



National Competition Policy: modelling proposed reforms

Study report with appendices



The Productivity Commission acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, waters and community. We pay our respects to their Cultures, Country and Elders past and present.

The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).

© Commonwealth of Australia 2024



With the exception of the Commonwealth Coat of Arms and content supplied by third parties, this copyright work is licensed under a Creative Commons Attribution 4.0 International licence. In essence, you are free to copy, communicate and adapt the work, as long as you attribute the work to the Productivity Commission (but not in any way that suggests the Commission endorses you or your use) and abide by the other licence terms. The licence can be viewed at: <https://creativecommons.org/licenses/by/4.0>.

The terms under which the Coat of Arms can be used are detailed at: www.pmc.gov.au/government/commonwealth-coat-arms.

Wherever a third party holds copyright in this material the copyright remains with that party. Their permission may be required to use the material, please contact them directly.

ISBN 978-1-74037-806-2 (online)

ISBN 978-1-74037-805-5 (print)

An appropriate reference for this publication is:

Productivity Commission 2024, *National Competition Policy: modelling proposed reforms*, Study report, Canberra

Publication enquiries:

Phone 03 9653 2244 | Email publications@pc.gov.au

Terms of reference

I, Jim Chalmers, pursuant to Parts 2 and 4 of the *Productivity Commission Act 1998*, hereby request that the Productivity Commission undertake a Study to assess the impacts to GDP, economic growth, productivity, government revenue and consumer wellbeing from the implementation of competition reforms proposed by Commonwealth, State and Territory governments as part of a revitalised National Competition Policy being progressed through the Council on Federal Financial Relations (CFFR).

In undertaking this work, the Commission should consider the November 2023 Statement of Expectations which directs the Commission to consider national prosperity and economic progress broadly, to ensure strong, sustainable and inclusive economic growth and rising living standards.

Background

The Australian Government recognises the importance of competition in lifting dynamism, productivity and wages growth, putting downward pressure on prices and delivering more choice for Australians dealing with cost-of-living pressures.

Australia's productivity growth has slowed over the past decade, and we are facing challenges from an uncertain international environment and structural changes taking place from the transition to net zero, digitalisation, and the expansion of the care and support economy. We need a competitive and resilient economy that can adapt to these challenges and make the most of opportunities in our economy.

Laws and policies at all levels of government – Commonwealth, state and territory, and local – impact the competitiveness of our economy. In this context, the Australian Government is committed to working with states and territories on reforming national competition settings to ensure these challenges are met. At the December 2023 CFFR meeting, Treasurers agreed to progress competition-enhancing reforms by revitalising National Competition Policy.

To inform this work, and recognising the principle that all governments should share the benefits of economic growth and revenue from competition reforms to which they have contributed, CFFR agreed the need for economic modelling to assess the impact of proposed reforms, including impacts on government revenue. This will be required to inform any intergovernmental agreements associated with revitalised National Competition Policy, and to inform the National Reform Program – which consists of a National Reform Agenda and Jurisdiction-specific Reform Plans.

Scope of the inquiry

The Commission will undertake a study to assess reform options proposed by Commonwealth, state and territory governments as part of the revitalised National Competition Policy (as considered by CFFR in mid-2024) to understand the economic and other benefits to the Australian community, as well as the government revenue impacts. While the reform options are yet to be agreed by CFFR, it is important that they tackle shared priorities such as addressing cost-of-living pressures, and adapting to the net zero transition, digitalisation, expansion of the care and support economy, and creating a more dynamic business environment.

In undertaking this assessment, the Commission should provide an assessment of:

- The long-run economic impacts arising from the implementation by all levels of government of proposed reforms to revitalise National Competition Policy, including:
 - the expected impact on GDP

- to the extent possible, the analysis should separately identify the contribution to GDP that would arise from the reforms being implemented by (a) the Commonwealth government; and (b) state, territory, and local governments
- any impacts on dynamic efficiency and other measures of economic progress and national prosperity.
- To the extent possible, the total additional revenue accruing to (a) the Commonwealth government, and (b) state, territory, and local governments, arising from the proposed reform options.
- Benefits accruing to Australian households and to the extent possible, distributional impacts. This should include estimated impacts on aggregate measures of incomes, prices and wages; the differential impacts across various groups (delineated, to the extent possible, by age, gender, income and education); and measures of consumer wellbeing, such as impacts on cost-of-living or consumer choice.
- Where possible, other impacts on consumers that may be difficult to quantify, such as improved quality of service, living standards or other outcomes for consumers.
- Impacts, in terms of output, prices, productivity and growth on relevant industries and sectors.

Where possible, the Commission should provide an indication of the likely time over which any economic or other impacts are expected to occur.

In providing its assessment of the benefits to the Australian community, the Commission should provide an explanation of the methodology and assumptions used to derive the estimates. The Commission should also undertake sensitivity analysis of the results to the assumptions used.

The Commission should also consider any available reviews, estimates or analysis of the potential impacts of proposed reforms.

Process

The Commission should:

1. Develop a suitable methodology and framework to model the direct and economy-wide economic and revenue impacts of the proposed reform options and revisions to revitalise National Competition Policy. This should be informed by a review of previous modelling undertaken by the:
 - Industry Commission in 1995 on the growth and revenue impacts of the original National Competition Policy, and
 - Productivity Commission in 2005 to estimate the benefits of the original National Competition Policy.

The Commission will be provided with early indicative reform options to inform model development.

2. Model the impacts of reform options considered by CFFR using the developed methodology to estimate the overall economic and revenue impacts, and other outputs described above.
3. Prepare a report which provides analysis of the likely impacts of reforms, covering the outputs and analysis described above.

The Commission will consult as required, including with state and territory governments, in completing this Study.

The Commission should provide a report to the Government by 1 November 2024.

The Hon Dr Jim Chalmers MP

Treasurer

[Received 13 March 2024]

Contents

Terms of reference	iii
Study report	1
Key points	2
What is this study about?	3
What reforms did we assess?	5
Our approach to assessing the reforms	8
What did we find?	13
A closer look at the reform areas	17
Where to begin?	30
Appendices	35
A. Public consultation	37
B1. Business environment	39
B2. Net Zero	87
B3. Labour mobility	117
B4. Human services	139
B5. Data and digital	167
C. About the economy-wide modelling	203
D. Economy-wide and revenue results	235
Abbreviations	255
References	257

Acknowledgments

The Commission would like to acknowledge all those who have taken the time to contribute to this study, including the organisations and individuals who provided submissions to the study and the Australian, State and Territory Government bodies who participated in meetings and workshops.

The Commissioners on this study were Alex Robson and Stephen King. The Commissioners express their appreciation to the staff who worked on this report. The team included: Vanessa Boltman, Sebastian Broadhurst, Peter Daniel, Zac Duretto, Owen Gabbitas, Patrick Jomini, Aaron Korczak-Krzeczowski, Eric Liu, Diego Machillanda, Benjamin Mitra-Kahn, Bonnie Nguyen, Jessica Nugent, Nicholas Rathjen, George Steel, James Thiris, Michael Youren and Xiao-Guang Zhang, with administrative and project support from Athena Wicks.

Disclosure of interests

The *Productivity Commission Act 1998* specifies that where Commissioners have or acquire interests, pecuniary or otherwise, that could conflict with the proper performance of their functions they must disclose those interests. The Commissioners working on this report have no interests requiring disclosure.

Study report

Key points

- * Australia has greatly benefited from past competition policy reforms – but, in recent years, reform efforts have stalled. A new round of National Competition Policy Reforms could boost GDP by an estimated \$26–45 billion in 2023-24 dollars (or by 1.0–1.7% of GDP).**

 - We assessed the economic impact of 26 proposed reforms identified by the Australian, state and territory governments through the Council for Federal Financial Relations. The reforms spanned five themes: dynamic business environment; net zero; labour mobility; human services; and data and digital.
 - This is an estimate of potential benefits. For many reforms, key details about the reforms and implementation do not currently exist. In these cases, we assumed the intended outcomes are realised to their fullest extent.

- * Overall, the proposed reforms will be good for Australians, with the boost to GDP supplemented by other benefits such as improvements in consumer access and welfare, and contributions towards Australia’s emission reductions.**

 - The impacts of many of the proposed reforms are likely to be far-reaching, but not all benefits can be quantified in dollar terms.
 - For many of the human services reforms, the most important benefits lie not with GDP, but with improving quality of care, consumer access and welfare. For many of the net zero reforms, the main benefits will be their contribution to Australia meeting its emission targets.

- * In the long run, the proposed reforms will ease cost of living pressures, reducing prices by an estimated 0.7–1.5%, but the effect of individual reforms is mixed. That said, short-run price effects could differ, so some reforms may ease cost of living pressures in the short run, even if they do not in the long run.**

- * The proposed reforms will increase net government revenues in the long run. For the Australian Government, net revenues will be an estimated \$5.7–9.2 billion higher. For state and territory governments as a whole, net revenues will be an estimated \$2.4 billion higher overall.**

 - A key driver of this effect is that the boost to GDP leads to higher tax revenues for governments.
 - This represents the long-run effects on government budgets of the reforms being in place. It does not account for upfront or transition costs associated with rolling out the reforms – such estimates would require significantly more detail about scope and implementation than was available to us.

- * For many reforms, getting the scope and implementation right will be key. Particular caution should be taken for the reforms about consumer switching, data sharing, information provision in human services and efficient user charging.**

What is this study about?

The Australian Government is currently undertaking a two-year competition review (Treasury 2023b). A key focus of the review is to ‘look at competition laws, policies and institutions to ensure they remain fit for purpose, with a focus on reforms that would increase productivity, reduce the cost of living and boost wages’ (Chalmers and Leigh 2023). This study focuses on estimating the economic benefits from a set of reforms to competition policy (box 1).





The Australian Government is working with state and territory governments on reforming national competition policy settings. In December 2023, Australian, State and Territory Treasurers agreed to progress competition-enhancing reforms to revitalise National Competition Policy. On 1 February 2024, the Australian Government Treasurer announced that this work:

... will be supported by the Productivity Commission, which will be tasked with assessing the economic, revenue and broader benefits of reform proposals considered by the Council on Federal Financial Relations. (Chalmers 2024)

The terms of reference for this study were provided to the Commission on 15 March 2024. We were asked to look at possible competition reforms, developed through the Council on Federal Financial Relations (CFFR). We were provided with early indicative reform options to inform model development in March, shortly after the commencement of this study. A final list of proposed reforms was provided to the Commission on 19 August 2024. We were requested to provide a preliminary report at the beginning of October 2024 to enable CFFR decision making, with a final report to be provided to the Treasurer on 1 November 2024.

The focus of this study is to assess the economic impacts of the proposed reforms. This includes the scale of any benefits from the reforms, and how those benefits are distributed. As such, this study looks at the likely impacts on Australia’s national economy, as well as on individual states and territories. It also considers how segments of the economy are likely to be affected, including consumers and households, relevant industries and sectors (including small businesses), and the government sector. Figure 1 summarises the types of impacts that we were asked to consider.

Figure 1 – What economic impacts did we look at?

National		States and territories	
Impacts on economic progress, prosperity and dynamic efficiency		Impacts on economic progress, prosperity and dynamic efficiency	
Gross domestic product (GDP)		Gross state product (GSP)	
Consumers & households		Industry	Government
Impacts on consumer wellbeing, cost of living, living standards and distributional effects		Impacts on growth, productivity, small businesses and distributional effects	
Incomes, prices, wages, consumer choice, product quality		Output, prices, employment	Government revenue

Box 1 – Why does competition policy matter?

Competition refers to a process of market rivalry, fuelled by businesses striving to achieve their own objectives – such as attracting customers, increasing their profits, avoiding losses or gaining market share. Competition plays a pivotal role in driving economic growth, dynamism and prosperity. Strong competition makes it difficult for individual businesses to accrue excessive market power, which in turn encourages fair and efficient market dynamics and keeps prices in check (Banks 2000). It motivates businesses to respond to the needs of consumers by offering better products and services, leading to improved standards of living. Competition principles have also been extended beyond private markets. One such area is the provision of human services, where embedding the principles of choice and competition is intended to encourage those markets to respond to consumer needs and preferences.

Globally, governments and policymakers recognise the need to maintain robust competition policies to support thriving economies (OECD 2014). Competition policy is about enabling markets to function as well as they can and competitive processes to thrive. The overarching objective of competition policy can be seen as improving community welfare by increasing economic efficiency (PC 2014e, p. 8).

Competition policy settings affect Australia's overall economic performance, as well as the lives of all Australians. Previous competition policy reforms have changed the economic landscape in ways that are now taken for granted. For example, in the past:

- consumers had no choice of electricity or gas provider – they paid regulated tariffs and customer service was poor or non-existent;
- telecommunications services operated as a monopoly, which only ended in 1992 when Australia's second telecommunications provider, Optus, entered the market;
- there were price controls and supply restrictions on food products such as eggs, poultry ... rice, and sugar;
- retail trading hours were restricted for most stores, with limited trading on weekends ...
- only lawyers could offer land conveyancing services ... (Harper et al. 2015, p. 17)

And, in more recent years, competition and competition policy settings have continued (and will continue) to shape the everyday experience of individuals and households.

- Over the past decade, the growth of ridesharing has disrupted the taxi monopoly in Australia. In 2019, demand for Uber services outstripped taxis for the first time (Roy Morgan 2019). This followed decisions in all states and territories to legalise ridesharing (ABC 2016, 2018).
- In the 1990s, changes to regulatory settings allowed new players to enter Australia's retail lending markets (including mortgage brokers and international banks), leading to increased competition for banks (PC 2018a). However, concerns remain that poor competition has contributed to high interest rates and increased cost-of-living pressures (SSCCL 2024, p. 52).
- Digital platforms have become ubiquitous over the past decade but remain concentrated around a few 'tech giants'. There is growing regulatory appetite to reign in the market power of those giants. In 2020, the US Department of Justice brought a successful antitrust lawsuit claiming that Google had maintained a monopoly in search and services by paying to appear as the default search engine on mobile devices (US DOJ 2020). And in 2023 the European Union enacted the Digital Markets Act, giving it more power over large tech firms (EC 2024). Stronger regulatory action has the potential to change how these markets develop, and shape the experience of platform users.

What reforms did we assess?

We were asked to analyse the impacts of 26 proposed reforms, spanning five themes. A brief outline of the proposed reforms is included in table 1 and they are discussed in greater depth in appendices B1-B5.

Table 1 – Proposed National Competition Policy reforms

No.	Short name	Long name and description ^a
Dynamic business environment		
B1	Overseas standards	Lower barriers to the adoption of trusted overseas standards Adopting an expedited or default approach to recognising trusted overseas standards and processes – where they fulfill an equivalent regulatory purpose (e.g., provide protection to consumers) – to existing and future references to Australian standards in regulation.
B2	Commercial planning and zoning	Liberalise and standardise commercial zoning rules and review planning requirements to ensure they do not distort competition Adopt a liberalised, pro-competition and nationally consistent approach to commercial planning and zoning regulations.
B3	Public procurement	Improve contestability and value for money in public procurement Governments develop a nationally consistent best practice procurement framework.
B4	Phoenixing	Efforts to prevent phoenixing in the building sector Improving information-sharing between regulators and the collection of statistical data on phoenixing activities to facilitate a better response.
B5	E-conveyancing	Reform e-conveyancing market State and territory government reforms to the e-conveyancing market to implement competition through interoperability.
B6	Marine freight industry	Lower competition barriers in the marine freight industry Lowering competition barriers in the marine freight industry.
B7	Distribution networks	Improve domestic distribution networks Address barriers that restrict distribution networks, including regulatory barriers on specific imported products that are safe and useful for Australian markets.
B8	Efficient user charging	Implement forward-looking efficient user charging approaches Develop prospective benchmark user charging guidelines that can be adopted nationally.
B9	Modern methods of construction	Lower barriers to modern methods of construction Lower barriers to the growth in nascent innovative construction businesses including increased automation, modular/prefabricated, off-site housing, 3D printing housing, and transportable housing.
Net zero		
NZ1	Right to repair	Remove barriers to the ‘right to repair’ Addressing barriers to third-party repair of consumer products. Primarily this would enable independent repairers and consumers access to the necessary parts, information and equipment needed to repair products, including access to embedded software in products.
NZ2	Overseas standards	Streamline the adoption of trusted overseas standards to enable an efficient net zero transformation Streamline the adoption of trusted overseas standards that support the net zero transformation.

No.	Short name	Long name and description ^a
NZ3	Heavy EVs	<p>Lower barriers to the adoption of electric vehicle (EV) trucks and buses that meet trusted overseas standards</p> <p>Lower barriers to the adoption of electric trucks and buses that meet trusted overseas standards by:</p> <ul style="list-style-type: none"> • Ensure Australian Design Rules (ADRs) for heavy vehicles align with trusted overseas standards, where they are at least as safe as Australian standards; and can be updated as they develop without undue delay • Ensure road use regulation supports adoption of updated ADRs on Australian roads (which could include heavier and wider EV trucks).
NZ4	EV charging	<p>Support competition in EV charging infrastructure (EVCI) rollout</p> <p>Adopt consistent policy settings in the national rollout of EVCI that promote efficiency and address potential competition risks.</p>
NZ5	EV imports	<p>Lower barriers to the uptake of imported EVs</p> <p>Remove barriers that prevent independent EV imports and ensure these vehicles can be used on Australian roads.</p>
Labour mobility		
L1	Restraint of trade clauses	<p>Limit the unreasonable use of restraint of trade clauses</p> <p>Adopt a nationally consistent approach to limiting the unreasonable use of restraint of trade clauses in employment agreements to improve job mobility.</p>
L2	Occupational licensing	<p>Streamline occupational licensing and registration requirements</p> <p>L2.1 – Remove unnecessary licensing and registration requirements and streamline remaining requirements to ensure they are justified by consumer safety risks.</p> <p>L2.2 – Reform the structure and governance of national professional bodies that make occupational registration and licensing decisions to address conflicts of interest.</p>
Human services		
H1	Matching	<p>Assist health and care service users to find the best service providers</p> <p>Facilitate the availability and accessibility of service information to better match service users to providers across the health, care and support sectors.</p>
H2	Labour mobility	<p>Improve labour mobility in health care</p> <p>Remove unnecessary barriers to labour mobility in the health, care and support services, including barriers to workers performing their full scope of practice.</p>
H3	Access arrangements	<p>Reform market access arrangements for service providers</p> <p>Reform market access arrangements (including commissioning and other approaches) for human services to improve market functioning and better address thin markets.</p>
H4	Medicine pricing	<p>Reduce the cost of medicine</p> <p>Reduce the wholesale cost of medicines by adjusting pricing strategies and addressing anti-competitive agreements.</p>
H5	Telehealth	<p>Remove barriers to Telehealth</p> <p>Remove unnecessary barriers to consumer access to telehealth and other digital health services.</p>
Data and digital		
D1	Consumer switching	<p>Reduce search and switching costs for consumers</p> <p>Address the major frictions and impediments that deter consumers shopping around and switching to competitively priced or more suitable products.</p>

No.	Short name	Long name and description ^a
D2	Data sharing	<p>Optimise data availability and sharing to improve competition</p> <p>Removal of technical, legal or resourcing barriers to aid:</p> <ul style="list-style-type: none"> • public access (including business access) to (non-sensitive) publicly funded data of significant public value (e.g. publicly funded research data) • acquisition and sharing of private data (where privacy and consumer protection impacts are managed).
D3	Emerging technology	<p>Address regulatory barriers to the development and growth of emerging technologies</p> <p>Remove regulatory barriers that hinder the uptake of emerging technology in commercial activities, including robotics, artificial intelligence, aeronautics, and biotechnology.</p>
D4	Banking	<p>Remove barriers to competition in banking</p> <p>Remove regulatory barriers to competition in the banking sector that advantage large incumbents and lead to poor consumer outcomes. This could include barriers that hinder customer movement or place a high burden on new or smaller players.</p>
D5	Payment systems	<p>Increase access by non-Authorised Deposit-taking Institutions (ADIs) to payment systems</p> <p>Increase direct access for non-ADI payment product providers to Australian Payment Systems, to clear and settle payments.</p>

a. The long names and descriptions of each reform were prepared by the National Competition Policy Senior Officials Working Group and provided to us. We assigned a short name to each reform.

This is not an exhaustive list of competition reforms that could benefit Australia. Other reforms to competition law and policy are being considered as part of the competition review, but are not in scope for this study. This includes reforms in the area of aviation (Treasury 2024a) and mergers and acquisitions (Treasury 2024b). In addition, some submissions to this study identified other areas where revitalising competition policy could be beneficial. This included:

- trade and foreign investment (Fels, sub. 1)
- taxation (Fels, sub. 1; Lyons, sub. 18)
- electricity markets (Alinta Energy, sub. 5)
- workplace relations (HIA, sub. 4)
- broader issues in the construction and housing industry (HIA, sub. 4; Urban Taskforce Australia, sub. 6).

The case for reform in these areas was not in scope for this study. In progressing the National Competition Policy reform agenda, the Australian, state and territory governments should consider the suggestions made in submissions to this study.

Many of the proposed reforms will benefit from intergovernmental coordination. Just over a quarter will require the Australian, state and territory governments to work together to implement the reform in a way that fully realises the potential benefits (figure 2). There are three reforms (B2, B5 and B8) where the bulk of reforms will need to occur at the state and territory level or those governments could implement unilaterally, but that could have greater benefits if a harmonised approach between jurisdictions were taken. There are also many reforms that could be progressed by the Australian Government alone.

Figure 2 – Who is needed to implement each proposed reform?

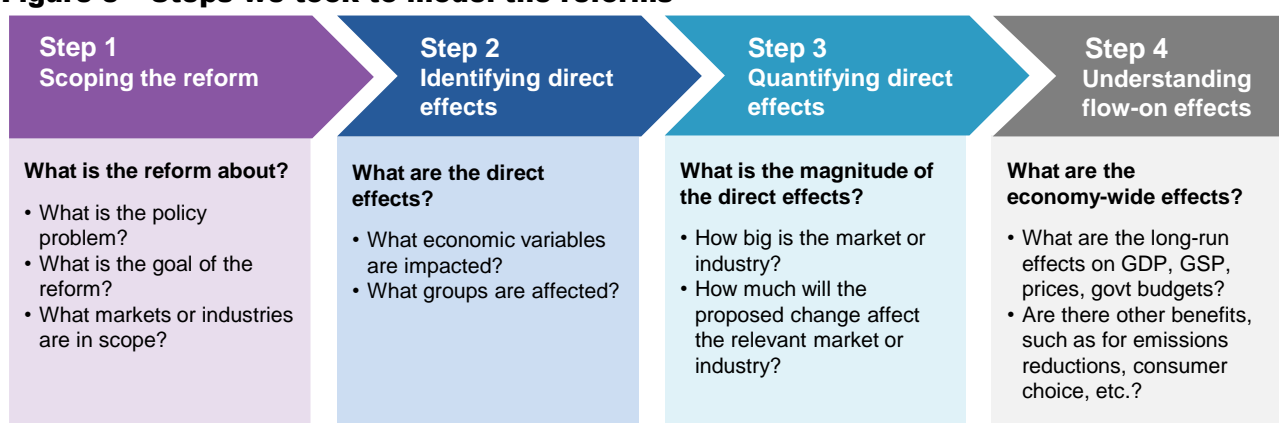
Australian Government only	Coordination needed	State/territory governments only
B1 – Overseas standards	B3 – Public procurement	B2 – Commercial planning and zoning
B6 – Marine freight industry	B4 – Phoenixing	B5 – E-conveyancing
B7 – Distribution networks	NZ3 – Heavy EVs	B9 – Modern methods of construction
NZ1 – Right to repair	L2 – Occupational licensing	
NZ2 – Overseas standards	H2 – Labour mobility	
NZ4 – EV charging	H3 – Access arrangements	
NZ5 – EV imports	D2 – Data sharing	
L1 – Restraint of trade clauses	Unclear^b	
H4 – Medicine pricing	B8 – Efficient user charging	
H5 – Telehealth	H1 – Matching	
D3 – Emerging technology ^a	D1 – Consumer switching	
D4 – Banking		
D5 – Payment systems		

a. Depending on the scope of technologies covered by this reform, involvement of state and territory governments may also be required. b. More information is needed about the intended scope or implementation of these reforms to determine which levels of government will be involved.

Our approach to assessing the reforms

We were asked to assess the economic impacts of the proposed competition reforms provided to us through the CFFR process. We adopted a staged approach to systematically assess each of the proposed reforms (figure 3) and consulted with the National Competition Policy Senior Officials Working Group at each step in this process. We have sought to provide ‘best estimates’ of the potential economic impacts, given the time available, the information provided about each of the reforms and the constraints on consultation and engagement (box 2).

Figure 3 – Steps we took to model the reforms



Box 2 – Consultation and engagement

Information about the proposed reforms was provided to the Commission on a confidential basis and remained confidential throughout the course of this study. This includes the indicative list of reforms (provided 18 March 2024), as well as the final list of reforms (provided 19 August 2024).

Consequently, we were unable to conduct our usual public consultation and engagement processes to the full extent. For the same reason, it was not possible to release a draft report for public comment. On 3 April 2024, we issued a call for submissions, which outlined the purpose of the study and proposed approach to modelling. In response, we received 18 submissions and three brief comments.

To inform our estimate of the economic effects, we drew extensively on the existing Australian and international evidence about competition reform initiatives. We also conducted workshops on 20 May 2024 and 28 August 2024 to discuss methodology and results with the National Competition Policy Senior Officials Working Group, which comprises representatives from each of the jurisdictions – in addition to meeting with jurisdictional representatives bilaterally and as a group on multiple occasions.

Overall, it should be noted that relatively little consultation was able to be undertaken as part of this study specifically, with the result that the Commission was constrained in its ability to seek new evidence and publicly test its analysis and estimates. Appendix A contains further details about consultation.

Scoping the reforms

The first step was to understand the intended scope of each reform. This included identifying the background and context for the reform; the policy problem and the goal of the reform; and which markets, sectors or industries were intended to be affected.

For some of the proposed reforms, the intended scope was not clear. In general, these were instances where good practices had been identified, but it was not clear how widely those practices could or were intended to be applied. That said, there were usually some markets or sectors clearly intended to be in scope, even if the full intended scope had not been articulated in the reform descriptions provided to us. Examples of reforms falling into this category include:

- the adoption of trusted overseas standards (B1, NZ2)
- addressing regulatory barriers to the adoption of emerging technologies (D3)
- implementing efficient user charging for government-provided goods and services (B8).

In these instances, we adopted a **case study** approach, focussing on markets that were clearly in scope, to illustrate the types of benefits that could be expected from the reform. It was not possible to extrapolate these effects to other markets, meaning that we have not been able to capture or quantify all benefits that would accrue from a broader rollout. For this reason, interpretation of the modelling results should take into account the fact that, for some reforms, the realised benefits could be greater (and potentially significantly greater) than the benefits that have been estimated.

Identifying the direct effects of the reforms

There are two dimensions to understanding the direct effects of each proposed reform. The first is what economic variables are likely to be impacted – such as changes to the price of certain goods or productivity

in certain markets. The second is who is likely to be affected by these changes – whether certain types of consumers; particular markets, sectors or industries; or specific geographical areas of Australia.

Some of the effects in figure 1 were identified as part of this step. This includes:

- for affected industries or sectors – effects on prices, costs, profits, efficiency and productivity
- for consumers – effects on access to services, consumer choice and quality of goods and services.

The scope and intended in-principle effects of each proposed reform were tested and validated at a methodology workshop that we held with the National Competition Policy Senior Officials Working Group.

For almost all reforms, we were able to identify their (likely or intended) direct effects. The exception to this was the proposal to reform competition in the marine freight industry by repealing Part X of the *Competition and Consumer Act 2010* (Cth) (reform B6). Part X exempts registered agreements between shipping lines from parts of Australia's general competition laws, including laws requiring that such arrangements be shown to provide a net public benefit. We could not identify the direct effect of this reform for two reasons: first, it is unclear what effect existing registered agreements are having on price and productivity in the marine freight industry; second, it is unclear what regulatory arrangements (if any) would be put in place instead of Part X. Previous reviews have recommended the repeal of Part X on good governance grounds – that is, there is no compelling basis for the special treatment of shipping lines (Harper et al. 2015; PC 2005a, 2022b).

Quantifying the direct effects of the reforms

For a handful of the proposed reforms, there were clear details about what concrete policy changes would be made. For these, we sought to directly estimate the likely economic effects of implementing the specified reform in the intended market, sector or industry. We drew on Australian and international studies, evidence from past studies and inquiries and input from the jurisdictional representatives.

Many of the reforms were, however, more about principles to foster improved efficiency or economic prosperity than about implementing specific, known and tangible changes. In other words, they are better characterised as reform directions – areas where there is appetite to address an identified policy problem, but no specific actions have been proposed. Reforms in this category include:

- several human services reforms about improving access to services and health outcomes (H1, H2, H3)
- streamlining commercial planning and zoning regulations (B2)
- improving public procurement practices (B3).

For these, to enable some degree of quantification, we took a **scenario- or outcomes-based** approach – that is, we sought to model what would happen in certain scenarios or if certain outcomes were achieved. This approach yields estimates about the size of the available benefits, leaving aside the question of how those benefits can be realised. It should be borne in mind that, when it comes to the details of reform implementation, a modelling exercise cannot manufacture certainty from the unknown. Therefore, for these reforms, the modelling results should be considered as an outer envelope of the possible benefits.

For some reforms, we used an **elasticity approach** to estimate how responsive the overall economy is to the direct effects of the reform. This involves applying an arbitrary productivity shock (we have chosen 1% or 0.1%, depending on the reform) to the affected sectors to illustrate how much overall economic conditions change in response. This means that our modelling results are not a measure of estimated impacts, but are instead a measure of the economy-wide response to a potential shock. These results are roughly speaking linearly related to the shock – so, for example, the results from a 0.2% shock would be roughly twice that for a 0.1% shock of the same kind.

The various modelling approaches we took are summarised in figure 4.

Figure 4 – Modelling approaches

	Intended scope is well defined	Scope to be determined after this study
Specific reform actions identified	The reform was modelled directly – that is, a direct assessment of the estimated costs and benefits of implementing the specified reform in the intended market, sector or industry.	The reform was modelled through a case study approach, focusing on sectors or markets that are clearly intended to be in scope. This approach illustrates the types of costs and benefits that can be expected from certain types of reforms.
No specific reform actions identified	<p>For some reforms, a scenario- or outcomes-based approach was used. This is about estimating the size of the available benefits, leaving aside the question of how those benefits can be realised.</p> <p>For some reforms, we used an elasticity approach to estimate how responsive the overall economy is to the direct effects of the reform.</p>	<p>A combined case study and outcomes-based approach was used for some reforms.</p> <p>Where the scope and reform actions were very unclear, first principles were used to assess the issues and the case for government intervention.</p>

Overall, our primary focus was on the long-run economic impacts of the proposed reforms – an approach supported in submissions (BCA, sub. 2). Given the lack of implementation detail, we did not focus on the upfront or transition costs associated with rolling out the reforms. In essence, the modelling exercise undertaken in this study is about describing how the reforms might affect long-run economic conditions in Australia; it is not a cost-benefit analysis of the reforms.

There are some reforms where we considered that the quantification of certain impacts was not possible or would not provide additional insights. For these, we have sought to identify and discuss the nature of any material economic impacts and, where applicable, the in-principle case for reform. This approach was supported in submissions, which emphasised the importance of identifying costs and benefits, even when they are intangible or cannot be quantified (Consumers' Federation of Australia and CHOICE, sub. 3, p. 1).

Understanding the flow-on effects of the reforms

We used Computable General Equilibrium (CGE) models to estimate the likely flow-on effects of the proposed reforms. CGE models use actual economic data, fitted to a set of equations that describe the structure of the economy. They can be used to estimate how an economy might react to economic shocks, including policy changes.

Depending on the model, CGE modelling can yield information about how a package of reforms is likely to affect aggregate measures such as output, prices and government budgets in the long run. In the context of the CGE model, the long run refers to how long it takes for the economy to fully adjust to the specified shock (in this case, each of the proposed reforms), as opposed to a specific time period.

The Commission has previously used CGE models to estimate the economic effects of the Hilmer reforms (IC 1995; PC 2005b) and the terms of reference for this study directed us to consider the methodology used in these earlier reports (box 3).

Box 3 – Modelling competition reforms

In 1993, the **Hilmer Report** found that, with interstate trade growing due to advances in transport and communication technology, a nationally consistent approach to competition policy was needed (Hilmer 1993, p. 16). The report set out a framework for a National Competition Policy and, in 1995, the Australian, state and territory governments committed to a suite of reforms. The reforms contributed to a productivity boom that was sustained through the 1990s that underpinned more than a decade of continuous economic growth (Banks 2001; PC 2005b).

Initially, the Industry Commission (1995) estimated that the reforms could permanently boost GDP by up to 5.5%. Later, once reform implementation was well underway, the Productivity Commission estimated that the reforms had led to a GDP uplift of at least 2.5% (PC 2005b).

Two decades later, the **Harper Review** revisited competition policy in Australia. The review took place as Australia's mining boom was drawing to an end, and found further reforms would be 'critical to improving Australia's productivity performance and to sustaining our living standards into the future' (Harper et al. 2015, p. 18). The review made 56 recommendations to reinvigorate Australia's competitive landscape. While the Australian Government (2015) committed to implementing the majority of the review's recommendations, progress was slow (Bogaards 2019; Harris 2015). Amongst the recommendations not implemented was one to task the Productivity Commission with modelling the economic effects of the proposed reforms (Harper et al. 2015, p. 79).

For this study, we prepared three CGE models and, when the list of proposed reforms was finalised, chose to use two. The key characteristics of each model are summarised in table 2, and full details are in appendix C. The detailed CGE modelling results are in appendix D.

Table 2 – Key features of the CGE models we used

	PC National	PC Regional	Victoria University Regional Model
Owner	Developed and maintained by the Commission.	Developed and maintained by the Commission.	Maintained by the Centre of Policy Studies at Victoria University
Regions	Australia-wide	Australia-wide, with state and territory detail	Australia-wide, with state and territory detail
Database	2018-19	2018-19	2018-19
No. of industries	114	114	92
Used for this study	Yes	No	Yes

Not all proposed reforms were good candidates for CGE modelling. First, reforms were only suited to CGE modelling if their intended or expected impacts could be identified and estimated – though, as discussed above, for some reforms we addressed this by focussing on outcomes or scenarios.

A second requirement is that the direct effects were sufficiently large, so as to produce non-negligible changes in the model. There were several reforms that were likely to produce material effects in specific markets, but those markets are small in the context of the broader Australian economy. Examples of reforms in this category include the reforms for:

- e-conveyancing (B5)
- adopting a standard for charging plugs for electric vehicles (EVs) (NZ4).

This means that, although a small number of individuals or businesses may be significantly impacted, those impacts would be lost if analysed through a CGE framework. In these instances, the effects of the reforms were best understood through a sectoral analysis of the reform, which is the approach we took.

In total, 19 of the 26 reforms were at least in part modelled via CGE modelling.

What did we find?

The proposed reforms will boost GDP

The overall package of proposed reforms is expected to be good for the Australian economy. Based on the impacts that we could quantify, we estimate that the proposed reforms have the potential to **boost GDP by \$26–45 billion** or 1.0–1.7% of GDP in the long run (in 2023-24 dollars). This equates to a permanent increase of about \$3,000–5,000 per household. All CGE-modelled reforms had the effect of increasing GDP (table 3), though some had small effects. The reforms with the greatest increase in GDP had economy-wide impacts and include occupational licensing (L2), banking (D4), and distribution networks (B7) (the effect of each individual reform is discussed in the next section of this report). The permanent boost to gross state products (GSP) from the reform package is reported in table 4.

Overall, these estimates should be considered an **outer envelope** of the possible GDP (and GSP) uplift from these reforms, in line with the Industry Commission's approach to modelling of the Hilmer reforms in 1995. This is because many of the proposed reforms are best characterised as principles to foster improved efficiency or economic prosperity, rather than implementing specific, known and tangible changes. As discussed above, we took an outcomes- or scenario-based approach to modelling many of the reforms, which yields estimates about the size of the potential benefits, leaving aside the question of how those benefits can be realised. (For a handful of reforms, we took a case study or elasticity approach to modelling, which means that the potential economic effects of those reforms could be greater than estimated.)

It should also be noted that, whereas the Industry Commission (1995) estimated a boost to GDP of up to 5.5% (\$23 billion in 1993-94 dollars), the revised estimates a decade later – once reform details and implementation approaches were evident – were less than half that, at 2.5% of GDP (\$20 billion presumably in 2003-04 dollars) (PC 2005b). This differential illustrates the difficulty of estimating expected benefits in the absence of full information about the scope of the reforms and how they will be implemented. This means there is a degree of uncertainty associated with the modelling that we did as part of this study and reflects the need for caution when interpreting estimates about the impact of future reforms.

As a percentage of GDP, the proposed reforms will have a smaller economic impact than the Hilmer reforms. However, it should be noted, that Australia's economy has changed considerably since the time of the Hilmer reforms – in part due to the reforms themselves. A larger and more complex economy means that reforms of any size will register as a smaller share of GDP today than three decades ago. As a rudimentary point of comparison, reforms worth \$23 billion in 1993-94 are equivalent to about \$52 billion in 2023-24 – or, in other words, about 1.9% of GDP in 2023-24.

Table 3 – Headline economic effects

No.	Short name	CGE ^a	GDP (\$m) ^c		CPI (%) ^c		Other ^d
			Lower	Upper	Lower	Upper	
Dynamic business environment							
B1	Overseas standards	..	..	..	..	..	Product variety
B2	Commercial planning and zoning	Yes ^b	..	..	..	..	Higher land use value, competition in downstream markets
B3	Public procurement	Yes	..	34	..	-0.00	..
B4	Phoenixing	..	..	..	..	..	Consumer confidence
B5	E-conveyancing	..	..	..	..	..	..
B6	Marine freight industry	..	..	..	..	..	..
B7	Distribution networks	Yes	3,435	6,780	-0.13	-0.25	..
B8	Efficient user charging	Yes ^b	..	..	..	..	..
B9	Modern methods of construction	Yes	2,858	5,730	-0.05	-0.11	Lower housing supply pressures
Net zero							
NZ1	Right to repair	Yes	..	408	..	+0.02	Consumer rights
NZ2	Overseas standards	..	..	..	..	..	Product variety, emissions reduction
NZ3	Heavy EVs	Yes	..	748	..	-0.02	Emissions reduction
NZ4	EV charging	..	..	..	..	..	Emissions reduction
NZ5	EV imports	Yes	..	1,095	..	-0.04	..
Labour mobility							
L1	Restraint of trade clauses	Yes	2,569	5,137	-0.05	-0.10	..
L2	Occupational licensing	Yes	5,155	10,332	-0.10	-0.19	..
Human services							
H1	Matching	Yes ^b	..	..	..	..	Health outcomes, consumer choice
H2	Labour mobility	Yes	600	1,205	-0.07	-0.12	Health outcomes
H3	Access arrangements	Yes	1,789	3,228	-0.03	-0.06	Health outcomes, consumer choice, choice for informal carers
H4	Medicine pricing	Yes	..	2	..	-0.00	..
H5	Telehealth	Yes	..	793	..	-0.02	Health outcomes, convenience
Data and digital							
D1	Consumer switching	..	..	..	..	..	Consumer choice
D2	Data sharing	Yes	..	1,642	..	-0.05	Innovation effects
D3	Emerging technology	Yes	..	711	..	+0.02	Effects in other industries, innovation effects
D4	Banking	Yes	3,532	6,574	-0.17	-0.47	..
D5	Payment systems	Yes	172	445	-0.02	-0.06	Innovation effects
TOTAL^e			25,542	44,864	-0.72	-1.45	

a. Whether we conducted CGE modelling for any part of the reform. GDP and CPI effects are only reported for CGE-modelled reforms, as they are CGE modelling outputs. b. We estimated the responsiveness of the overall economy to the direct effects of the reform. This means that the CGE modelling outputs are not a measure of estimated impacts, but are instead an elasticity measure. These results are reported in tables 5 and 8. c. A range is reported for certain reforms to reflect where we undertook sensitivity analysis. d. This column reports significant other benefits that we anticipate, but could not be (directly) quantified in our modelling. e. Individual values may not sum to total due to rounding. The lower total is the sum of lower estimates for reforms where sensitivity analysis was undertaken, plus central estimates for reforms where sensitivity analysis was not undertaken.

Table 4 – Estimated effect of the reform package on Gross State Products^a

	Change (\$ m)	Change (%)
New South Wales	11,431	1.3
Victoria	7,762	1.2
Queensland	9,433	1.9
South Australia	2,101	1.4
Western Australia	12,231	3.1
Tasmania	635	1.5
Northern Territory	798	2.3
Australian Capital Territory	443	0.8

a. For upper-bound estimates. Values do not sum to the estimated effect on GDP due to rounding.

But not all benefits could be quantified

For some reforms, the benefits are reflected in their effect on GDP; however, for many others, their effect on GDP should be seen as a secondary consideration. For example, for many of the net zero reforms, the main focus is on helping Australia meet its emission targets. In addition, for many of the human services reforms, the focus is on a range of outcomes including improved access and consumer choice. Our analysis indicates that, overall, these various reforms are likely to have the effect of helping Australia meet its emission targets, improving access and promoting consumer choice – but these benefits are not reflected in the headline results from the CGE modelling.

Therefore, it should be emphasised that no single number can capture the full impacts and benefits of any reform agenda. Many of the reforms have benefits that are not amenable to quantification in monetary terms, and we have identified and discussed these benefits in appendices B1–B5. This includes some measures that we were asked to consider, where possible, in the terms of reference, such as effects on consumer choice, living standards and quality of life.

Even where the primary direct effects of the reform are quantifiable, the flow-on effects of reform can be so far-reaching and nuanced that it would be impossible to capture them in full. For example, several of the data and digital reforms are aimed at encouraging innovation and improving economic dynamism – for these, the exact nature and magnitude of their impacts are inherently unforeseeable. Moreover, the evolving scope of some reforms means they could be applied to markets and industries that were not anticipated at the time of this study – by definition, our modelling does not account for these benefits.

Getting scope and implementation right is key

For all of the proposed reforms, getting scope and implementation right is essential to realising the potential benefits to the fullest extent possible. But for some, extra caution is required when deciding whether and how to proceed with the reforms, and decision-makers should consider how the downside risks will be managed.

- **Reform D1 – Consumer switching.** There is mixed evidence about the efficacy of measures to improve consumer switching in various markets. Well-designed initiatives (such as mobile number portability) can boost levels of switching, but initiatives that are badly designed can result in net costs. Moreover, many efforts to improve switching have been market-led (for example comparison websites), and there is a question about the ability of – or the need for – government-led initiatives to generate similar benefits.

- **Reform D2 – Data sharing.** While improved data sharing has the potential to deliver large net benefits, the exact costs, benefits and risks depends on the type of data being shared. A one-size-fits all policy is not appropriate as different datasets generate different value and risks, and the design of each of the data-sharing schemes will be a key determinant of the size of the benefits (if any) from this reform.
- **Reform H1 – Matching.** For human services, the evidence suggests that providing consumers with more information about services providers, such as performance rankings, may not change consumer behaviour. While information sharing can motivate poor-performing providers to improve or exit the market. If not carefully designed, information sharing can also result in unintended (and adverse) consequences: This includes providers refusing to provide certain services or serve certain cohorts in order to maintain higher ratings.
- **Reform B8 – Efficient user charging.** There are some government services for which fully cost-reflective user charging is not appropriate, so the reform to adopt efficient user charges more widely has the potential to result in net costs (including worse equity outcomes and increased cost of living pressures), if applied to the wrong government services. Whether efficient user charging should be adopted for government services should be considered on a case-by-case basis – a detailed review of the prospective (positive) externalities or equity implications would be needed for each service.

These reforms, and key implementation considerations, are discussed further in appendices B1-B5.

The cost of living will be modestly lower in the long run

As discussed above, cost of living relief is another focus of the proposed reform package. The terms of reference for this study direct the Commission to assess the cost-of-living effects of the proposed reforms and the Treasury's National Competition Policy consultation paper stated that 'a subset of reforms that are important for addressing cost-of-living pressures will be prioritised for early implementation' (Treasury 2024c, p. 32).

Our modelling results showed that, overall, the total effect of the reforms will be to decrease prices in the long run by 0.7–1.5%, which will ease cost of living pressures.

The effect of individual reforms is mixed (table 3). For reforms where we modelled long run prices, we found that only two would increase prices and the remainder would decrease prices. In the CGE modelling, the effect of reforms on long run prices is determined by two factors.

- Whether the price change is positive or negative is determined by the structure of the CGE model, including how related markets interact with each other. For example, because many markets use labour as an input, changes in demand for labour in one market could affect the amount of labour available to be used in other markets, leading to increased labour costs in those latter markets. These relationships are fixed in the CGE model.
- The magnitude of the change is affected by the size of the shock applied to the CGE model. The size of these shocks was determined by our estimation of the direct effects associated with each reform (discussed above).

It should be noted that the CGE-model provides insights into long-run price effects only, and the short-run price effects could be different. This means it is plausible that some reforms may ease cost of living pressures in the short run, even if they do not in the long run. In the short run, cost of living effects will also be influenced by the timing and sequencing of reform implementation.

For governments, net revenues will increase overall

As a whole, the proposed reforms will have the long-run effect of increasing net revenues for governments overall (table 5). In the CGE modelling, the effect on government budgets is the combined effect of changes

to tax revenue collections (incomings) and changes to expenditure (outlays) – and the net effect is determined by the relative magnitude of these changes. These were all determined in the CGE model as a response to the shock that we specified.

For the Australian Government, net revenues will be an estimated \$5.7–9.2 billion higher, largely due to increased income tax collection (driven by increases in nominal income). For state and territory governments, as a whole, net revenues will be an estimated \$2.4 billion higher. This is the net effect of changes to revenue (comprising GST grants, non-GST grants, payroll tax and property taxes) and changes to expenditures (employee expenses, driven by nominal wages), which is unique to each jurisdiction.

Table 5 – Changes to net government revenue^a

	Change (\$ m)	Change (%)
Australian Government	9,183	1.3
New South Wales	706	0.6
Victoria	663	0.7
Queensland	410	0.4
South Australia	150	0.5
Western Australia	303	0.6
Tasmania	46	0.5
Northern Territory	25	0.3
Australian Capital Territory	47	0.6

a. For upper-bound estimates. Values may not sum to totals reported elsewhere due to rounding.

It should be noted that these results do not account for the expense of implementing the reform. This includes the fixed cost of rolling out the reform, as well as any ongoing administrative or operational costs. This is a costing exercise separate to the one we have been asked to undertake and will require significantly more detail about the intended implementation pathway of each reform than we have been provided.

A closer look at the reform areas

Dynamic business environment

We were asked to consider nine reforms for enhancing business dynamism (tables 1 and 6). A dynamic business environment is important because it means that the economy can respond and adapt to changing economic circumstances. As the Treasury explained:

Enhancing business dynamism is key to restoring Australia’s productivity. A more dynamic business environment directly supports competition, through encouraging innovation, information sharing, diffusing technological advancement, and greater choice for consumers.

(Treasury 2024c, p. 34)

The role for government in this area is to ensure that the regulatory environment does not unnecessarily impede – and, where possible, promotes – dynamism.

Table 6 – Summary of dynamic business environment reforms

No.	Short name	Key direct effects	Key flow-on effects
B1	Overseas standards	<p>Estimated effects: Lower compliance costs for businesses (\$500m per annum)</p> <p>Other key effects: Fewer out-of-date standards Lower admin costs for regulatory agencies Increased product variety (some markets)</p>	Flow-on effects were not estimated
B2	Commercial planning and zoning	<p>Estimated effects: Increased competition in downstream markets (modelled as an illustrative 0.1% increase in capital productivity of retail markets)</p> <p>Other key effects: Higher land use values</p>	<p>The following results are elasticity measures: GDP: +\$23 m (+0.00%) CPI: -0.00% Net govt revenue (Cth): +\$6 m Net govt revenue (S/T): -\$1 m</p>
B3	Public procurement	<p>Estimated effects: Lower government procurement costs (2% decrease in government expenditure)</p>	<p>GDP: +\$34 m (+0.00%) CPI: -0.00% Net govt revenue (Cth): +\$1,654 m Net govt revenue (S/T): +\$3,035 m</p>
B4	Phoenixing	<p>Estimated effects: Reduced costs for creditors, including suppliers, workers, consumers and government (\$2.85-5.13 billion annually)</p> <p>Other key effects: 'Fairer' competition in construction market</p>	Flow-on effects were not estimated
B5	E-conveyancing	<p>Estimated effects: Increased competition, leading to lower prices (\$8-\$15 per transaction)</p>	Flow-on effects were not estimated
B6	Marine freight industry	<p>Key effects: Uncertain</p>	Flow-on effects were not estimated
B7	Distribution networks	<p>Estimated effects: <i>For parallel imports:</i> Lower prices for vehicles (by 15%) <i>For tariff and excise systems:</i> Lower compliance costs for importers (\$1.29-2.58 billion annually) <i>For coastal shipping services:</i> Savings of \$33 million annually</p>	<p><i>For parallel imports of vehicles:</i> GDP: +\$89 m (+0.00%) CPI: -0.00% Net govt revenue (Cth): +\$13 m Net govt revenue (S/T): -\$10 m <i>For tariffs:</i> GDP: +\$3,346–6,691 m (+0.13–0.25%) CPI: -0.13–0.25% Net govt revenue (Cth): +\$152–304 m Net govt revenue (S/T): +\$199–399 m</p>
B8	Efficient user charging	<p>Estimated effects: <i>For roads:</i> More efficient road usage (modelled as an illustrative 1% increase in road transport productivity)</p>	<p>The following results are elasticity measures: GDP: +\$693 m (+0.03%) CPI: -0.01% Net govt revenue (Cth): +\$76 m Net govt revenue (S/T): -\$67 m</p>

No.	Short name	Key direct effects	Key flow-on effects
		<p>Other key effects:</p> <p><i>For other government services:</i></p> <p>More socially efficient allocation of investment in government services</p>	
B9	Modern methods of construction	<p>Estimated effects:</p> <p>Increase in construction output (1–2%) (modelled as an equivalent increase in labour and capital productivity)</p>	<p><i>For residential construction</i></p> <p>GDP: +\$2,021–4,050 m (+0.08–0.15%)</p> <p>CPI: -0.03–0.07%</p> <p>Net govt revenue (Cth): +\$202–406 m</p> <p>Net govt revenue (S/T): -\$73–146 m</p> <p><i>For non-residential construction</i></p> <p>GDP: +\$837–1,680 m (+0.03–0.06%)</p> <p>CPI: -0.02–0.04%</p> <p>Net govt revenue (Cth): +\$96–194 m</p> <p>Net govt revenue (S/T): -\$20–40 m</p>

Removing red tape

Four of the reforms in this theme were about addressing red tape. This includes:

- reviewing and standardising commercial planning and zoning rules between jurisdictions (B2)
- updating building regulations to facilitate modern methods of construction, including prefabricated and modular construction (B9)
- addressing barriers that restrict distribution networks, including restrictions on parallel imports and compliance costs for importers (B7)
- streamlining processes for recognising trusted overseas standards (B1).

The reforms to refresh commercial planning and zoning rules (B2) and update building regulations (B9), and one aspect of the reform about distribution networks (B7), have the capacity to deliver significant economic benefits. The Commission has previously recommended that commercial and industrial planning and zoning should move to fewer, broader, and standardised land use zones (PC 2011b, 2011c, 2014d, 2017g, 2017h, 2023b). Reducing overly prescriptive zoning could deliver two types of benefits.

- Increased economic value of land – increasing competition for land would enable land to be put to higher value uses.
- Increased competition in downstream markets – giving businesses more choice over where they can locate would make it easier for new firms to enter local markets and for existing firms to expand, enabling them to compete in new geographical areas. It would also remove distortions in competition between in-store and online retailers.

Although these potential benefits are large, quantifying their magnitude is not straightforward. As the Commission has previously noted, modelling changes to commercial planning and zoning rules would be a highly speculative exercise (PC 2020c, p. 21), and therefore would not produce reliable insights. The fact that demand for land is affected by a range of factors means that isolating the effect of previous reforms is not possible (PC 2020c, p. 12). For example, in recent years, the COVID-19 pandemic has led to a shift in the relationship between metropolitan and suburban areas, affecting the decisions of businesses about where to locate (PC 2021f, p. 59). We have examined a specific documented case of change (supermarket competition in Victoria) to illustrate the potential gains from reform, though it is not clear to what extent these outcomes can be extrapolated to other markets. To overcome these empirical issues, we took an elasticity approach to illustrate the possible flow-on effects for increasing competition in the retail sector.

Updating building regulations to enable greater use of modern methods of construction also has the potential to have significant economic impacts. Currently, prefabricated construction makes up about 3–5% of Australian residential and non-residential construction (such as schools, hospitals, and hotels) – compared to, for example, Canada at 8–16% (HIA 2022, p. 10). Relative to traditional methods, modern methods of construction save time and can have lower costs. Overall, this reform could increase output in the residential and non-residential construction market, leading to a \$2.9–5.7 billion increase in GDP. It could also help alleviate housing supply pressures in the longer term. It should be noted, however, that regulation is not the only barrier to the uptake of modern methods of construction; other limiting factors include consumer preferences and access to finance.

One limb of the reform about distribution networks (B7) is about compliance costs imposed by the tariff, excise, tax and quarantine systems – including a proposal to remove the remaining import tariffs. This reform has the potential to deliver a significant boost to GDP due to the breadth of imports that could be affected. This reform will reduce the price of imports, through both the removal of tariffs and compliance costs for importers. It will also place downward pressure on the price of domestically produced goods.

The reform about recognising overseas standards (B1) and the other aspects of the reform about distribution networks (B7) are expected to have more modest economic impacts.

- The other limbs of the reform about distribution networks (B7) include restrictions on parallel imports and coastal shipping rules. Of those, restrictions on the parallel imports of internal combustion engine vehicles will have an economic impact in the immediate term, but this will decrease over time as the market transitions to EVs (there is a separate reform about the import of EVs, discussed below). The other limbs are anticipated to have smaller economic impacts (table 4).
- The reform about standards covers mandatory standards. Based on feedback in workshops (box 3), we focused on mandatory standards for products. Overall, we found that streamlining the process for adopting overseas standards would lower administrative costs for regulatory agencies, lower compliance costs for businesses, and could lead to greater product variety. The Australian Competition and Consumer Commission estimated business savings of at least \$500 million per year in regulatory costs (Cass-Gottlieb 2024). To the extent that it reduces standards falling out of date, there could also be innovation and safety improvements. For consumers, our analysis of a selection of products sold in Australia and overseas showed that the price differential is small or non-existent, meaning that there are unlikely to be significant effects on prices (as opposed to product variety) in Australia.

Changing government practices

Two reforms were about changing the way government conducts business, including how it procures and charges for goods and services.

In broad terms, the first reform is about adopting better practices in relation to public procurement, with a view to achieving better value for money (B3). Much has been written about how public procurement practices can be improved (in particular, avoiding or minimising the use of panels). Based on the literature, we estimate that governments could potentially aim to achieve savings of 2% on current expenditure levels by implementing better procurement practices. Given Australia's high rate of public procurement this reform could deliver significant savings to governments (\$1.7 billion to the Australian Government and \$3.0 billion to the state and territory governments combined). Because we modelled this reform as a saving to government for a given level of output, the estimated GDP impact is practically zero. In practice, however, those savings could fund additional government expenditures or be passed on to households in the form of tax cuts, either of which could in turn boost GDP (though they would then no longer manifest as savings).

The second reform is about the development of an efficient user charging framework. As discussed above, the question of whether efficient user charging should be adopted for government services must be considered case by case. This means that the benefits of adopting a broad framework are not clear cut. There are some services where the case for efficient user charging is well-established. For example, the Commission previously estimated that better asset utilisation due to road reform (including but not limited to pricing) could deliver economic and social benefits in the order of 0.7% of GDP (PC 2017b, p. 17) – though it should be noted that this was not a measure of GDP uplift. For this study we took an elasticity approach to modelling the flow-on economic effects of road user charging. However, there are also many government services for which fully cost-reflective user charging is not appropriate and would be contrary to the objectives of government policy, such as in health and education.

Reforms to specific industries

This theme also included three reforms to address market dynamics or reform competition settings in specific industries. This includes the reforms:

- to address phoenixing in the construction industry (B4)
- to improve competition in the e-conveyancing market (B5)
- for the marine freight industry, to repeal exemptions from certain competition laws (B6).

These reforms have the potential to have significant economic impacts in the specific markets and industries that they affect. For example, e-conveyancing reforms could transform that market from a near-monopoly to one that is more competitive, which could significantly reduce the cost of e-conveyancing services. While these reforms are expected to have significant sectoral effects, the flow-on effects to the broader Australian economy are limited. For this reason, we did not separately estimate the flow-on effects of these reforms.

Net zero

As a signatory to the Paris Agreement, Australia has committed to international goals and efforts to contain the extent of global warming (DCCEEW nd; UNCC 2024). In line with this commitment, Australia has pledged to achieve net zero emissions by 2050 (DCCEEW nd). Unnecessarily restrictive regulatory settings could hamper innovation that might otherwise enable the transition to net zero. As the Treasury explained:

Competition has a key role to play in advancing the net zero transformation. Competitive markets drive the innovation and adoption of technologies needed to dramatically reduce emissions.

Unnecessary regulatory requirements that reduce efficiency, and limit access to low emissions technology, will increase the abatement costs. (Treasury 2024c, p. 41)

We were asked to assess five reforms under the net zero theme, which are summarised in tables 1 and 7. The full analysis of each reform is in appendix B2.

Electric vehicles

Four reforms were about the uptake of EVs and related infrastructure.

- Of these, two were to directly enable the import of heavy vehicles (electric trucks and buses) (NZ3) and other types of vehicles including passenger vehicles (NZ5). Overall, we found that these reforms will open up those markets to greater competition. So long as global supply of EVs is not constrained, this will increase the number of vehicles available for purchase, leading to lower prices and therefore cost savings for Australian households and businesses. It will also enhance product variety and consumer choice, by expanding the range of vehicles that are available in Australia.

- The other two reforms cover standards about charging infrastructure – to allow bidirectional charging of EVs (NZ2) (this reform could potentially also cover other emerging standards) and for EV charging plugs (NZ4). We found that these reforms would create greater certainty for consumers and industry, which will support the uptake of EVs.

Table 7 – Summary of net zero reforms

No.	Short name	Key direct effects	Key flow-on effects
NZ1	Right to repair	<p>Estimated effects:</p> <p><i>For the repair market:</i></p> <p>Lower prices for repair services (remove 10% profit margins for repairers)</p> <p><i>For a repair supplies obligation:</i></p> <p>Higher agricultural output (value of grain output increases by 3%)</p>	<p><i>For the repair market:</i></p> <p>GDP: +\$311 m (0.01%)</p> <p>CPI: +0.01%</p> <p>Net govt revenue (Cth): +\$86 m</p> <p>Net govt revenue (S/T): -\$98 m</p> <p><i>For a repair supplies obligation:</i></p> <p>GDP: +\$97 m (0.00%)</p> <p>CPI: +0.01%</p> <p>Net govt revenue (Cth): -\$19 m</p> <p>Net govt revenue (S/T): -\$17 m</p>
NZ2	Overseas standards	<p>Estimated effects:</p> <p>Enabling vehicle-to-grid reduces the amount of grid-scale battery storage required (net present value \$2 billion)^a</p> <p>Other key effects :</p> <p>Lower prices and greater availability of vehicle-to-grid technology</p> <p>Reduced emissions</p>	Flow on effects were not estimated
NZ3	Heavy EVs	<p>Estimated effects:</p> <p>Reduced transport costs for heavy EVs (1–4% decrease)</p> <p>Increased road damage (5–10% increase)</p> <p>Lower prices for heavy EVs (10% lower)</p> <p>Removal of 5% import tariff on heavy EVs</p> <p>Other key effects:</p> <p>Reduced emissions</p>	<p><i>Combined effect^b:</i></p> <p>GDP: +\$748 m (0.03%)</p> <p>CPI: -0.02%</p> <p>Net govt revenue (Cth): \$51 m</p> <p>Net govt revenue (S/T): -\$58 m</p>
NZ4	EV charging	<p>Key effects (not estimated):</p> <p>Greater certainty for charging infrastructure</p> <p>Greater take up of EVs, which may contribute to reduced emissions</p>	Flow on effects were not estimated
NZ5	EV imports	<p>Estimated effects:</p> <p>Lower prices for second hand EVs (15% decrease)</p> <p>Other key effects:</p> <p>Increase in product variety</p>	<p>GDP: +\$1,095 m (0.04%)</p> <p>CPI: -0.04%</p> <p>Net govt revenue (Cth): +\$164 m</p> <p>Net govt revenue (S/T): -\$124 m</p>

a. Effects of adopting vehicle-to-grid technology, compared to no uptake. b. Estimated for a scenario with maximal reduction in transport costs (4%) and minimal increase in road damage (5%). For disaggregated estimates, see appendix B2.

Together, these reforms are estimated to boost Australia's GDP by \$1.8 billion. These reforms will also facilitate a quicker transition from internal combustion engine vehicles to EVs, enabling faster emissions reduction – thereby supporting Australia's net zero objectives. There will be some costs involved. Transitioning to heavy EVs will increase wear and tear on roads, as heavy EVs generally weigh more than their conventional counterparts. In the short run, road damage will increase as heavy EV uptake increases but given international efforts to develop lighter EVs and more efficient engines (Elmelin 2023), it is unclear whether these costs will persist in the long run.

Right to repair

We also considered one reform about addressing barriers to the right to repair (NZ1), stemming from recommendations made in the Commission's *Right to repair* inquiry (PC 2021d). One key recommendation was to introduce a repair supplies obligation for agricultural machinery. This would mean that, when agricultural machinery breaks down, farmers would be able access more repairs in a timelier fashion. This is important because, at critical points during harvest time, delays can cause crops to spoil or deteriorate in quality, leading to production losses. We found that implementing that recommendation could lead to higher output for farmers, translating to a \$97 million increase to GDP. The inquiry also made recommendations to bolster the rights of consumers and third-party repairers. Implementing these recommendations will lead to greater competition in the repair sector, leading to a \$311 million increase to GDP. Implementing the reforms could also have upstream effects on the original product market that bolster consumer wellbeing, though it was not possible to estimate the magnitude of these effects.

Labour mobility

Labour mobility is about the ability of workers to move between different employers, occupations and geographical regions. A flexible workforce means that the labour market is more competitive, leading to better employment conditions and higher real wages for workers (Deutscher 2019). It also means that the economy can more readily adapt to changes, which improves productivity and supports economic dynamism:

Job mobility matters to the entire economy. In fact, job switching is something economists use as an indicator of a well-functioning, competitive and dynamic labour market. For businesses, it means improved productivity, as they can attract the talent and skills they need. (Leigh 2024)

The two proposed reforms under the labour mobility theme focus on the ability of workers to move between employers and between occupations (tables 1 and 8).

- One is about limiting the unreasonable use of restraint of trade clauses (L1) – focusing on non-compete clauses, which impede the ability of workers to switch employers and start up rival businesses.
- The second reform is about occupational licensing, which governs the entry of new workers into certain professions. This reform consists of two sub-reforms to: reduce unnecessary occupational licensing requirements (L2.1); and address conflicts of interests in occupational licensing decisions (L2.2).

Reforms are already underway to enable automatic mutual recognition of occupational licensing between jurisdictions and therefore are not in scope for this study. In 2020, the *Intergovernmental Agreement on the Automatic Mutual Recognition of Occupational Registration* (National Cabinet 2020) was signed, to enable licensed workers to move between and operate more seamlessly across state lines. In line with the terms of the agreement, an evaluation of the automatic mutual recognition scheme is expected in 2025.

Overall, the labour mobility reforms are estimated to have a significant economic impact (the full analysis of each reform is in appendix B3), including a \$7.7–15.5 billion boost to GDP. This estimate of the GDP impact derives solely from the effects of reforms L1 and L2.1.

Table 8 – Summary of labour mobility reforms

No.	Short name	Key direct effects	Key flow-on effects
L1	Restraint of trade clauses	Estimated effects: Increased wages for workers (up to 2.4% in industries with high use of non-compete clauses and up to 1.4% in others)	GDP: +\$2,569–5,137 m (+0.10–0.19%) CPI: -0.05–0.10% Net govt revenue (Cth): +\$333–666 m Net govt revenue (S/T): -\$28–55 m
L2.1	Occupational licensing (reduce unnecessary requirements)	Estimated effects: Increase in productivity for industries with high incidences of occupational licensing (0.8% increase)	GDP: +\$5,155 m–10,332 m (+0.19–0.39%) CPI: -0.10–0.19% Net govt revenue (Cth): +\$612–1,225 m Net govt revenue (S/T): -\$72–144 m
L2.2	Occupational licensing (conflicts of interest)	Key effects (not estimated): For affected occupations, possible increase in the supply of professional services	Flow-on effects were not estimated

The sheer prevalence of restraint of trade clauses in Australia means that reform L1 has the potential to have a large economic impact. One in five Australian workers are subject to non-compete clauses and one in two are subject to some form of post-employment restraint (ABS 2024g). Non-compete clauses constrain job matching and act as a barrier to labour productivity – therefore, we modelled this reform as having the direct effect of improving labour productivity, with the exact magnitude depending on the current prevalence of non-compete clauses in each industry.

The Commission has previously modelled the economic effects of reducing unnecessary occupational licensing requirements (L2.1) as part of its *Advancing prosperity* report (PC 2023d). That report estimated an increase in productivity of 0.8% for industries with the highest incidence of occupational licensing (construction; transport and wholesale; professional, scientific and technical services; school education; and health and social services). We verified this using the CGE models available for this study, and found a 0.39% boost to GDP (compared to 0.34% in *Advancing prosperity*).

For reform L2.2, we found no existing evidence to show that conflicts of interest are affecting the way licensing decisions are being made, nor that they are leading to worse occupational licensing outcomes. The lack of evidence does not necessarily mean that problems do not exist, but it does mean that it was not possible to predict the likely effects of such reform, and therefore not possible to model the likely benefit. We were also unable to develop the evidence base further, given the constraints on public consultation we faced (box 3). Any reform effort in this area should begin with a clear understanding of what the policy problem is and how it manifests. If there are occupations where conflicts of interest are suspected to adversely affect licensing decisions, further inquiries focusing on those specific occupations should be undertaken. Failing that, a systematic (and public) review of conflicts of interest in occupational licensing would be needed.

Human services

This reform theme covers a range of human services, including health, disability, aged care, community services, and other services. The provision of high-quality and accessible human services is important because they contribute to the wellbeing of individuals and enable economic and social participation (PC 2016c, p. 3). Reforms in this area have the potential to affect the entire Australian population:

Everyone will access human services in their lifetime, including children, the elderly, people facing hardship or harm, and people who require treatment for acute or chronic health conditions ... Reforms to the way human services are provided [can] enable and support people and their families to have a stronger voice in shaping the services they receive, and who provides them. (PC 2017c)

Reforms will also be important to address the growing pressures on human services. As the population ages, the burden of chronic disease increases and community expectations rise, more pressure will be placed on government budgets. The most recent Intergenerational Report projected that Australian Government spending on health, aged care and the NDIS are projected to rise from 6.2% of GDP to 10.8% by 2062-63 (Australian Government 2023a, p. 15).

The Harper Review recommended the adoption of ‘choice and competition principles’ in the area of human services (Harper et al. 2015, p. 36). This would transplant one of the key principles of competitive markets – the idea that service provision should be responsive to consumer needs and preferences – into the context of human services. This also reflects the shift in attitudes about how services should be delivered towards person-centred approaches to human services provision (PC 2019b, p. 171).

We were asked to assess five proposed reforms in this theme, which are summarised in tables 1 and 9. The reforms were intended to support choice, competition and contestability in a way that helps to ensure access to quality and sustainable services. The full analysis of each reform is in appendix B4.

Improving access to human services

In broad terms, three reforms are about improving access to human services, through:

- improving labour mobility in the health, care and support services, with a focus on scope of practice (H2)
- reforming market access arrangements in the health, care, support and social services sectors, with a focus on addressing thin markets (H3)
- lowering barriers to consumers accessing telehealth and other digital health services (H5).

These reforms will have modest effects for most people. For example, reforms to improve telehealth will make health services more easily accessible (PC 2020b) and deliver time savings – compared to attending in person, a telehealth appointment could save a patient 65 minutes in waiting and travel time on average (PC 2024b). And removing barriers to workers performing their full scope of practice can reduce the cost of care. For example, expanding the scope of practice of nurse practitioners could help meet the growing demand for health services at lower cost (by about \$400–823 million).

One of the greatest opportunities for these reforms is in rural and remote areas, where they could improve access to health (and other) services, leading to improved health outcomes. This is particularly important because people living in rural and remote locations experience difficulty in accessing health services, with higher rates of hospitalisations, deaths and injury (AIHW 2024d). To illustrate the potential impact of reform, we modelled the potential benefits that could accrue if health outcomes could be improved in rural and remote areas. Overall, we found that, if this led to a 0.5% increase in the available labour supply in those areas and healthcare productivity in regional rural Australia increased by 1%, then it would result in an increase in GDP of \$3.2 billion.

It should be noted, however, these results do not provide insights about how these benefits could be secured. Improving access to health services in rural and remote areas is a long-standing and unsolved problem that has received considerable attention over the years (AIHW 2024d; Nous Group 2023). No modelling exercise can provide new solutions for policy problems; they can only test and validate policy ideas that have been developed through other channels. Nevertheless, our modelling results provide insights about the scale of the benefits available, and the value of continuing efforts in this area.

Table 9 – Summary of human services reforms

No.	Short name	Key direct effects	Key flow-on effects
H1	Matching	<p>Estimated effects:</p> <p>Possible improved health outcomes (modelled as an illustrative 0.1% increase and a 0.1% decrease in labour productivity)</p> <p>Other key effects:</p> <p>Possible increased consumer choice</p>	<p>The following results are elasticity measures:</p> <p><i>For a labour productivity increase:</i></p> <p>GDP: +\$2,646 m (+0.10%)</p> <p>CPI: -0.05%</p> <p>Net govt revenue (Cth): +\$347 m</p> <p>Net govt revenue (S/T): -\$35 m</p> <p><i>For a labour productivity decrease:</i></p> <p>GDP: -\$2,641 m (-0.10%)</p> <p>CPI: +0.05%</p> <p>Net govt revenue (Cth): -\$346 m</p> <p>Net govt revenue (S/T): +\$35 m</p>
H2	Labour mobility	<p>Estimated effects:</p> <p>Cost savings (\$400–823 m for nurse practitioners and \$200m for pharmacists)</p> <p>Improved health outcomes in regional and remote areas (see H3)</p> <p>Other key effects:</p> <p>Increased consumer choice and improved quality of service</p>	<p><i>For nurse practitioners:</i></p> <p>GDP: +\$567–1,172 m (+0.02–0.04%)</p> <p>CPI: -0.04–0.09%</p> <p>Net govt revenue (Cth): +\$95–196 m</p> <p>Net govt revenue (S/T): +\$83–171 m</p> <p><i>For pharmacists:</i></p> <p>GDP: +\$33 m (+0.00%)</p> <p>CPI: -0.03%</p> <p>Net govt revenue (Cth): +\$104 m</p> <p>Net govt revenue (S/T): -\$21 m</p>
H3	Access arrangements	<p>Estimated effects^a:</p> <p><i>For regional and remote areas (covering 29% of the population):</i></p> <p>Improved health outcomes (0.25–0.5% increase in labour productivity in those areas)</p> <p>Lower healthcare expenditure (1% increase in total factor productivity in those areas)</p> <p>Other key effects:</p> <p>Increased consumer choice and improved quality of service</p>	<p><i>For health outcomes in regional/remote areas:</i></p> <p>GDP: +\$1,437–2,875 m (+0.05–0.11%)</p> <p>CPI: -0.02–0.05%</p> <p>Net govt revenue (Cth): +\$184–367 m</p> <p>Net govt revenue (S/T): -\$16–31 m</p> <p><i>For healthcare exp. in regional/remote areas:</i></p> <p>GDP: +352 m (0.01%)</p> <p>CPI: -0.01%</p> <p>Net govt revenue (Cth): +\$34 m</p> <p>Net govt revenue (S/T): +\$9 m</p>
H4	Medicine pricing	<p>Estimated effects:</p> <p>Lower prices for generic medicines (by 7%)</p>	<p>GDP: +\$2 m (+0.00%)</p> <p>CPI: -0.00%</p> <p>Net govt revenue (Cth): +\$22 m</p> <p>Net govt revenue (S/T): +\$13 m</p>
H5	Telehealth	<p>Estimated effects:</p> <p>Time savings (modelled as a 0.03% increase in labour supply)</p> <p>Improved health outcomes in regional and remote areas (see H3)</p> <p>Other key effects:</p> <p>Increased consumer choice</p>	<p>GDP: +\$793 m (+0.03%)</p> <p>CPI: -0.02%</p> <p>Net govt revenue (Cth): +\$104 m</p> <p>Net govt revenue (S/T): -\$11 m</p>

a. The estimated effects for this reform include aspects of H2 and H5.

Matching consumers and services

Another reform we assessed was about improving matching between consumers and services, by providing consumers with more information about services and service providers (H1). The scope and implementation of this reform will determine whether it results in net benefits. Around the world, past efforts to improve information provision have been met with very little change in consumer behaviour, though this may reflect the merits of specific policy designs. Policies to provide consumers with more information can also create perverse incentives for providers not to provide certain services or serve certain cohorts in order to maintain higher ratings. That said, if the reform can be implemented effectively, it has the potential to empower consumers to make decisions that best meet their needs and incentivise providers to improve the quality of services. This can improve health outcomes, leading to improved quality of life and wellbeing and reduced absences from work and hence higher labour productivity. This would be a broad-based effect that impacts the whole economy.

Pricing of generic medicines

The final reform is about the price of generic medicines (H4). This reform could reduce prices in Australia to levels similar to those in comparable countries, such as New Zealand, Canada and the United Kingdom. Overall, this will have negligible economy-wide impacts.

Data and digital

Data and digital technology use can improve the productivity and growth of businesses. This can lead to improved product quality and consumer choice, particularly in the services sector (PC 2023e, p. 1). Productive use of technology can also enhance international trade and improve government service delivery.

Some evidence suggests Australia is falling behind in adopting data and digital technologies:

... compared with other developed countries, Australia does well on basic measures of technology and data uptake, but is falling behind on more advanced uses. This could limit future productivity growth. (PC 2023e, p. 1)

Therefore, governments play a key role in creating policy settings that maximise the benefits of data and digital technologies, while managing user risks (such as privacy, security or other harms). For example, artificial intelligence is expected to deliver large productivity benefits over time but it also has the potential to create new harms to individuals, the economy and society (PC 2024d, p. 2). The challenge for government policy is striking the right balance between:

- removing existing barriers to using data and digital technologies to enhance competition and productivity, and improve consumer choice
- not inhibiting the growth of emerging technologies
- managing the potential risks of emerging of data and digital technologies, including risks to competition.

We were asked to assess five reforms under the data and digital theme (tables 1 and 10). The full analysis of each reform is in appendix B5.

Financial services

Two reforms are about financial services markets – banking (D4) and payment systems (D5). Given the ubiquity of these services, these reforms could have a significant economic impact, if effectively implemented. Overall, we estimate that these reforms together translate to a boost to GDP of up to \$6.6 billion, which translates to over \$750 per Australian household.

For the payment system reform (D5), we were asked to assess the effects of allowing more payment product providers to directly access the New Payments Platform, which enables low-cost and real-time account-to-account payments. Currently, only authorised deposit-taking institutions (ADIs) or institutions sponsored by those ADIs can access the New Payments Platform. This has hindered the development of Australia's payment product markets, negatively affecting business solution products and the ability to quickly and cheaply transfer money domestically and overseas, as well as contributing to debit and credit card providers dominating the retail transactions market with comparatively high fees for transactions. The proposal is to enable direct access by non-ADIs, thereby increasing competition in the payments market. We anticipate that this reform will give customers and vendors more choice over how they make and receive payments, enabling them to choose payment methods with lower merchant fees.

The banking system reform (D4) is framed more broadly: it is about removing regulatory barriers to competition in the sector. In the absence of specific reform actions, we have considered what stronger competition might look like, focusing on two banking products that are likely to have a material economic impact: home loans and small business loans. For home loans, we estimate this could translate to applicable interest rates being 0.15–0.5 percentage points lower than they would otherwise be. And for business loans, we estimate this could translate to: (a) a 0.5 percentage point reduction in interest rates for the 45% of small to medium sized enterprises (SMEs) with non-residential property asset secured loans and (b) a 2.5 percentage point reduction to the 5% of SMEs with unsecured loans.

There are other parts of the financial system that were not in scope for this study, but where the adequacy of competition settings could have significant implications for the wellbeing of individuals and households (such as credit and debit card payment reform). The Commission has previously undertaken a three-stage review of Australia's superannuation system (PC 2016a, 2017i, 2018b), as well as an inquiry into competition in the Australian financial system (PC 2018a). That latter inquiry covered many types of insurance, but not private health insurance (which merits further study).

Adopting good practice principles

The three remaining reforms can be described as good practice principles rather than well-defined reform actions. These were reforms to increase levels of consumer switching (D1); improve data sharing and access (D2); and enable the uptake of emerging technologies (D3). The broad nature of these reforms means they could potentially cover a very wide range of sectors and policy initiatives – and hence deliver a range of benefits. Because the scope of the reforms is still to be determined, it was not possible to account for or quantify all of those benefits. To illustrate the types of benefits that might be expected, we took a case study approach to modelling two of the reforms.

- For the reform about emerging technologies (D3), we considered a case study for drone technologies. We found that widespread use of drones could boost productivity in key sectors (mining and agriculture), which could in turn increase total output (GDP). We would expect that other enabling technologies (such as artificial intelligence) could boost GDP through a similar mechanism by increasing the productivity of existing industries. New technologies can also lead to the creation of new markets and industries, but attempting to model these effects would be a highly speculative exercise, and therefore unlikely to produce meaningful insights.
- We looked at a health data case study to illustrate the effects of improving data sharing and access (D2). We identified two sources of benefits: enabling health records to be shared could directly improve the way health services are provided; and allowing health data to be used for research could improve the quality of research outputs. For other types of data, however, we would expect that the main benefit would arise from better research outputs, as the case for sharing customer 'records' is more limited.

There is mixed evidence about the efficacy of measures to improve consumer switching in various markets (D1). To assist decision-makers in progressing this reform, we have laid out a framework for identifying the circumstances when government-led initiatives to boost consumer switching are likely to be most fruitful (appendix B5).

Table 10 – Summary of data and digital reforms

No.	Short name	Key direct effects	Key flow-on effects
D1	Consumer switching	<p>Key effects (not estimated):</p> <p>Lower product prices and/or increased product quality in affected markets</p> <p>Increased consumer choice</p>	Flow on effects were not estimated
D2	Data sharing	<p>Estimated effects:</p> <p><i>For health data:</i></p> <p>Increased capital and labour productivity in the health sector (by 1%)</p> <p>Other effects:</p> <p><i>For other data:</i></p> <p>Increased research productivity</p>	<p>GDP: +\$1,642 m (0.06%)</p> <p>CPI: -0.05%</p> <p>Net govt revenue (Cth): +\$205 m</p> <p>Net govt revenue (S/T): +\$93 m</p>
D3	Emerging technology	<p>Estimated effects:</p> <p><i>For drones:</i></p> <p>Increased capital and labour productivity in the agriculture and mining sectors (0.1% each)</p> <p>Other effects:</p> <p><i>For other technology:</i></p> <p>Lower barriers to adoption, leading to earlier and greater benefits</p>	<p>GDP: +\$711 m (0.03%)</p> <p>CPI: +0.02%</p> <p>Net govt revenue (Cth): +\$80 m</p> <p>Net govt revenue (S/T): -\$27 m</p>
D4	Banking	<p>Estimated effects:</p> <p><i>For home loans:</i></p> <p>Lower interest rates (0.15–0.5 percentage points)</p> <p><i>For business loans:</i></p> <p>Lower interest rates (0.5 percentage points for 45% of SMEs and by 2.5 percentage points for a further 5% of SMEs)</p>	<p><i>For home loans:</i></p> <p>GDP: +\$1,293–\$4,335 m (+0.05–0.16%)</p> <p>CPI: -0.13–0.42%</p> <p>Net govt revenue (Cth): +\$645–2,164 m</p> <p>Net govt revenue (S/T): -\$38–127 m</p> <p><i>For business loans:</i></p> <p>GDP: +\$2,239 m (+0.08%)</p> <p>CPI: -0.05%</p> <p>Net govt revenue (Cth): +\$714 m</p> <p>Net govt revenue (S/T): -\$316 m</p>
D5	Payment systems	<p>Estimated effects:</p> <p>Lower merchant fees (0.3 percentage points for Mastercard/Visa transactions, 0.1 percentage points for Eftpos transactions, affecting 15–51% of the retail transaction market)</p> <p>Other effects:</p> <p>Increased innovation in payments</p>	<p>GDP: +\$172–445 m (+0.01–0.02%)</p> <p>CPI: -0.02–0.06%</p> <p>Net govt revenue (Cth): +\$172–448 m</p> <p>Net govt revenue (S/T): -\$55–144 m</p>

Where to begin?

The exact scope and implementation details have not yet been decided for many of the proposed reforms. To assist with the implementation process, the Commission has identified first steps for each of the proposed reforms (table 11, figures 5-7).

Table 11 – Where to begin?

No.	Short name	Recommended starting point	Who ^a
Dynamic business environment			
B1	Overseas standards	Consider what mandatory product standards can be replaced with overseas standards, based on the ACCC stocktake (ACCC 2023a, p. 129).	Cth
		Identify other mandatory standards that could be replaced with overseas standards.	All
		Comprehensive mapping and review of voluntary standards.	All
B2	Commercial planning and zoning	Implement recommendations to standardise planning and zoning regulations as recommended by multiple Commission inquiries and studies (PC 2011b, 2017h, 2023b).	S/T
B3	Public procurement	Reform public procurement arrangements as recommended by the Joint Committee on Public Accounts and Audit (2023) and by the Commission.	All
B4	Phoenixing	Monitor the effects of the <i>Treasury Laws Amendment (Combating Illegal Phoenixing) Act 2020</i> (Cth) to identify what residual policy problems remain.	Cth
B5	E-conveyancing	Enact interoperability legislation and implement the recommendations of the NSW Productivity and Equality Commission (2024).	S/T
B6	Marine freight industry	Repeal Part X.	Cth
		Implement recommendations from the <i>Lifting productivity at Australia's container ports</i> SR inquiry (PC 2022b).	SR
B7	Distribution networks	Remove restrictions on parallel imports of vehicles	Cth
		Remove remaining tariffs	
		Reform the coastal shipping regulatory regime in line with recommendations from <i>Lifting productivity at Australia's container ports</i> (PC 2022b).	
B8	Efficient user charging	Adopt user charging principles for roads and levies.	All
		Identify other government services that are intended to be in scope.	
B9	Modern methods of construction	Review building regulations, codes and standards to determine implementation options and pathways.	S/T
Net zero			
NZ1	Right to repair	Implement a repair supplies obligation for agricultural machinery.	Cth
		Implement recommendations relating to the Australian Consumer Law and intellectual property from <i>Right to repair</i> inquiry (PC 2021d).	SR
NZ2	Overseas standards	Identify and monitor for candidate standards for vehicle-to-grid charging.	Cth
		Monitor for emergence of other relevant overseas standards.	
NZ3	Heavy EVs	Address restrictions on parallel imports and restrictions imposed by Heavy Vehicle National Law and Australian Design Rules.	Cth
NZ4	EV charging	Select a standard or monitor for the emergence of a common international standard.	Cth
NZ5	EV imports	Remove restrictions on parallel imports and those imposed by Australian Design Rules.	Cth

No.	Short name	Recommended starting point	Who ^a
Labour mobility			
L1	Restraint of trade clauses	Consider implementation options, with a focus on identifying policy options that are capable of targeting unnecessary (as opposed to all) non-compete clauses.	Cth
L2	Occupational licensing	Identify areas where licensing requirements can be removed or streamlined. Review progress in implementing automatic mutual recognition. Identify occupations where conflicts of interests are affecting licensing decisions.	All
Human services			
H1	Matching	Scope policy options, with a focus on identifying options that are effective and do not create perverse incentives.	All
H2	Labour mobility	Scope policy options and consider findings from the Scope of Practice review (Cormack 2024c), starting with options to expand scope of practice.	All
H3	Access arrangements	Scope policy options, taking into account cost of implementation and consider evidence from existing and further trials.	All
H4	Medicine pricing	Consider implementation options using evidence from overseas.	Cth
H5	Telehealth	Consider expediting the development of standards for virtual care and an associated accreditation scheme.	Cth
Data and Digital			
D1	Consumer switching	Identify markets that are intended to be in scope, focusing on markets that could benefit from higher levels of consumer switching.	All
D2	Data sharing	Implement data sharing arrangements for health sector data. Identify other data sharing opportunities for government funded service providers.	All
D3	Emerging technology	For drones, identify uptake levels, current uses and potential regulatory barriers. Embed an outcomes-based approach to the regulation of emerging technologies.	Cth All
D4	Banking	Implement recommendations from the <i>Competition in the Australian financial system</i> inquiry (PC 2018a).	SR
D5	Payment systems	Implement recommendations from the <i>Competition in the Australian financial system</i> inquiry (PC 2018a).	SR

a. This column identifies which level(s) of government should be responsible for the action. Cth = the Australian Government. S/T = state and territory governments. All = the Australian, state and territory governments. SR = See the relevant report for details.

Figure 5 – Australian Government: starting points

	Theme	Reform	Where to start
Australian Government	Dynamic Business Environment	Phoenixing	Monitor the effects of the <i>Treasury Laws Amendment (Combating Illegal Phoenixing) Act 2020</i> (Cth) to identify what residual policy problems remain.
		Marine freight industry	Repeal Part X. Implement recommendations from the Productivity Commission's <i>Lifting productivity at Australia's container ports</i> inquiry.
		Distribution networks	Remove restrictions on imports of vehicles (imposed by parallel import rules and the Australian Design Rules). Remove remaining tariffs. Reform the coastal shipping regulatory regime in line with recommendations from the Productivity Commission's <i>Lifting productivity at Australia's container ports</i> inquiry.
		Efficient user charging	Adopt user charging principles for roads and levies. Identify other government services that are intended to be in scope.
	Net Zero	Right to repair	Implement a repair supplies obligation for agricultural machinery. Implement recommendations relating to the Australian Consumer Law and intellectual property from the Productivity Commission's <i>Right to repair</i> inquiry.
		Overseas standards	Identify and monitor for candidate standards for vehicle-to-grid charging. Monitor for emergence of other relevant overseas standards.
		Heavy EVs	Address restrictions on parallel imports and restrictions imposed by Heavy Vehicle National Law and Australian Design Rules.
		EV charging	Select a standard or monitor for the emergence of a common international standard.
		EV imports	Remove restrictions on parallel imports and those imposed by Australian Design Rules.
	Labour mobility	Restraint of trade clauses	Consider implementation options, with a focus on identifying policy options that are capable of targeting unnecessary (as opposed to all) non-compete clauses.
Human Services	Drug pricing	Consider implementation options using evidence from overseas.	
	Telehealth	Consider expediting the development of standards for virtual care and an associated accreditation scheme.	

Figure 6 – State and territory governments: starting points

	Theme	Reform	Where to start
State and Territory Governments	Dynamic Business Environment	Planning and zoning	Implement recommendations to standardise planning and zoning regulations as recommended by multiple Productivity Commission inquiries and studies.
		E-conveyancing	Enact interoperability legislation and implement the recommendations of the NSW Productivity and Equality Commission.
		Modern methods of construction	Review building regulations, codes and standards to determine implementation options and pathways.

Figure 7 – Intergovernmental coordination: starting points

	Theme	Reform	Where to start
All Governments	Dynamic Business Environment	Overseas standards	Consider what mandatory product standards can be replaced with overseas standards, based on the 2023 ACCC stocktake. Identify other mandatory standards that could be replaced with overseas standards. Comprehensive mapping and review of voluntary standards.
		Public procurement	Reform panel procurement arrangements as recommended by the Joint Committee on Public Accounts and Audit and the Productivity Commission.
	Labour mobility	Occupational licensing	Identify areas where licensing requirements can be removed or streamlined. Review of progress in implementing automatic mutual recognition. Identify occupations where conflicts of interests are affecting licensing decisions.
	Human Services	Matching	Scope policy options, with a focus on identifying options that are effective and do not create perverse incentives.
		Labour mobility	Scope policy options and consider findings from Scope of Practice review, starting with options to expand scope of practice.
		Access arrangements	Scope policy options, taking into account cost of implementation and consider evidence from existing and further trials.
	Data and digital	Consumer switching	Identify markets that are intended to be in scope, focusing on markets that could benefit from higher levels of consumer switching.
		Data sharing	Implement data sharing arrangements for health sector data. Identify other data sharing opportunities for government funded service providers.
		Emerging technology	For drones, identify uptake levels, current uses and potential regulatory barriers. Embed an outcomes-based approach to the regulation of emerging technologies.
		Banking	Implement recommendations from the Productivity Commission's <i>Competition in the Australian financial system</i> inquiry.
Payment systems			

Appendices

A. Public consultation

This appendix outlines the consultation process undertaken and lists the organisations and individuals who participated in the study.

The Commission received the terms of reference for this study on 15 March 2024. A call for submissions was released on 3 April 2024 inviting public submissions and brief comments.

In total, 8 submissions and three brief comments were received (table A.1). The submissions and brief comments are available at: www.pc.gov.au/inquiries/completed/competition-analysis/submissions.

During the study, the Commission held two workshops (table A.2) with state and federal entities: one workshop on 20 May 2024 to discuss modelling methodology and one workshop on 28 August 2024 to discuss early results. The Commission also met with jurisdictional representatives bilaterally and as a group on multiple occasions throughout the study.

The Commission would like to thank everyone who participated in this study.

Table A.1 – Submissions

Participant	Submission
Accord	11
Australian Competition and Consumer Commission (ACCC)	16
Alinta Energy	05
The Australia Institute	08
Australian Automotive Dealer Association (AADA)	14
Australian Medical Association (AMA)	12
Australian Small Business and Family Enterprise Ombudsman (ASBFEO)	15
Business Council of Australia	02
Choice and Consumers Federation of Australia	03
Department of Premiers and Cabinet (TAS)	17
Fels, Professor Allan	01
Housing Industry Association (HIA)	04
Law Council of Australia	10
Lyons, Mark	18
Mandala	09
Nelson, Darren Brady	13
Sympli Australia	07
Urban Taskforce Australia	06

Table A.2 – Roundtables**Participants – 20 May 2024 and 28 August 2024**

Department of Treasury (Australian Government)
Department of Treasury (NSW)
Department of Treasury and Finance (VIC)
Department of Treasury (QLD)
Department of Treasury and Finance (SA)
Department of Treasury (WA)
Department of Treasury and Finance (TAS)
Department of Treasury and Finance (NT)
Department of Treasury and Finance (ACT)

B1. Business environment

Reform B1 – Overseas standards

Reform description (provided to the Commission)

Reform:	Adopting an expedited or default approach to recognising trusted overseas standards and processes – where they fulfill an equivalent regulatory purpose (e.g., provide protection to consumers) – to existing and future references to Australian standards in regulation.
Policy problem:	Overseas standards, certifying bodies and trusted approvals could be better referenced in the regulatory structures for Australian-made health devices; food safety standards; product safety standards; standards for batteries, EV charging, gas, hydrogen; building and construction standards; data and digital standards; agricultural product standards; transport and manufacturing standards.
Goal of reform:	Australian regulators recognise trusted overseas standards, certifying bodies and approvals, with freedom to derogate when they do not address specific Australian risks.

Background

Mandatory standards are developed to address safety concerns and to ensure that consumers are provided with important information about products (Treasury 2021c, p. 3). Mandatory standards are administered by a range of organisations. For example: the Australian Competition and Consumer Commission (ACCC) manages product safety; the Therapeutic Goods Administration manages medicine and therapeutic goods; and Food Standards Australia and New Zealand manage food.

To illustrate the types of benefits that could accrue from this proposed reform, the Commission has focussed on product standards which are managed by the ACCC. Other standards are also covered in other appendices, for example, standards relating to net zero technologies are covered by reform NZ2. The Commission has focused on product standards because they are further along the harmonisation process than other standards. This is because in 2023, the ACCC undertook a stocktake of overseas standards to determine suitability for adoption in Australian standards (ACCC 2023a, p. 130). The Commission was also directed to look at product standards as a starting point for this reform. We understand there are other types of standards which could be harmonised, but there is more work needed to be done to identify which overseas standards could be used for harmonisation. Furthermore, the findings in this section might not be applicable to other markets with standards and further analysis would need to be done for those markets.

Mandatory product standards are governed by the Australian Consumer Law (ACL) and are enforced by the ACCC. Under the ACL, it is an offence to supply products that fail to meet the requirements of mandatory safety standards and make untrue claims about products meeting mandatory or voluntary safety standards

(ACCC 2018a, p. 4). A mandatory standard may require a product to display safety information on its packaging and/or require the product to meet certain product requirements, such as be a particular size. Some products subject to mandatory standards must also undergo testing to ensure they meet the Australian mandatory standards (ACCC 2024e).

There are also voluntary standards. Standards Australia is a non-government organisation which develops voluntary standards. Some voluntary standards are used to inform the development of mandatory standards or are referenced in mandatory standards (these standards are discussed below) (Treasury 2021c, p. 4). Other voluntary standards are made binding by being referenced in legislation – however, without a comprehensive stocktake, it is not possible to identify which voluntary standards fall into this category. For this reason, it is not possible to determine the extent to which voluntary standards are binding. For other voluntary standards, compliance is a commercial decision that may have commercial consequences, but it is not a regulatory requirement (so voluntary standards not referenced in mandatory standards or legislation are not in scope for this reform).

This proposed reform is about Australia adopting trusted overseas standards where possible. Australia is a signatory to the World Trade Organization’s Technical Barriers to Trade Agreement, which has signatories promise to ensure that standards do not create unnecessary obstacles to international trade (WTO 1995). However, Australian-specific standards are not the only source of potential duplication. For example, for medicines and agvet chemicals, there are registration and approval processes that determine what can be used in Australia, even for things already assessed and registered by an overseas regulatory authority (APVMA 2021; TGA 2022). Registration and approval processes are not in scope for this reform.

The ACCC is responsible for over 40 mandatory standards which cover products such as treadmills, quad bikes and portable swimming pools (ACCC 2023c). As mentioned above, in 2023, the ACCC undertook a stocktake of overseas standards to determine suitability for adoption in Australian standards (ACCC 2023a, p. 130). Of those standards that the ACCC are responsible for, the ACCC identified about 30 products for which there were suitable international standards that could be referenced in Australian standards (ACCC 2024f).

Effects of the reform

Direct effect:	Lower compliance costs for most businesses
	Faster regulation of emerging areas
	Lower administrative costs for regulatory agencies
	Increase in number of imported products (for some markets)
Parties affected:	Businesses face reduced compliance costs
	Consumers have greater choice of products
	Governments have lower administrative costs

For this reform it is assumed that the mandatory standards of the products the ACCC identified as having suitable international standards would be harmonised with those relevant standards. This section looks at the likely reform for a sample of different products. Overall, however, the products which have mandatory standards that might be harmonised are not a significant part of the economy and would not have a significant effect on GDP. It is possible that some voluntary standards may be binding in practice and could therefore affect product markets. However, as discussed above, it was not possible to determine the extent

to which they are binding as part of this study. For this reason, the flow-on economy-wide effects of this reform were not modelled.

Removing costs to businesses

This reform will remove compliance costs for some businesses. One compliance cost is the cost associated with testing products, some of which must be done through specialist laboratories, such as for disposable cigarette lighters (ACCC 2024e).

Businesses may also face additional compliance costs if their product needs to be altered to adhere to Australian mandatory standards (adaptive cost). A common way that products need to be altered is to include warning labels on products, for example, baby bath aids require warning labels on the product and on the packaging (ACCC 2024a). This cost will depend on how different Australian standards are to international standards. In cases where Australian standards have some overlap with international standards, the adaptive cost will be low. In cases where a product needs to be altered significantly to adhere to Australian standards, the adaptive cost will be high.

Businesses making products subject to mandatory standards may also face costs associated with purchasing a standard. For some mandatory standards, the legislated standard references a standard produced by Standards Australia which must be purchased by the business. The cost of one standard is not significant (for example, the cost of the standard relevant to sunglasses is about \$120 (Standards Australia 2021)). The ACCC can also make a copy of the standard available for viewing at one of its offices. This cost is therefore negligible when compared to the other compliance costs.

There are a few estimates of the additional costs imposed by Australian standards. A 2016 bunk beds draft regulation impact statement estimated how much the mandatory Australian safety standard (which included test costs) cost businesses. These costs were measured to be \$5,431 per business which was higher than the cost to business of the ISO standard (global standard, \$4,160), the European standard (\$5,106), and the ASTM standard (US standard, \$3,640) (ACCC 2016a, p. 28). The ACCC estimated that proposed amendments to the ACL, which include making it easier for mandatory standards to recognise a wider range of voluntary overseas and Australian standards, could lead to economy-wide business savings of at least \$500 million per year on regulatory costs (Cass-Gottlieb 2024).

Lower prices and more options for consumers?

To the extent that these compliance costs increase overall operating costs, they may be barriers to entry for some businesses. As such, their removal could have a marginal effect on encouraging new market entrants and could increase the quantity of products in a market. The literature has found that shared standards enables trade and leads to higher trade volumes (Moenius 2004, p. 15; Schmidt and Steingress 2022, p. 13).

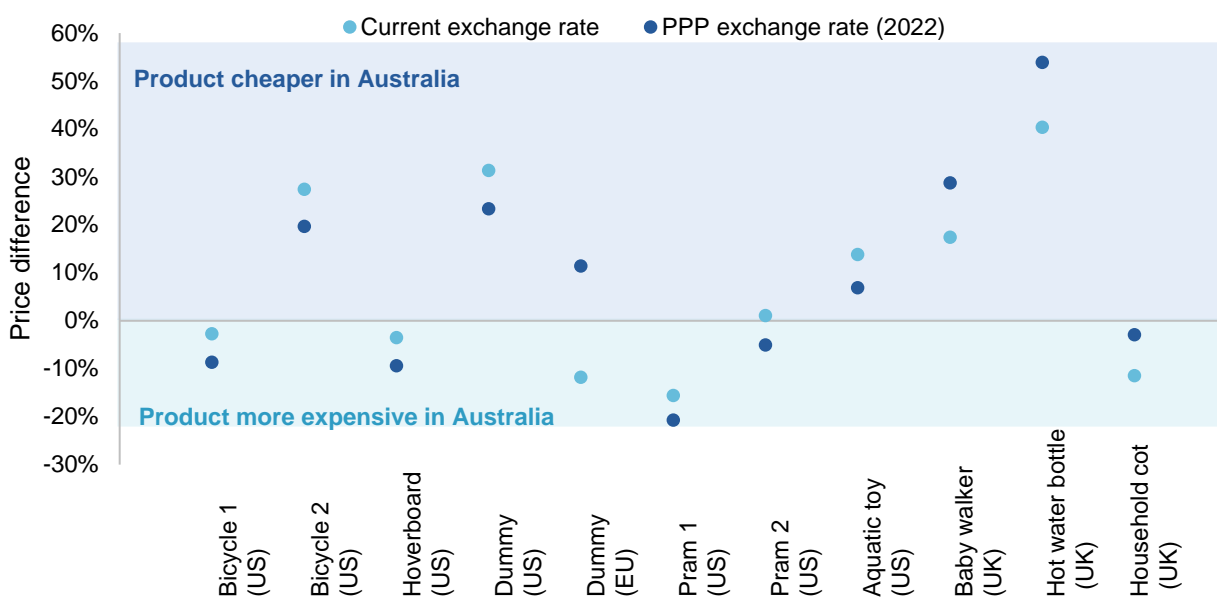
In principle, removing additional costs could also lower prices faced by consumers for affected products. There is limited evidence on the effects of standards harmonisation. The Commission's analysis of a selection of products sold in Australia and overseas also found it was not clear that Australian prices were higher due to product standards.

- A sample of products identified by the ACCC as having international standards that could be referenced in Australian standards were analysed to look at price differences between Australia and overseas. The sample included dummies, bicycles and hoverboards (figure B1.1). There were limited price differences between the Australian products and their overseas counterparts – which could indicate that these products have low adaptive costs.

- Looking at products which do not have suitable international standards produced mixed results. For example, there were many models of baby car seats available in Australia but not available overseas, and vice versa. This could indicate that in cases where the Australian standard is different from international standards, it may be more profitable for firms to design different products for the Australian market. For sunglasses, some were cheaper overseas than in Australia, but not all. Comparing prices of Ray Ban sunglasses online found that aviator classic sunglasses were cheaper in America compared to Australia (by about AUD40). However, round metal sunglasses were cheaper in Australia compared to America (by about AUD110) (prices as of July 2024).

Therefore, it is not clear that in the short run the reform would reduce prices – as prices are already comparable – but it could increase the number of products in markets which are subject to mandatory standards. This could be explained by many of the markets that these standards apply to being competitive already. In the long run, increasing the number of products in a market and the number of companies in a market could reduce prices. The increase in products also means more choices for consumers which increases consumer welfare.

Figure B1.1 – It is not clear that standards are increasing prices in Australia



Source: Commission estimates.

Increase innovation and improve safety

Removing mandatory standards may enable faster regulation and adoption of emerging technologies. Mandatory standards are frozen at the time they are made or declared (Treasury 2021c, p. 9). If a mandatory standard references a voluntary standard (such as those published by Standards Australia) or an international standard, then this reference is to the relevant standard as it existed at that point in time and does not take into account subsequent updates. The time it takes for the ACCC to update mandatory standards means that, in some cases, mandatory standards lag 10-20 years behind updated voluntary standards (Treasury 2021c, p. 9).

The delay in updating mandatory standards can have safety implications, especially when mandatory standards do not keep pace with technological advancements. This can result in situations where businesses

meet the updated voluntary or international standard (with improved safety requirements), but do not meet the Australian mandatory standard (with lower safety requirements) (Treasury 2021c, p. 9) (box B1.1).

The delay in updating standards can also affect business decisions.

Businesses have reported this to be a limitation on their willingness or ability to innovate and supply the latest and safest products to Australian consumers as they take on additional legal risks. (Treasury 2021c, p. 9)

Box B1.1 – Bicycle helmets

Innovations in bicycle helmets have led some producers to include smart technology in helmets. This smart technology allows wearers to upload information such as allergy information and emergency contacts (Bicycle Retailer 2022, 2023). This information can be used by first responders if there is an accident. The Australian mandatory standard for bicycle helmets was updated on 22 March 2024, but this did not include a provision for use of this smart technology. This standard is not due to be updated for some time (ACCC 2024b). This means that Australia will not be able to access bicycle helmets with smart technology until the next update of the standards.

Lower administrative costs for regulatory agencies

This reform would reduce the costs of regulating the regime. There is no estimate of this cost, but it has been described as resource intensive.

- In making a mandatory standard, the ACCC must develop a regulatory impact statement and undergo consultation. Treasury has described this process as ‘resource intensive’ and that it ‘typically takes 18 to 36 months, or longer in some circumstances’ (Treasury 2021c, p. 4).
- The ACCC also reviews mandatory standards to ensure they continue to address safety and information asymmetry concerns. To update a mandatory standard to align with current industry practice, the ACCC conducts consultation and a preliminary regulatory impact assessment at a minimum (Treasury 2021c, p. 9). This process is also meant to be ‘resource intensive and typically take[s] at least 18 months or more’ (Treasury 2021c, p. 5).

There are also some overlaps with state and territory laws. One example of overlap is with bicycle helmets. The mandatory standard sets out the rules for which bicycle helmets can be supplied in Australia, while the state and territory laws set out which bicycle helmets can be used (ACCC 2016b, p. 4). Some states and territories had considered allowing the use of helmets that complied with certain international standards that were not included in the mandatory standard. The ACCC noted that if there was no mandatory standard then ‘State and Territory road safety authorities would have greater flexibility to specify the standards of helmets that could be used’ (ACCC 2016b, p. 4).

Reform B2 – Commercial planning and zoning

Reform description (provided to the Commission)

Reform:	Liberalise and standardise commercial zoning rules and review planning requirements to ensure that they do not distort competition.
Policy problem:	Regulatory barriers imposed by planning requirements – including how they vary across locations and industries – create barriers to entry and reduce competition and firm productivity at the regional level.
Goal of reform:	Reducing planning and zoning barriers to stimulate competitive use of land, provide new employment opportunities, and productivity improvements.

Background

Planning and zoning systems guide and facilitate growth and development in cities, towns and regions. In most Australian jurisdictions, local governments are responsible for applying zones to land (subject to ministerial approval), but they operate in accordance with the legislative frameworks and land use plans established by state and territory governments.

Overly prescriptive zoning can:

- reduce flexibility. Zoning can place rules for how land can be used, even if it is against the wishes of the community. For example, restrictive zoning rules might prohibit or delay a convenience store from opening in a suburban residential neighbourhood even though residents would welcome it
- reduce adaptability. Zoning can prevent land uses from changing in response to economic and social changes. For example, a local government may zone a piece of land exclusively for manufacturing, only for external factors to make manufacturing economically unviable there
- increase regulatory costs. Zoning imposes regulatory costs such as the fees, delays and uncertainty involved in seeking permits for land uses that require them in particular zones, or seeking a rezoning to accommodate a new use (PC 2020c, p. 5).

This reform focuses on commercial zoning rules and does not include other zoning types, such as residential zoning and industrial zoning. Separate analysis would need to be done to understand the effects of any reform to these zones. For example, analysing how reforming industrial zones would affect competition would involve analysing a range of industries including the following: electricity, gas, water and waste services; manufacturing; transport, postal and warehousing; and wholesale trade (PC 2020c, p. 8).

The Commission has recommended that commercial zoning should move to fewer, broader, and standardised land use zones on several occasions (box B1.2). Such a move would reduce administrative and compliance costs, make it easier for new firms to enter local markets and for existing firms to expand, and enable planning systems to respond more flexibly to changing land use activities (PC 2017g, p. 16).

Box B1.2 – Previous recommendations for planning and zoning reform

Below is a selection of Commission reports that advocated for planning and zoning reform.

2011 – Research report – Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments

In this report, the Commission outlined leading practices which would significantly improve governance, transparency, accountability and efficiency in planning and zoning. One of these leading practices was about broadening zoning definitions. This was suggested because planning has to meet many complex objectives, so broadening zone definitions would allow planning systems to more flexibly meet those objectives (PC 2011d, p. XLV–XLVI).

2011 – Inquiry report – Economic Structure and Performance of the Australian Retail Industry

The inquiry found that there were prescriptive requirements in council plans in many jurisdictions across Australia which impeded competition without justification. This included restrictions on business type and business location (PC 2011b, p. 242). The Commission recommended that state, territory and local governments should broaden business zoning and significantly reduce prescriptive planning requirements. This would allow the location of all retail formats in existing business zones to ensure that competition is not needlessly restricted (PC 2011b, p. 244).

2014 – Research report – Relative Costs of Doing Business in Australia: Retail Trade

Part of this study looked at how regulation in planning and zoning systems can be either competition-enhancing or competition-reducing. It found that the root cause of many problems in the retail tenancy market is restrictive planning and zoning legislation that unnecessarily limits competition and restricts retail space, particularly in relation to the supply of retail space in shopping centres (PC 2014c, p. 121).

2017 – 5-year Productivity Inquiry report: Shifting the dial

As part of the Commission's first review of factors influencing Australia's economic performance, planning and zoning was highlighted as one area in need of reform. The Commission concluded that state, territory and local governments should move to fewer and more broadly-stated land use zones (PC 2017g, p. 16). This would enable new firms to enter markets and help reduce administrative and compliance costs. The Commission recommended that competition principles be applied to land use policies and that there should be a ban on regulation that explicitly or implicitly favours particular operators and sets proximity restrictions (PC 2017h, p. 19).

2021 – Information paper – Plan to identify planning and zoning reforms

This paper was prepared to be a guide to states and territories for thinking about planning and zoning reform and suggests reform directions. Reform directions include creating land use regulations that allow for a broad range of uses and making the administration for development assessment more efficient (PC 2021a, p. 4).

2024 – 5-year Productivity Inquiry report: Advancing prosperity

This inquiry repeated the Commission's earlier recommendations on planning and zoning. It recommended that state and territory governments should revise their planning regulations to ensure residential, commercial and industrial zoning is not unduly restrictive (PC 2023b, p. 33).

Effects of the reform

Direct effect:	Increase in the value of land Downstream competition effects in markets with commercial land users – reduced barriers to entry for emerging businesses, leading to new market entrants (including small to medium businesses)
Parties affected:	Industry, through increased competition Consumers, through greater access to diverse goods and services and cheaper goods and services

Reducing overly prescriptive zoning is thought to have two main effects.

- **Increase land use values.** As land becomes more flexible and adaptable, there is more demand which increases the value and price paid for land. Decreasing regulatory costs can also directly increase land use value (box B1.3).
- **Increase competition in markets.** Zoning restrictions can limit the use of land, for example, if a zone requires a permit for certain activity, obtaining the permit could be a lengthy and costly process which can act as a barrier to market entry. Unnecessary restrictions on the use of land can also add to the cost for businesses with physical locations, which can distort their ability to compete with online retailers.

Box B1.3 – Land use values are not the same as property prices

Land use value is the total benefits and costs to community as a whole of using a piece of land for a particular purpose. This not only includes the value that accrues to the person using the land, but also accounts for any effects on third parties or the broader community. This means that the value of land is often affected by what is adjacent to the land or what nearby land is used for.

The value of a land use is not limited to monetary or financial benefits. It also includes non-monetary costs and benefits associated with that land use, such as environmental and social impacts. For this reason, some measures of 'land value', such as property prices, may not fully reflect the land use value as they do not take into account these non-monetary effects.

It is difficult to model how improving zoning and planning arrangements could increase land values due to a range of other factors affecting land use decisions. Some factors include:

- **population growth** which increases demand for residential land. This in turn affects the decisions of businesses in terms of where to set up their base to attract workers and where to have store fronts (PC 2020c, p. 12)
- **changing work practices.** The increase in people working from home has increased the importance of suburban areas. This affects the decisions of businesses such as restaurants and cafes as well as health services (PC 2021f, p. 59).

Any modelling would also suffer from a degree of subjectivity and speculation, as it requires the construction of a counterfactual against which to measure the impacts of the reform (PC 2020c, p. 21). Most of the literature also focuses on how zoning and planning affect housing (Jenner and Tulip 2020; Kendall and Tulip 2018). Instead of modelling the planning and zoning reform directly, the Commission has examined

past reforms in Victoria to demonstrate the potential effects and taken an elasticity approach to demonstrate potential flow-on economic effects of a productivity improvement to the retail sector. Even though the reform could not be modelled directly, the Commission considers it would have significant economic benefits.

Victoria undertook reforms in 2013 which can provide information on the effects of this reform

In 2013 the Victorian Government merged five business zones into two commercial zones. Amendments to commercial zones included removing permit requirements for certain activities (including for supermarkets) and removing some floor space limits (such as for shops and offices) (PC 2020c, p. 19).

These reforms increased the availability of suitable sites and reduced set-up costs for small-scale supermarkets and large-format retailers. The Commission analysed the Victorian reforms in a case study in 2020 (PC 2020c). Some of the analysis in that case study is drawn upon in the sections below.

How land use values might change under zoning and planning reform

It is difficult to estimate the effects of planning and zoning reform and in cases where reform has occurred, the effects have been found to be variable (box B1.4). As a result of this difficulty and the different estimations found in the literature, we have focused on the effects of the 2013 Victorian reforms.

Box B1.4 – The effects of planning and zoning reform are difficult to estimate

Studies that look at commercial land use value have variable results

There is limited Australian and international evidence for how commercial planning and zoning reform affect land use value. As noted earlier, many studies have only focused on the effect it has on housing and on residential zones.

Those studies that do look at changes in commercial land value (meaning property prices) have variable results. For example, the Valuer General NSW (2021) conducted case studies of how land values changed after land on the outskirts of Sydney was rezoned for a rail line and for the Western Sydney Airport. They observed that the land value increased after it was expected that the land might be rezoned in the future with the increase continuing until the rezoning was announced, sometimes several years later. They concluded that it was difficult to value the land accurately during this period because there were often few sales and prices were variable. For example, of the sales made in the pre-zoning period, some areas increased by 0-50%, while others increased by 200-250% (Valuer General NSW 2021, fig. 24).

Other literature on this issue is likely to be less reliable because of methodological issues, particularly a reliance on assumptions that may not be robust. For example, The Centre for International Economics (2013, p. 101) estimated that Sydney's land use restrictions were inhibiting between \$8 billion and \$16 billion in economic value when estimated in 2012. This figure was based on assumptions such as industrial land being rezoned to residential, low density being made into high density residential and larger blocks being converted to smaller blocks.

Overseas estimates have also been unable to determine the uplift in value due to reform.

Box B1.4 – The effects of planning and zoning reform are difficult to estimate

- A study looking at South Korean zoning showed that in land zones where large retailers were prevented from establishing stores to protect small and medium retailers, the small and medium retailers had higher sales. The effect was greater in small and medium cities than large metropolises (Lee et al. 2020, p. 203).
- One study looked at how zoning of land affected land value in Chicago in 1923. The study found that land zoned for residential use increased in value faster than land zoned for commercial use (McMillen and McDonald 2002).

The Commission’s case study on the 2013 Victorian reforms did not estimate how land use value might change

As noted earlier, the Commission also undertook a case study on how planning and zoning reform might affect land use value. The Commission’s case study found that many factors were influencing commercial land use in Victoria and that zoning and planning arrangements should be set up to be flexible enough to respond to changing influences. For example, there has been a shift from manufacturing to knowledge-based industries which led to manufacturing industries facing increasing competition for land from knowledge-based industries (PC 2020c, p. 10).

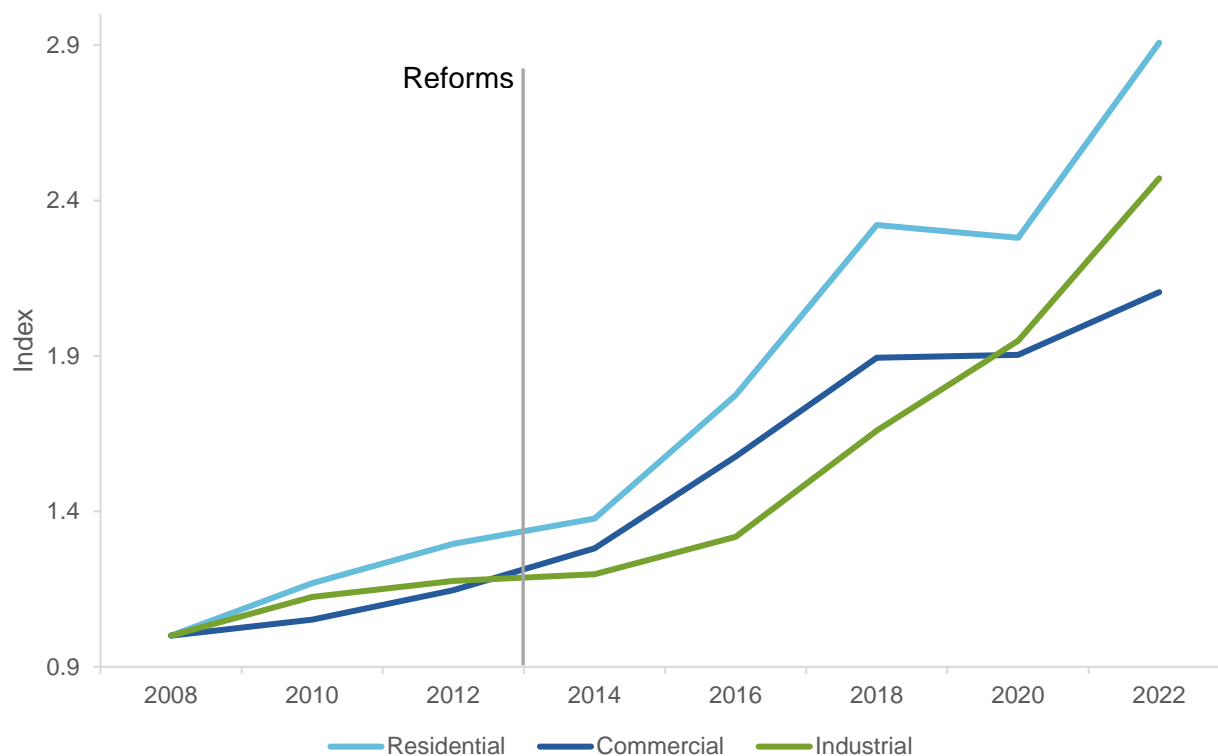
The Commission found that the reforms increased the availability of suitable sites and reduced set-up costs for small-scale supermarkets and large format retailers meaning consumers have greater access to these types of retailers (PC 2020c, pp. 20–21).

The case study also found that the predicted negative effects of the 2013 reforms did not occur. One effect that was thought to occur from the 2013 reforms was an increase in small-scale supermarkets and large format retail establishing in areas outside activity centres (community areas where there is retail, employment, leisure and entertainment) and away from public transport. If this did occur, some industry participants thought that this could adversely affect consumers due to higher travel costs, increased congestion and reduce the availability of industrial land for industrial activity. The Commission did not find clear evidence of these adverse effects (PC 2020c, pp. 24–32).

One way to estimate the effect of zoning reform is to look at the change in land values before and after the 2013 reforms. The change in land value would reflect factors such as the increasing flexibility and adaptability of what land could be used for, the actual increase in land value, and the reduction in regulatory costs such as acquiring permits for land use. The Valuer-General Victoria records the total land value of residential, commercial, industrial, rural and non-rateable leviable land in each Victorian municipality (Department of Transport and Planning 2024b). Using 2008 as the baseline to show land value before and after the 2013 reform, there is significant growth in land values after the 2013 reforms (figure B1.2). This does not prove that the reforms led to this growth because, as noted earlier, other factors contribute to land values and it is difficult to isolate the effect of the reforms and it is unclear what would have happened if the reforms had not occurred. This figure indicates that reforms did not lead to a decline in land value.

When comparing the Victorian land values to NSW land values for each zone over the same time period, the growth in values broadly followed the same trend (figure B1.3 demonstrates this for commercial zones). This could indicate that broader economic factors are more likely to influence land value.

Figure B1.2– Land values increased at a greater rate after the 2013 reforms^{a,b}
Victorian land values growth, by zone, 2008-2022



a. Victorian land value here is 'Site Value' (SV) as estimated by the Valuer-General, which is the value of the land only and assumes the land is vacant with no improvements such as buildings. **b.** The index here is calculated as the change in SV compared to a base year value in 2008.

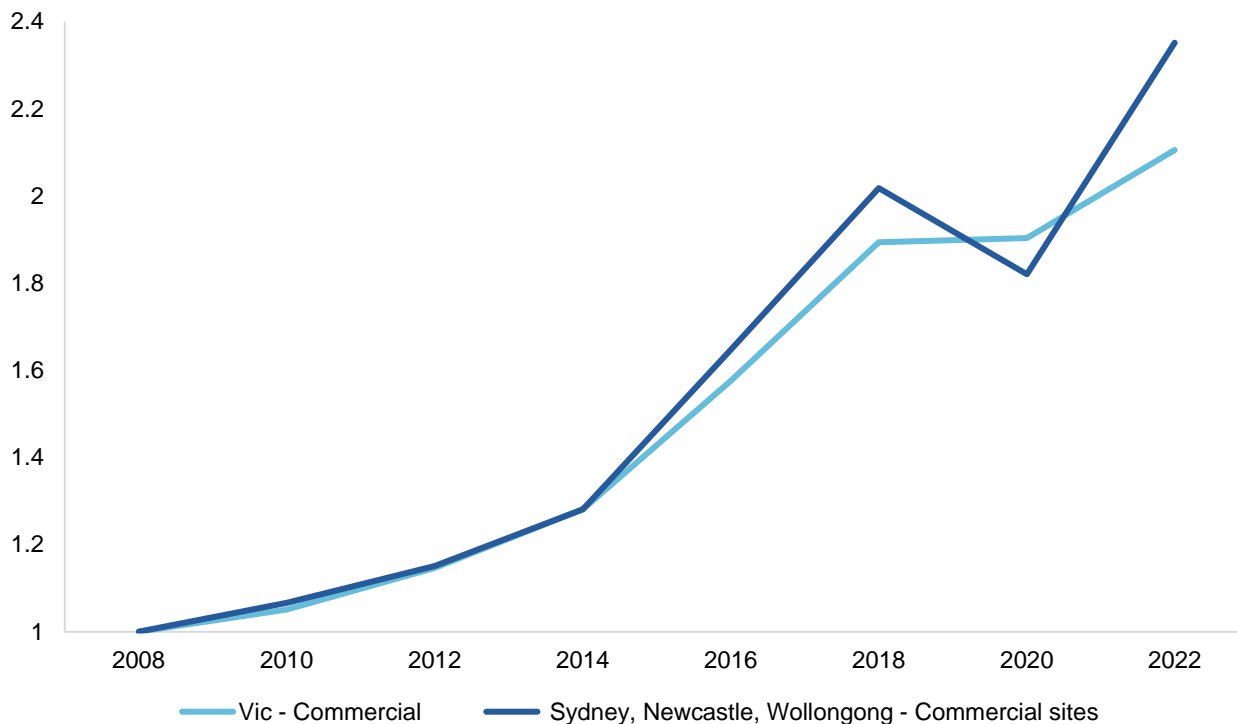
Source: Department of Transport and Planning (2024b).

These results cannot be generalised for other states and territories

There is merit in all states and territories considering ways to make their zoning and planning arrangements more flexible and adaptable. Each state and territory has a different starting point, with different institutional and policy histories. The number of zones, and complexity of zoning and planning arrangements, varies across states and territories (table B1.1).

Many jurisdictions have reviewed and/or undertaken significant reforms in relation to their commercial planning and zoning rules. These reforms include broadening and simplifying zone classifications, standardisation of zones across councils, and alignment of state and local measures. For example, NSW has reduced their number of zones since the Commission wrote a paper in 2021 on how to identify planning and zoning reforms (NSW Government 2024b; PC 2021a, p. 12).

Figure B1.3 – Commercial land value growth is similar in Victoria and in NSW^{a,b}
Commercial land value growth in Victoria compared to NSW^a



a. Victorian land value is 'Site Value' (SV), which is the value of the land only and assumes the land is vacant with no improvements such as buildings. NSW land value is also taken from their state's Valuer General, but it is not clear whether this is also 'SV' land value.

Source: Department of Transport and Planning (2024b); NSW Government Valuer General (2024).

Table B1.1 – The number of zones varies by jurisdiction

Number of zones, zone type, by jurisdiction

Jurisdiction	No. commercial zones	No. industrial zones	No. residential zones
New South Wales ^a	3	2	5
Victoria	3	3	6
Queensland	6	9	7
Western Australia ^b	Not available	Not available	Not available
South Australia ^c	65 zones total		
Tasmania	4	2	~5
ACT	6	2	5
Northern Territory	4	3	8

a. NSW's commercial and industrial zones are referred to as 'employment zones'. The split shown in this table is based on whether the zones appear to be industrial or commercial in nature and on previous zones. b. There is variation in zoning across local governments and the exact number of each zone category is not available. c. South Australia has 65 total zones all of which do not fall neatly into the three zones classifications in this table.

Sources: ACT Government (2024); Department of Transport and Planning (2024a, pp. 30–33); DHLGPPW (2024b); DPLH (2024); NSW Government (2024d, p. 10); NT Government (2020); PC (2021a, p. 12); PlanSA (2024); Tasmanian Government (2024).

The Commission has not analysed the benefits of planning and zoning reform for each state and territory due to the complexity of each system. Each state and territory differs in their planning and zoning systems and in the economic factors that shape their cities. Understanding each system and analysing whether each system is set up to meet the needs of the population of each state and territory would be resource intensive and require extensive consultation. For example, in 2022 South Australia convened an Expert Panel for the Planning System Implementation Review to review South Australian planning arrangements. This review was originally meant to occur from 1 August 2022 until 31 December 2022, but was extended to Easter 2023 to enable more consultation and because of local elections (Expert Panel for the Planning System Implementation Review 2023, p. 11). The review had extensive consultation and received over 600 email submissions and held 14 community engagement workshops (Expert Panel for the Planning System Implementation Review 2023, p. 14).

How competition in other sectors might change

Planning and zoning arrangements have two channels through which they can reduce competition in sectors, such as the retail sector.

- **By being too prescriptive.** Planning and zoning arrangements may have restrictions on: what type of business may be allowed in a zone; the number of businesses allowed in a zone; business size through floor space minimums; business location; and business mix (PC 2011b, p. 242). This unduly raises the cost of starting new business activities or expanding existing businesses in a particular area.
- **By reducing the size of zones.** If zones are too small to accommodate multiple businesses this could inhibit competition.

The outcome of these two channels is the same – they both create barriers to entry which impedes competition and can lead to concentrated markets where there is less incentive for businesses to improve their productivity and lower their prices. Previous Commission work analysed overseas evidence on the retail industry (because Australian evidence was not available) and found that restricting the development of larger stores lowered retail productivity, reduced retail employment and raised consumer prices (PC 2011b, p. 215). Another outcome is that zoning would also artificially inflate operating costs. This reform would remove these distortions, thereby removing barriers to competition.

Planning and zoning reforms would affect competition in a number of markets and much of the focus in previous literature has been on how zoning and planning arrangements have affected the retail sector. For example, the Commission has looked into how planning and zoning arrangements affected the retail industry on at least two occasions (box B1.2). The ACCC has also looked into how planning and zoning arrangements affected supermarkets in 2008 and are undertaking another inquiry at the same time as this study (ACCC 2008, p. 194, 2024g).

To provide an indication of how reforming planning and zoning arrangements may affect a market, a case study on supermarkets is discussed in box B1.5. Overall, there were some gains made following the 2013 reforms – they removed barriers to competition in the supermarket sector. The scope for additional gains, especially for the supermarket sector, might be limited. An ACCC inquiry into Australia's supermarket sector also had similar findings. The interim report, released September 2024, was not clear that there would be significant gains from planning and zoning reform.

Our preliminary view ... is that planning and zoning laws may slow a supermarket retailer's ability to develop new stores by creating additional costs or adding significant delays. (ACCC 2024h, p. 182)

Box B1.5 – Supermarket case study

Supermarkets have previously used planning and zoning arrangements to their advantage

When supermarkets are located close to each other, this increases competition and reduces the price of groceries. In their 2008 grocery inquiry, the ACCC looked into Coles and Woolworths¹ and found that when one of their stores was located within one kilometre of each other, then this led to an average of around 0.2% lower prices (ACCC 2008, p. 97). The proximity of Aldi stores was found to have a more significant effect on prices.

- When a Woolworths store had an Aldi within one kilometre this led to an average 0.7% decrease in prices compared to when a Woolworths store had no Aldi within five kilometres.
- When a Coles store had an Aldi within one kilometre this led to an average 0.8% decrease in prices compared to when a Coles store had no Aldi within five kilometres (ACCC 2008, p. 97).

The ACCC inquiry also found that supermarkets had used zoning and planning arrangements to deter rivals from building near their existing stores. For example, the ACCC found that participants would lodge planning objections to prevent competitors from entering the market (ACCC 2008, p. 194). Lodging planning objections might not lead to a development being stopped, but it does cause delays and contribute to competitors' costs. There were also cases of supermarkets having clauses within their lease agreements that required their landlord to object if a competing development was proposed in a nearby area (ACCC 2008, p. 194).

But how much improving planning and zoning has improved competition is unclear

One way to look at how the 2013 reforms affected supermarket competition is to look at the number of new stores established in areas where they were previously restricted. From 2013 to 2020, Aldi established 53 new stores in Victoria – 14 were restricted under the previous zones, 12 of these 14 were on sites that previously prohibited supermarkets, while two were on sites that previously allowed supermarkets but with a permit (PC 2020c, p. 21). However, it is difficult to draw firm conclusions on the extent of this effect, given the uncertainty about the number of stores that would have opened in the absence of the reforms. The Commission found that Aldi store openings in Victoria followed a similar trend before and after 2013, suggesting that Aldi stores may have increased in number in the absence of the 2013 reforms (PC 2020c, fig. 4).

Therefore, it is not clear that the 2013 Victorian reforms led to competition gains in the supermarket sector, which indicates that planning and zoning may not be an impediment to competition in the supermarket sector.

The ACCC said they will consider this issue further in their final report which is due to the Treasurer by 28 February 2025 (ACCC 2024g, p. 17).

That said, the Commission considers that it is likely there could be gains to other sectors not considered here. The magnitude of competition benefits will vary from market to market, so it is not possible to generalise the experience of the supermarket sector to other markets.

There are also other similar reforms to this one which could improve competition. For example, a new retail pharmacy cannot be within 1.5 km of an existing pharmacy and cannot be directly accessible by the public

¹ Coles and Woolworths did not have national pricing at this time, but moved to it later.

from within a supermarket (Department of Health and Aged Care 2024, pp. 33–35). This contributes to a lack of competition and leads to some pharmacists having a monopoly (King et al. 2017, p. 19). Reforming pharmacy location rules would help improve competition in the pharmacy sector.

Illustrative CGE modelling

Given the uncertainty about this reform, the Commission has taken an elasticity approach to the CGE modelling of this reform. This approach is about estimating the responsiveness of the overall economy to the direct effects of the reform, to illustrate the potential flow-on economic effects. This means that the CGE modelling results are not a measure of estimated impacts, but are instead an elasticity measure.

This reform may lead to improved capital productivity in the retail sector, which will have flow-on effects for the rest of the economy. For this modelling, we have looked at a scenario where the reforms improve retail capital productivity.

We have used an illustrative shock that assumes that the reforms increase capital productivity by 0.1% in the retail sector. The CGE modelling indicates that such a shock would result in an increase to real GDP of about \$23 million (0.0009%) and a decrease to consumer prices by 0.0025% in the long run. The CGE results are roughly speaking linearly related to the shock – so if, for example, the reform resulted in a 0.2% productivity uplift instead, the economic impacts would be twice that for the 0.1% shock that is modelled here.

Reform B3 – Public procurement

Reform description (provided to the Commission)

Reform:	Governments develop a national consistent best practice procurement framework.
Policy problem:	Some public procurement processes have the effect of excluding some potential providers and allow for anti-competitive conduct between bidders.
Goal of reform:	Increase competition between bidders in procurement processes, decreasing costs of procurement and potentially improving the quality of goods and services procured.

Background

Governments have rules that aim to ensure public procurement is conducted in a fair, equitable and transparent manner, and to ensure that procurement delivers value for money. The rules aim to promote open and fair competition and effective management of risks (Joint Committee of Public Accounts and Audit 2023, p. 12). The Australian Government’s Procurement Rules include competition as a ‘key element’, saying ‘effective competition requires non-discrimination and the use of competitive procurement processes’ (Department of Finance 2024a, p. 15).

The Australian National Audit Office (ANAO) described the benefits of using competition in procurement to achieve value for money.

- Competitive pressure helps achieve value for money in contractor pricing and service offers. The simple step of asking tenderers to reduce their price with a better or ‘best and final offer’ could result in greater value for money for the taxpayer. Approaching a single supplier is more likely to place the entity in the position of being a price-taker.
- Competition allows suppliers – including small to medium enterprises – to have a fairer and more equitable opportunity to secure government business.
- Competition may result in more innovative solutions.
- Australian Government entities can better demonstrate value for money when procurement is competitive. (ANAO 2023b)

But current public procurement practices do not always effectively promote competition.

In August 2023, the Joint Committee of Public Accounts and Audit released a report on Commonwealth procurement which found that agencies systematically fail to comply with rules and demonstrate value for money. Four out of five reports from the ANAO considered by the Committee had found noncompliance with the Commonwealth Procurement rules (Joint Committee of Public Accounts and Audit 2023, p. vii). An example included incorrectly or inappropriately classifying certain procurement activities as construction (to meet a higher threshold to avoid competitive processes) despite contestable links to actual construction or maintenance activities (Joint Committee of Public Accounts and Audit 2023, pp. 64–66).

The Committee found that a growing share of procurement has concentrated among fewer suppliers and widespread (and growing) use of panel procurement processes, which bypass open tender requirements to directly procure from chosen suppliers. ANAO statistics show the proportion of the number of contracts associated with a standing offer increased from 28% in 2012-13 to 50% in 2021-22, and by value had increased from 12% to 34% over the same period (ANAO 2023a, p. 8). Panels are intended to allow

frequently required goods and services to be procured more easily, but the Committee found these processes had been inappropriately used by agencies.

Reviews have also found there is scope to improve state and territory governments' adherence to competition principles in public procurement. For example, one review argued that 'Australians pay too much for major road and rail projects because governments don't drive a hard bargain on contracts with the big construction firms' (Terrill et al. 2021, p. 3). Other examples include:

- the NSW Audit Office reviewed how effectively 10 agencies procured and managed consultants and found most did not procure and manage consultants effectively, and that some did not comply with procurement rules (Audit Office of New South Wales 2023, p. 3). Many consulting engagements were extended or increased due to the NSW government agencies requesting additional work from the consultants after the initial contract had been agreed (Audit Office of New South Wales 2023, p. 27). The NSW Audit Office noted that while this can provide some efficiency and value compared with conducting a new tender process, 'routinely exercising extension options or rolling over contracts reduces competition and limits access to new suppliers, products and services' (Audit Office of New South Wales 2023, p. 27)
- the Queensland Audit Office found there was scope for more effective government procurement to deliver better value for money. While not commenting on competition principles specifically, there was scope for more effective collaboration among departments, and for the use of whole-of-government arrangements which could take advantage of the state's significant purchasing power (Queensland Audit Office 2022, pp. 1, 3, 5).

Potential reforms

Recommendations to foster more competition in public procurement generally centre around discouraging the overuse of procurement panels. The Joint Committee on Public Accounts and Audit recommended:

- agencies still be required to conduct a separate value for money assessment when conducting procurement from a panel, even though value for money has been considered when forming a panel
- panel procurement should involve multiple competing tenders from panel members, with sole-sourcing from a panel generally considered inadequate to demonstrate value for money
- panel procurements facilitate ongoing competition and foster new entries to the market, by requiring panels to be refreshed at regular intervals (at least once every two years and at least before a panel is extended), and an ability for new entrants to seek to be listed on the panel (at any time where possible or at least periodically during the life of the panel) (Joint Committee of Public Accounts and Audit 2023, pp. xviii–xix).

Others have recommended:

- governments should not weigh local experience any more heavily than is justified to provide infrastructure at the lowest long-term cost
- governments should award all infrastructure contracts through an open tender process (no market-let proposals) (Terrill et al. 2021, p. 27,29).

There are also significant procurement reforms outside competition concerns, for example around increasing transparency, and around improving agencies' sophistication and professionalism in procurement matters. The Commission recommended governments increase the use of alliance contracting or collaborative contracting for major infrastructure projects so that contractors are involved earlier in the planning and scoping stages of a project (PC 2023d, p. 97). The Commission has also previously recommended ways to improve the ways governments fund and contract for community and human services (box B1.6). There are also competition concerns in the construction industry not necessarily related to public procurement.

Box B1.6 – Community and human services

Governments fund a range of community services which are delivered by non-government providers. Governments could improve the ways they select these providers and manage the contracts. Several Commission inquiries have recommended how to do this.

Human Services

For family and community services, governments have moved from simple 'contracting out' arrangements to more involved 'commissioning' processes. Commissioning involves several steps: understanding the needs of the population, designing the service, selecting providers and designing contracts; and monitoring and evaluation. The Commission recommended improvements at every stage of this cycle.

- Governments should design criteria for selecting service providers that focus on their ability to improve outcomes for the service population and not discriminate on the basis of service type. Governments should also publish rolling schedules of upcoming tenders, and allow sufficient time for providers to prepare considered responses.
- Governments should develop indicators of wellbeing outcomes for services, for use in provider selection, performance management and evaluation.
- Governments should increase default contract lengths to seven years, and pay providers the efficient cost of service provision.

Expenditure on Children in the Northern Territory

The Commission found considerable scope to improve the way providers of children and family services were contracted and funded. The Commission recommended governments fundamentally shift how they commission and fund services, transitioning away from short-term transactional and output-based funding, towards longer-term relations and outcomes-focused funding.

The Commission recommendations echoed those above: publish a rolling schedule of upcoming funding opportunities; longer contract lengths (seven years); and funding that reflects the full costs of providing services.

Mental Health

The Commission found the delivery of psychosocial supports was hampered by inefficient funding mechanisms. The Commission recommended governments extend the funding cycle length for psychosocial supports from one year to a minimum of five years.

Closing the Gap

The Commission's Review of the National Agreement on Closing the Gap also recommended the use of longer-term, collaborative approaches to commissioning Aboriginal and Torres Strait Islander community controlled organisations.

Source: PC (2017c, 2019a, 2020b, 2024e).

Effects of the reform

Direct effect:	Total procurement costs fall
Parties affected:	Government sector expenditure costs, flow-on effects to output.

Australia has one of the highest rates of government procurement in the OECD. In 2022, general government procurement was fifth highest in the OECD (OECD nd).

The effect of the reform would be to deliver an equivalent 'quantum' of government output at a lower cost. Resources otherwise spent on high-priced procurement would be saved and able to be used elsewhere. This can be modelled through a scenario – an x% saving on public procurement.

Estimating the size of the savings

A comparison of Australian infrastructure costs with costs overseas might provide some insight to the scope for gains, although not all the differences could be attributable to competition concerns. One comparison found rail construction costs in Australia are in the top quarter of 27 OECD countries studied (Terrill et al. 2021, p. 9).

Other estimates of the potential gains are illustrative.

- A 1996 Industry Commission review considered the wider impacts of introducing more tendering processes. It assumed potential savings of 1.66% to 3.32% (IC 1996, p. 579).
- An impact assessment (Cabinet Office (UK) 2022, p. 30) for a UK Bill to reform procurement arrangements used 'illustrative scenarios' – increasing the number of bidders on a contract by one could reduce costs by 2% to 3.8% (these scenarios are based on studies of different US construction projects, box B1.7).

Box B1.7 – More bidders leads to reduced costs

Carr (2005) – New York construction projects

This study analysed bids for the construction of schools in the state of New York, USA. The similarity of the projects allowed the study to control various factors to see whether the number of bidders affected the costs when compared with the pre-bid estimate. The results were that, on average, each bidder lost from competition leads to a 3.79% increase in project cost. But there was not a simple, straight-line relationship.

Moving from a single bid, to receiving a second bid, there was a 4% price drop, while the third bidder dropped the price another 4%. As the number of bidders increased, the rate of price reductions also increased. Once the fourth and fifth bidders joined in the competition, an additional 6% reduction with each additional bidder was seen. The sixth bidder yielded another 4%. This totalled a 24% reduction from receiving only a single bid, to the robust competition of six bidders actively pursuing the contract. The seventh bidder added another 2% reduction, while the eighth bid yielded an additional 1% reduction, at which time the curve flattened to near zero. (Carr 2005, pp. 1170–1171)

Box B1.7 – More bidders leads to reduced costs

Gupta (2002) – Florida highway construction

This study analysed bids for highway construction in Florida, United States using a several different models. It found that the winning bid fell by 12-14% as the number of bidders rose from 2 to 8 (implying an average reduction of 2% to 2.33% per bidder). The results implied there was no effect on bids above eight bidders.

Modelling results

The Commission has modelled a 2% reduction in government procurement expenditure to model this reform. We estimate current (2022-23) annual government procurement as \$225 billion, consisting of \$75 billion at the Australian Government level (Department of Finance 2023) and \$150 billion at the state and territory level. Our state and territory estimates are extrapolated from procurement expenditure in the three largest states:

- New South Wales: \$42 billion (NSW Government 2024a)
- Victoria: \$49 billion (Buying for Victoria 2024)
- Queensland: \$19 billion ((Queensland Government 2022).

These states represented 72% of national GDP in 2024 (RBA 2024e) and we assume their average government procurement expenditure is representative of all states and territories.

Current procurement practices are assumed to give rise to a rent to suppliers, estimated at 2% of government procurement, or \$5.4 billion. The CGE modelling assumes that such a rent on government procurement can be eliminated. Although there is likely to be some variation in how this additional cost is incurred, by type of contract, and by sector, the 2% reduction is applied uniformly across sectors, according to the pattern of government expenditures as reported in the input-output table.

This rent is accounted for as part of aggregate household income and is therefore a transfer between the household sector and the government sector.² Therefore, reducing the rent reduces household income by the same amount. As a result, there are very small net effects in terms of real GDP, which increases by \$34 million (0.001% of GDP). The CPI decreases by 0.0012%. In addition to the savings from the 2% reduction in expenditures modelled³, Australian Government net revenues increase by \$154 million (leading to a total \$1,654 million increase in net revenue) and state and territory net revenues increase by \$35 million (leading to a total \$3,035 million increase in net revenue).

² The rents are assumed to accrue to supplying businesses in the first instance and are distributed to the household sector. Although these rents accrue unevenly to households, the single-household sector in the model does not capture this distributional aspect of the transactions.

³ The saving for the Australian Government is \$1,500 million and the saving for the states and territories is \$3,000 million.

Reform B4 – Phoenixing

Reform description (provided to the Commission)

Reform:	Improving information-sharing between regulators and the collection of statistical data on phoenixing activities to facilitate a better response.
Policy problem:	Phoenixing is particularly prevalent in the construction sector. It crowds out ‘legitimate’ businesses, preventing the market from operating efficiently by distorting price signals, increasing transaction costs, leading to ‘priced in’ risk, and undermining consumer confidence.
Goal of reform:	Reduce the amount of illegal phoenixing activity, particularly in construction.

Background

Illegal phoenix activity occurs when a new company continues the business of an existing company that has been liquidated or otherwise abandoned to avoid paying outstanding debts (which can include taxes, creditors and employee entitlements). Phoenixing is most prominent in building and construction particularly in sub-industries that have large workforces of semi or unskilled labour, and where labour costs are a significant cost to business (Cole 2003, p. 115).

Phoenixing is anti-competitive as it undermines a level playing field for other businesses and the efficient functioning of the building market by distorting price signals and increasing transaction costs. It also imposes significant costs on government through unpaid tax liabilities (Parliamentary Joint Committee of Corporations and Financial Services 2023, p. 213).

There have been numerous attempts to combat phoenixing. Regulators and watchdogs like the Phoenix Taskforce (a collection of Australian, state and territory government agencies) provide a collective approach to monitoring and combating illegal phoenixing (ATO 2024).

Most recently the *Treasury Laws Amendment (Combating Illegal Phoenixing) Act 2020* (Cth) introduced provisions holding company directors and officers accountable if they engage in illegal phoenix activity. Furthermore, recent reforms have also introduced a requirement for directors to obtain a Director Identification Number, which could act as an important mechanism for combatting illegal phoenixing.

Given the scope of recent reforms, as well as the ongoing attention through the Phoenix Taskforce, it is unclear what potential reforms remain in scope. The Parliamentary Joint Committee on Corporations and Financial Services conducted an inquiry into corporate insolvency in Australia but did not make recommendations to strengthen anti-phoenixing laws.

The committee notes that additional time may be necessary to properly ascertain the effectiveness of the anti-phoenixing reforms. However, the committee is of the view that a further review, after an appropriate amount of time, may be necessary to determine whether additional administrative or enforcement mechanisms are needed to ensure the reforms are meeting their objectives. (Parliamentary Joint Committee of Corporations and Financial Services 2023, p. 217)

The Committee did, however, recommend the Australian Government commission a ‘comprehensive and independent’ review of Australia’s insolvency law, encompassing both corporate and personal insolvency (Parliamentary Joint Committee of Corporations and Financial Services 2023, p. xiii). The Committee considered whether this review should be conducted by the Australian Law Reform Commission or the

Productivity Commission, but ultimately left this decision up to the Government. An independent review of the recent amendments combatting illegal phoenixing is due to commence in February 2025⁴.

Effects of the reform

Direct effect:	Reduced costs for creditors, including: <ul style="list-style-type: none">• suppliers/contractors (fewer unpaid invoices)• workers (reduced non-payment of wages, equivalent to an increase in wages)• consumers (from incomplete work)• government (increased tax collection – predominantly payroll, GST and company tax but also to a lesser extent personal income tax. <p>‘Better’ competition (in markets with large amounts of phoenixing)</p>
Parties affected:	Consumers, employees, suppliers and contractors through reduced undelivered entitlements. Government through increased tax collection.

The identified reforms would reduce the prevalence of illegal phoenixing in the construction industry. The principal effect would be to reduce the costs for those dealing with construction companies, including suppliers, contractors, workers and consumers (and government through tax collection).

One estimate of the economic impact of illegal phoenix activity on business, employees, and government is between \$2.85 billion and \$5.13 billion annually (2015-16 dollars) (ATO 2023). This is made up of:

- business from unpaid trade creditors: \$1,162 – \$3,171 million
- employees through unpaid entitlements: \$31 – \$298 million
- government from unpaid taxes and compliance: ~\$1,660 million.

These estimates pre-date more recent reforms, so it is possible the costs may have been reduced and thus so have the potential economic gains from further reform. Nevertheless, the economic impact of the ATO’s estimates of the economic cost of illegal phoenixing, and thus the potential gain from reform, is equivalent to 0.2% to 0.3% of GDP. Some effects will be intra-industry transfers (between construction companies, for example) and so will be too granular to be captured by a CGE model of the national economy. It is also not likely that (any) reform will drive illegal phoenixing down to zero.

A further effect of reducing phoenixing activities is to promote ‘better’ market competition, driven by increased consumer confidence and trust in price signals – that quoted prices are the actual price that will ensure delivery of the construction services.

⁴ *Treasury Laws Amendment (Combating Illegal Phoenixing) Act 2020* (Cth) s.4(2): ‘The review must start as soon as practicable after the end of 5 years after this Act receives Royal Assent’; the Act received Royal Assent 5 February 2020.

Reform B5 – E-conveyancing

Reform description (provided to the Commission)

Reform:	State and territory government reforms to the e-conveyancing market to implement competition.
Policy problem:	There is a near monopoly over e-conveyancing provision and operation, due to an interface that is not operable by competitors, making document submission impossible for competitors. Submission of conveyancing online using the interface is compulsory in most states in Australia.
Goal of reform:	Remove monopoly practices and effects in the e-conveyancing market.

Background

Conveyancing is legal work related to transfer of real property. In Australia, online platforms facilitate most exchanges of land titles easily and quickly. In 2023, it was estimated that 88 per cent of conveyancing transactions took place online (Kruger 2023). State and territory governments are responsible for land title registries. All but two jurisdictions (Tasmania and the Northern Territory) have mandated use of electronic platforms for conveyancing activities. Tasmania is planning conveyancing reforms, and the Northern Territory has yet to implement electronic conveyancing but has indicated an intention of doing so.

At present, the system that facilitates almost all title exchanges online is owned and operated by PEXA. PEXA began as a government-owned company, established by the governments of NSW, Victoria, Queensland and WA in 2010 (as National E-Conveyancing Development Limited) to design and implement a national e-conveyancing platform (NSW Productivity and Equality Commission 2024, p. 16). This history of government involvement conferred PEXA with several significant competitive advantages. As the NSW Productivity and Equality Commission noted:

...before its privatisation in January 2019, the incumbent ELNO [electronic lodgment network operator] was government-owned, and benefited from a government-sponsored program of work – involving Registrars, land registries, revenue office, commercial banks, and other industry stakeholders. (NSW Productivity and Equality Commission 2024, p. 40)

PEXA has also benefitted from first-mover advantage (again supported by the history of government involvement) and government e-conveyancing mandates (NSW Productivity and Equality Commission 2024, pp. 39–41).

Currently, Sympli is the only other player currently in the market and facilitates a very small number of transactions. One barrier to entry in this market is the lack of interoperability between platforms, which means that transactions can only take place between parties that subscribe to the same platform. Titles on the PEXA platform cannot be transferred onto Sympli – or any other potential platform. In 2019 a nationally consistent model was recommended by the ACCC (ACCC 2019a).

Interoperability has since been the subject of legislative attention, including amendment to Electronic Conveyancing National Law⁵ to require Electronic Lodgement Network Operators (ELNOs) to interoperate. A ministerial council met in February 2023 (ARNECC 2023), and in May 2023 a progress report to NSW

⁵ *Electronic Conveyancing (Adoption of National Law) Amendment Act 2022.*

Parliament outlined two phases of the agreed upon national approach. The first phase started with a test of platform infrastructure in September 2023, while the second phase builds toward the broader release of this functionality, once further work with ELNOs, banks, land registries and state revenue offices is undertaken (Registrar General 2023). While the first phase has since been successful, work on the second phase is ongoing and the current status of interoperability remains limited.

The first release of interoperability to the market is scheduled for 31 July 2025, with the full interoperability reform scheduled to be complete by early 2026. A market study by the NSW Productivity and Equality Commission noted that interoperability reform had experienced a number of delays and that the current timetable is at risk (NSW Productivity and Equality Commission 2024, p. 22).

The NSW Productivity and Equality Commission made 18 recommendations to open the e-conveyancing market to competition and to improve regulation of the market.

Effects of the reform

Direct effect: The number of e-conveyancing service providers increase (price of conveyancing services reduced)

Parties affected: Potential entrants face lower barriers to entering the market
Reduced costs borne by those undertaking property transactions
PEXA incurs investment costs for building interoperability

Fully enacting the interoperability legislation will reduce barriers to entry for other firms and increase competition by breaking the monopoly PEXA currently has over the market. As market entrants compete with PEXA on price, consumers will be able to undertake property transactions at a lower cost, increasing their utility. It is unclear whether introducing interoperability will be sufficient to make the market fully competitive, although the NSW Productivity and Equality Commission had a range of recommendations to promote competition.

A cost-benefit analysis of the effect of introducing interoperability found net benefits of \$83.6 million (over 10 years, using a discount rate of 7%) (CIE 2020, p. 3). This comprised costs of \$41.1 million (capital costs of \$22.2 million and operating costs of \$18.9 million) and benefits of \$124.7 million (benefits from reduced price distortions of \$94 million and time savings from product improvements of \$30.8 million) (CIE 2020, p. 3).

These benefits represent important gains for consumers. The cost-benefit analysis found there would be cost savings of about \$8 to \$15 per transaction (CIE 2020, p. 4). As the CIE noted:

Although the costs savings per transaction are small, the cumulative cost savings across the almost 3 million conveyancing transactions each year in Australia are large. The benefits of competition being thinly spread over a large number of consumers is a common feature of competition reforms. (CIE 2020, p. 5)

The cost-benefit analysis also assumed that interoperability would result in service quality improvements, namely a time saving of three minutes per transfer in the first year of interoperability and one minute each subsequent year (CIE 2020, p. 44). While the gains for consumers are important, their relatively small size means that they do not register in a model of the whole Australian economy, therefore we did not model the economy-wide effects through the CGE model.

In addition to the gains to consumers, the NSW Productivity and Equality Commission noted that the lack of competition in the e-conveyancing market could undermine competition in other sectors, such as banking and the conveyancing sector (NSW Productivity and Equality Commission 2024, pp. 26–27).

Reform B6 – Marine freight industry

Reform description (provided to the Commission)

Reform:	Lowering competition barriers in the marine freight industry.
Policy problem:	Shipping companies are exempted from broader prohibitions against anti-competitive behaviour.
Goal of reform:	Increase competition in shipping industry by reducing the available exemptions for anti-competitive conduct (price fixing, capacity regulation, schedule coordination, pooling or apportioning of earnings losses or traffic).

Background

Many shipping lines in the marine freight industry use ‘agreements’ that enable cooperation on ship use, schedules (timetables), containers, use of terminals and prices. There are many different types of agreements which can cover price and/or operational cooperation. For example, a ‘conference’ is a route-specific agreement between shipping lines on conditions for the carriage of cargo. Under a conference, shipping lines agree to: apply uniform or common prices; coordinate the scheduling of sailings and ports of call; regulate capacity; and allocate cargo and revenues. Another example is a slot charter agreement, which is where one shipping line buys a fixed percentage of capacity on another line’s vessel for a fixed amount of time and markets the slots as its own (PC 2022c, p. 184).

Agreements help shipping line companies overcome two features of the marine freight industry.

- **Economies of scale.** Economies of scale occur when average costs decline as the volume of cargo carried on a vessel increases, up to capacity. In the shipping line market, economies of vessel size arise because there are costs that have to be incurred no matter the size of the cargo carried. This includes costs of capital, crew and fuel. Economies of scale create a barrier to entry for shipping lines looking at offering new, competing services on Australian trade routes (PC 2022c, p. 183).
- **Customers’ desire for service regularity.** A new stand-alone entrant would generally need multiple ships to be able to offer even a weekly service to Australia’s major ports. Customers’ preference for regular services would make it difficult for a shipping line without a regular scheduled service to remain in the market (PC 2022c, p. 183).

Part X of the *Competition and Consumer Act 2010* (Cth) (CCA) exempts registered agreements between shipping lines from parts of Australia’s competition laws. To register, parties to an agreement must apply to the Registrar of Liner Shipping at the Department of Infrastructure, Transport, Regional Development, Communications and the Arts. If registered, shipping line agreements are exempt from parts of the CCA, including Part IV which covers restrictive trade practices such as cartels, exclusive dealing, and other actions that restrict or affect competition. The rationale for Part X is that allowing companies to have agreements which include pooling of vessels, schedules, and price would lead to lower cost, more reliable services.

Without Part X, shipping lines would need to go through the Part VII of the CCA process. Part VII allows parties to apply to the ACCC for authorisation to engage in conduct which is not allowed under Part IV of the Act. Part VII exists because legislators recognised that, in some circumstances, anticompetitive market conduct can have beneficial effects for the community.

Previous reviews have recommended repealing Part X, including the Commission’s 2005 Cargo Shipping Inquiry, the 2015 Competition Policy Review (the Harper review), and the Commission’s 2022 Maritime

Inquiry (Harper et al. 2015, pp. 39–40; PC 2005a, p. 180, 2022c, p. 195). Arguments in favour of the repeal are generally on the basis that no other industry has a legislative exemption like Part X, that agreements are not assessed by the ACCC, and parties to an agreement are not forced to show that their agreements are not detrimental to competition (Harper et al. 2015, p. 39; PC 2022c, pp. 194–195).

Effects of the reform

Direct effect:	Potential for shipping prices to fall in the long run if markets become more competitive
Parties affected:	Importers and exporters face lower prices in the long run
	Consumers face lower prices in the long run
	Lower revenue and lower costs for shipping lines

It is unclear whether agreements are artificially inflating prices or inhibiting productivity

There are a range of agreements within the maritime industry, each with differing effects on competition. Agreements that include price cooperation are anti-competitive as they enable participants to the agreement to artificially inflate prices. However, the Commission is not aware of any price cooperation agreements registered under Part X (DITRDC 2020, p. 3).

With the remaining agreements, it is less clear how they are affecting prices – they can both encourage and discourage competition. These agreements increase the number of participants in the market and may allow some shipping lines to build up a large enough client base to have a lower average cost per container and eventually deploy their own vessel on a route (ANL 2020, pp. 4–5). This would increase competition in the industry and help drive a reduction in prices. But initially, these agreements do not lead to shipping lines competing because instead shipping lines are working together to fill a vessel. Further, agreements between shipping lines can facilitate coordinated behaviour and may be used to limit competition between incumbent shipping lines. For example, if they have immunity from Australia’s competition laws, two or three shipping lines may share vessel space when just one line can operate a route and avoid competing for the single efficient market slot. This will hurt consumers who would benefit from that competition but helps shipping lines as they avoid competition and lines leaving the market.

There is a lack of information on how these agreements affect the market. The process of registering agreements under the Part X regime does not capture information on whether agreements could inflate prices or diminish productivity. When registering an agreement, shipping lines must complete a form that summarises the agreement and notes whether there is a restrictive trade practice provision. If there is such a provision, then the parties must provide reasons why it is necessary for the operation of the agreement and why it is of overall benefit to Australian exporters or importers. A copy of the agreement must also be provided (DITRDCA 2024c). There is no overall analysis of whether there is anti-competitive behaviour in the market and how this affects the market. Under the alternatives proposed for Part X, lines would have to prove that their agreements have beneficial effects for the community and not just consider the overall benefit to Australian importers or exporters (as the current Part X process does). A lack of information on the effects of agreements means it is not possible to construct a counterfactual and the Commission is unable to model this reform.

It is not clear how an alternative to Part X will work

It is also unclear whether Part X would be replaced by a class exemption. The Harper review recommended repealing Part X and granting a block exemption (in practical terms referred to as a class exemption) because it was thought that subjecting shipping lines to individual authorisation (the Part VII process) ‘might lead to unnecessary compliance costs for some operators’ (Harper et al. 2014, p. 29). In response to the Harper review, the Australian Government committed to looking into options for how a class exemption could be applied (Treasury 2015, p. 6). However, in the Commission’s 2022 inquiry into the maritime logistics system the Commission stated that either a class exemption or the existing provisions under Part VII could be appropriate replacements once Part X is repealed (PC 2022c, p. 195). The government has not yet responded to this recommendation.

There is little information on how a class exemption, if introduced, would work in the shipping industry and how it would affect shipping line agreements. Class exemptions are not common and there is only one class exemption (allowing small businesses to collectively bargain) that exists which is not comparable to the proposed shipping industry class exemption (ACCC 2024d). The ACCC stated that to grant a class exemption, they must be satisfied that the conduct would not be likely to substantially lessen competition, or be likely to result in overall public benefits (ACCC 2024d). But how this would be applied to the shipping line industry is not clear, for example, whether there would be restraints on certain features of agreements or whether shipping line companies of a certain size would be unable to be a participant to an agreement. In 2019, the ACCC conducted public consultation on an ocean liner shipping class exemption and received submissions. This work was discontinued because there were no indications that Part X would be repealed (ACCC 2019b).

Therefore, the lack of information on what the alternative to Part X will be and how it will work, makes developing a counterfactual and modelling this reform not possible.

There is a lack of certainty on economic outcomes

It is unclear whether businesses will face lower costs

Shipping representatives (Shipping Australia and the World Shipping Council) have supported repealing Part X and stated that Part X is a costly process.

Shipping Australia also notes that its members have advised that Part X is bureaucratic, causes delay, and unnecessary costs. Shipping Australia has been advised, for instance, because of the delays in the current system, it can take up to three months before a new service is approved to operate in Australia. (ACCC 2023b, p. 35)

It is not clear whether repealing Part X will lead to a reduction in costs for shipping lines. The Harper review considered that the Part VII process would have higher costs than a class exemption (Harper et al. 2014, p. 29). But the relative costs of either alternative to Part X is not known.

Prices may decrease when Part X is repealed

Repealing Part X could cause an increase in prices as markets adjust to any changes that would be implemented with a class exemption. The Harper Review recommended a two-year transition period to mitigate this (Harper et al. 2015, p. 385).

In the long run, repealing Part X may result in more competition which may reduce shipping prices, potentially at the expense of earnings to shipping lines. A reduction in shipping prices would benefit both importers and exporters and would also ultimately flow through to consumers who would pay less for their shipped goods.

Even though this reform could not be modelled, and there is a lack of clarity over the benefits of this reform, there are still strong arguments for why this reform is important. First, it is an important reform as it reduces the avenues for anti-competitive behaviour. And second, the reform would promote transparency as it would allow the ACCC to have oversight of the agreements between shipping lines.

Other Commission recommendations should be adopted

One reason for this reform is the potential spill-over benefits to other industries, such as reducing supply chain costs to businesses. In its 2022 maritime inquiry, the Commission made other recommendations about the marine freight industry which would help reduce supply chain costs to businesses (PC 2022c). In particular, the recommendations about workplace arrangements in container terminals would be productivity enhancing. The Commission found that container terminal operations are one labour market where the bargaining power of employees and employers differs substantially from the rest of the economy. The Commission found that conditions in container terminal operations, together with the workplace relations framework, confer significant – and unbalanced – bargaining power on unions (PC 2022c, p. 26). The Commission found that content in some workplace agreements: places substantial restrictions on merit-based recruitment and promotion; impedes the efficient allocation of labour; and limits operators in making key business decisions such as the introduction of automation (PC 2022c, p. 292). The Commission recommended a wide suite of measures that would give the Fair Work Commission an expanded role, impose limits on workplace agreement content and address imbalances in bargaining power. These recommendations, along with others in the Commission's maritime inquiry, should be adopted.

Reform B7 – Distribution networks

Reform description (provided to the Commission)

Reform:	Address barriers that restrict distribution networks, including regulatory barriers on specific imported products that are safe and useful for Australian markets.
Policy problem:	Statutory import restrictions limit competitive pressures, placing upwards pressure on prices.
Goal of reform:	Increase access to, and reduce the price of, goods currently covered by these restrictions.

This could comprise four components, three of which relate to barriers to imports while the fourth relates to transport within Australia:

- restrictions on parallel imports of motor vehicles with internal combustion engines
- restrictions on parallel imports of books
- compliance costs for importers of Australia's tariff, excise, tax and quarantine systems
- restrictions on foreign shipping lines providing coastal shipping services.

The Australian Parliament amended the *Trade Marks Act 1995* (Cth) in 2018 to allow parallel importers to import genuine goods into Australia without the consent of the owner of the Australian trade mark. The change was made in response to recommendations made by the Productivity Commission (PC 2016b) in its report on intellectual property arrangements. This means that importers can purchase genuine goods overseas and sell them in Australia in competition with goods the manufacturer or their agent has imported, which can result in lower prices for consumers. However, parallel import restrictions remain for motor vehicles and books.

Restrictions on parallel imports of motor vehicles

Motor vehicles to be imported into Australia must be entered on the Register of Approved Vehicles (RAV) established under the *Road Vehicle Standards Act 2018* (Cth).

Most imported vehicles are entered into the RAV with a Vehicle Type Approval, whereby an importer is able to import an unlimited quantity of vehicles of that type. However, this pathway requires detailed documentation about designs, manufacturing and quality control processes and access to factories for auditing. Importers other than manufacturers or their agents are unable to import these vehicles (DITRDCA 2024f).

Small numbers of vehicles are imported under concessional RAV approval, which allows entering vehicles on the RAV one by one. However, this pathway is restricted to a narrow range of vehicles including:

- vehicles over 25 years of age (DITRDCA 2024b)
- specialist and enthusiast vehicles – vehicles not otherwise available in Australia including high performance vehicles, vehicles meeting higher environmental or emissions standards, mobility vehicles for people with disability, campervans and motorhomes and rare vehicles (DITRDCA 2024e)
- a vehicle owned by a person living overseas when the person moves to Australia (DITRDCA 2024d).

The effect of these rules is that apart from the exceptions listed above vehicles cannot be imported into Australia except by the manufacturers of those vehicles and their agents.

By contrast, New Zealand has permitted the parallel importation of used vehicles since 1989 (DAE 2012, p. 15; NZ Institute of Economic Research 1998, p. iii).

Prices of used vehicles in New Zealand are lower than those in Australia. If parallel imports of used cars were also permitted in Australia, prices would likely fall benefiting consumers. In 2023, 2,074,535 used vehicles were sold in Australia, which was around 63% of total vehicle sales (Drive.com.au 2024).

There is a large international trade in used vehicles, mostly from Europe, Japan, Korea and North America, with China likely to increase its share. Japan is the largest exporter of used right hand drive vehicles and a potential source of used vehicles for Australia, if parallel imports were to be permitted. Japan exports 36% of its deregistered vehicles. In Japan, government taxes and charges increase for older and more polluting vehicles, which stimulates domestic demand for new vehicles and increases the number of used vehicles exported (International Transport Forum 2023, pp. 7, 20–21).

Effects of the reform

Direct effect: Costs of used internal combustion motor vehicles fall by 11 to 16% in the short to medium term; in the long term, internal combustion vehicles will be largely replaced by electric vehicles so the effect would be close to zero

Parties affected: Consumers of motor vehicles
Motor vehicle dealers
Firms using motor vehicles in their business

The direct effect of removing the restrictions on parallel imports of passenger vehicles would be to increase imports of used vehicles, leading to increased supply and reduced prices.

To estimate the direct effects of removing parallel import restrictions, the Commission compared the prices of a sample of popular internal combustion engine used vehicles in Australia (carsales.com.au) and New Zealand (autotrader.co.nz) (box B1.8). On average, smaller lower emitting passenger vehicles were 16% cheaper in New Zealand than Australia. In comparison, larger dual cab utilities were an average of 11% cheaper in New Zealand, while small delivery vans and minibuses were 30% cheaper in New Zealand. Price differences varied between models across each of these categories.

Box B1.8 – Estimating the price savings from removing parallel import restrictions on vehicles

The Commission compared the prices of a sample of 592 vehicles listed for sale in Australia and New Zealand (242 small to medium passenger vehicles, 269 dual cab utilities and 81 light commercial vans and minibuses). Models included in the analysis were chosen from the list of most widely traded used cars in Australia (Drive.com.au 2024) – Toyota Corolla, Hyundai i30, Mazda 3, Toyota Yaris, Ford Ranger, Toyota Hilux and Toyota HiAce. Other popular used car models in Australia were also considered but insufficient numbers for sale in New Zealand meant that a comparison was not possible. Some more common parallel imported models in New Zealand could not be included in the analysis as the same models are not available in Australia. It was also difficult to find makes and models of light trucks in New Zealand that are commonly traded in Australia. Used heavy vehicles are also imported into

Box B1.8 – Estimating the price savings from removing parallel import restrictions on vehicles

New Zealand, however, because of smaller numbers and variations in models they are not part of the analysis.

The vehicles chosen all had internal combustion engines – the smaller car models had petrol engines and the large utilities and delivery vans had diesel engines. Hybrid and electric vehicles were excluded from the analysis. Comparisons were for vehicles manufactured from 2019 to 2023 with odometer readings of 20,000 to 40,000 km. Newer cars were selected as these would likely be the most commonly imported vehicles if the Australian Government combined the relaxation of rules on parallel imports with a charge that increased with emissions. Safety and roadworthiness requirements would also favour the importation of newer vehicles. Prices for Australian vehicles excluded stamp duty and other taxes not imposed on vehicle sales in New Zealand.

For some models, the Commission selected sub-types within models to achieve a more valid comparison. However, it was not possible to identify all characteristics of the vehicles that may affect prices on the sales websites. To achieve greater consistency, vehicles for sale in Australia were restricted to those being sold by dealers but this could not be done for the New Zealand sales. There was variation in prices across vehicles of the same model, age and mileage.

The Commission's analysis approximates the price differences between used vehicles in Australia and New Zealand. Price differences varied between models. If additional models, older vehicles or those with greater mileage were included in the analysis the estimated difference may vary. The analysis is also at a point in time and for the exchange rate at that time – comparison over a longer period may lead to different estimates.

The approach used for this reform mirrors the estimation method used for reform NZ5 (parallel imports of electric vehicles). Further details about the approach and caveats are contained in appendix B2.

Notably, reform NZ5 is intended to increase the uptake of passenger EVs, to assist the government in meeting its net zero targets. But removing import restrictions for both EVs and internal combustion vehicles would make it cheaper for consumers to buy either. Allowing the parallel import of heavy vehicles would also likely benefit purchasers of those vehicles and firms using them to transport goods or passengers and is considered in reform NZ3. One policy option would be for the Australian Government to apply a tax or charge in proportion to the cost of emissions for imported internal combustion vehicles. Such a charge would incentivise imports of vehicles with lower emissions. In this vein, New Zealand imposes a Clean Car Standard whereby importers are charged more for imports of vehicles with CO₂ emissions above a set target and credits for vehicles below the target (NZ Transport Agency Waka Kotahi 2024).

In the long run, the likely economic benefits of relaxing parallel import restrictions for internal combustion engine vehicles will decrease. This is because sales of internal combustion engine vehicles are likely to be replaced by sales of EVs as the demand for EVs increases in Australia and the availability of used internal combustion engine vehicles from other countries falls. The corresponding analysis for reform NZ5 assumes that in the long run 90% of vehicles purchased in Australia will be electric vehicles.

In allowing the importation of used vehicles, the Australian Government may include requirements that the vehicles have met international safety standards. Reform B1 discusses the recognition of international standards more generally, and reform NZ5 includes discussion of the recognition of international standards

for electric vehicles. Imported used vehicles, like all vehicles, would need to satisfy roadworthiness requirements before they were registered by state and territory authorities for use on Australian roads.

Owners of imported used vehicles may face additional costs over the lifetime of the vehicles compared to owners of vehicles originally imported as new cars to Australia through the current Vehicle Type Approval process. Vehicle repairers owned or licensed by the original manufacturers may choose not to service parallel imported vehicles. Spare parts may not be available locally for imported used vehicle models that have never been imported to Australia as new vehicles. Importing spare parts when needed may increase the cost and time for servicing and repairs. However, after parallel imports of used vehicles to New Zealand commenced in the late 1980s, difficulties in accessing servicing and parts were only temporary, after which firms entered the market to import spare parts and provide servicing (NZ Institute of Economic Research 1998, p. 39).

The Commission has modelled removing the restriction on parallel imports of vehicles into Australia using CGE modelling. The same method has been used for both internal combustion engine vehicles here and for electric vehicles in reform NZ5. The Commission expects that in the long run most light vehicles will be electric. Therefore, to avoid double counting, 90% of the benefits of removing the parallel import restriction are allocated to electric vehicles under reform NZ5 with 10% allocated here for internal combustion vehicles. Although in the short to medium term more of the benefits would accrue to purchasers of internal combustion vehicles – so there is benefit in removing the restriction for all vehicle types.

Permitting the importation of used motor vehicles at lower world prices leads to lower prices for used vehicles more generally, which lowers costs to consumers and firms buying used vehicles. Lower vehicle prices underpin a reduction in the CPI.

We have assumed that after removal of the parallel import restrictions that used vehicles would comprise 20% of imports and that prices of used cars would fall by 15% (which is within the range of differences we have found across different vehicle types). Used cars (particularly newer used cars) are substitutes for new cars, therefore, allowing parallel imports of used vehicles would likely cause the price of new cars in Australia to fall but it is difficult to estimate the magnitude of the effect. When parallel imports of used vehicles were allowed in New Zealand in 1989, the price of both new and used vehicles decreased. However, New Zealand reduced tariffs on new vehicles during the same period, so it is difficult to isolate the effect of removing the parallel import restrictions (NZ Institute of Economic Research 1998, pp. 34–37).

CGE modelling indicates that by removing parallel import restrictions on internal combustion vehicles real GDP increases by about \$89 million (0.0033%) and consumer prices decrease by 0.0031% in the long run.

There are very small changes in government net revenue with an increase of \$13 million for the Australian Government and a decrease of \$10 million for state and territory governments.

Restrictions on parallel imports of books

The *Copyright Act 1968* (Cth) contains parallel import restrictions, in addition to the core copyright protections for authors and publishers of books in Australia. The parallel import restrictions protect publishers and authors who hold the Australian rights for a book title from competition from suppliers of foreign editions of the same title. If a particular book is published in Australia within 30 days of being published elsewhere in the world, booksellers cannot import and sell stock of that title from overseas. This enables rights holders to charge higher prices in Australia.

Effects of the reform

Direct effect:	Prices of books would fall – although unclear by how much as consumers are able to purchase books online from overseas if local prices are too high – rents earned by publishers and rights holders would be reduced
Parties affected:	Consumers of books Australian book retailers Publishers of books

In 2009, the Commission produced a research report that examined restrictions on the parallel importation of books (PC 2009). Using international book sales data, the Commission found that for a selection of trade books, prices were 35% more expensive in Australia than the US. Some titles were more than 50% more expensive in Australia (p.xviii) The Commission estimated the total cost of parallel import restrictions on consumers at \$25 million per year (p.7.5). The Commission recommended that the parallel import restrictions in the Copyright Act be repealed (p.xxv).

However, the benefits of enabling parallel imports have likely shrunk over time. First, the price of books has fallen in real terms since 2009. The Consumer Price Index for all goods and services increased by 48.5% between 2009 and 2024 but only increased by 2.2% for books.⁶ And whereas the total Australian market for books was \$2.5 billion in 2009 (PC 2009, p. 2.5) (\$3.3 billion in 2021-22), the most recent Australian Input-Output tables for 2021-22 show the total supply of book publishing in Australia at \$3.5 billion (ABS 2024b (product details table). These numbers are not strictly comparable as they are from different sources but they suggest that in real terms the size of the market for books has remained relatively constant.⁷

Second, online shopping has become more common, giving consumers greater capacity to purchase goods, including books, directly from overseas suppliers if the price is cheaper than they can be obtained from local Australian suppliers, which has likely placed downward pressure on book prices in Australia. Consumers can also easily compare book prices globally before choosing where to purchase books. Local rights holders may still be able to charge a higher price for books but the premium is likely to be less than in 2009.

The overall effects on the Australian economy of this reform have not been estimated using general equilibrium modelling as book sales are only a small fraction of the total Australian economy.

Compliance costs for importers of Australia's tariff, excise, tax and quarantine systems

Regulation of imports occurs for a variety of reasons:

- excise and taxation requirements ensure that imported goods are treated equally with domestically produced goods
- quarantine regulations and inspections protect Australia's agriculture and environment from harmful pests and diseases

⁶ Commission calculations using March 2009 and March 2024 CPI data for all goods and services and books (ABS 2024c, table 7).

⁷ The Commission's 2009 estimate drew on several data sources including book sales data, a survey of publishers and ABS household expenditure data. The 2021-22 estimate is from the ABS National Accounts. Using ABS All Groups Consumer Price Index data for March 2009 and March 2022, the 2009 estimate is \$3.348 billion in 2021-22.

- documentation of imports ensures that regulations are complied with and provides valuable data
- inspection of imported goods ensures that imports of harmful goods are prevented or minimised.

In the past Australia imposed tariffs on many imported goods to protect Australian industries from international competition, which increased the price of goods for consumers. Tariffs were also a source of revenue for the Australian Government. However, tariffs have fallen markedly:

... since the 1970s, tariffs have declined from in excess of 50% of import value for some goods (IC 1997, p. 200), to only 5% at most for almost all goods (PC 2022d, p. 47). About 90% of imports enter Australia duty free, with almost all remaining imports subject to the statutory rate of 5% (PC 2022d, p. 14). (PC 2024g, p. 17)

Compliance with Australia's tariff, excise, tax and quarantine systems imposes costs on importers. This reform examines ways of reducing unnecessary costs imposed on importers.

Effects of the reform

Direct effect:	Savings of \$1.29 billion and \$3.87 billion annually in compliance costs for importers Reduced tariff revenue to the Australian Government
Parties affected:	Importers Consumers of imported products Australian Government

This reform is being modelled as the removal of Australia's remaining import tariffs with a saving of between \$1.29 billion and \$3.9 billion annually, drawing on the Commission's recent estimates (PC 2024g, p. 19).

Removing Australia's remaining import tariffs

Removing Australia's remaining import tariffs could reduce costs for importers.

Both the low tariff rate, and the narrow coverage of goods it applies to, means the industry protection provided by tariffs is small, and is likely to distort prices for only a small number of businesses. However, the tariff system is not without its costs – businesses still incur costs when interacting with the system.

In practice, a nominal tariff still applies to about 50% of imported goods ... and importers must apply to lower the tariff rate. Broadly, there are two ways in which the lower tariff rates can be accessed: importing the good from a country with which Australia has a preferential trade agreement (PTA) or importing a product that is subject to a special concession, allowing the importer to pay a lower rate. While these options allow businesses to access lower tariff rates, the complexity of the tariff system creates compliance costs for businesses when they apply to obtain a preference or a concession. These costs are not immediately visible to government or readily recorded by administrative systems. Moreover, businesses do not always keep records of the costs of interacting with the tariff system unless they have employed third party customs agents. But, these compliance costs of tariffs raise the price of imported goods relative to domestic goods, and thereby act as a form of industry protection. (PC 2024g, p. 17)

The Australian Government abolished 457 tariffs on 1 July 2024. The Commission estimated that removing these tariffs would have reduced compliance costs by between \$43 million and \$128 million in 2022-23. After adjusting for the removal of these tariffs the compliance costs of remaining tariffs was between \$1.29 billion and \$3.9 billion in 2022-23 (PC 2024g, pp. 18–19).

The Commission has argued that simplifying the tariff system will lead to cost savings for businesses that will eventually flow through as lower prices to Australian consumers (PC 2022d, p. 2).

Excise, tax and quarantine compliance costs

There is likely little scope to reduce importers' compliance costs related to Australia's excise, tax and quarantine systems. Excises (in the form of excise equivalent duty) and taxes (such as the GST and the Luxury Car Tax) are imposed on imports as they are on domestic goods, which creates a level playing field. Hence there is little scope for reducing costs for importers.

Quarantine and biosecurity systems protect Australia's agricultural industries and environment from potentially damaging and costly pests and diseases under the *Biosecurity Act 2015* (Cth) and the *Imported Food Control Act 1992* (Cth). The associated regulations and related legislation provide for charging fees for biosecurity regulatory activities and services. Fees are determined on a cost recovery basis. The Department of Agriculture, Fisheries and Forestry reviewed its biosecurity cost recovery between 2021 and 2023 (Department of Agriculture, Fisheries and Forestry 2023).

Results and discussion

The Commission undertook CGE modelling for this reform. In the modelling, based on a mid-point (\$2.58 billion, or 0.06% of the costs associated with importing goods) between the estimated compliance cost cited above (\$1.29 billion to \$3.9 billion) removing Australia's remaining tariffs eliminates compliance costs for importers and increases real GDP by **\$6.7 billion (0.25%)** and the CPI decreases by **0.25%**.

Reducing tariff compliance costs for importers reduces the costs of imports to consumers and firms. Consequently, consumer prices decrease and real GDP increases.

In the modelling, net revenue increases by **\$304 million** for the Australian Government and **\$399 million** across state and territory governments as a result of revenue from taxes on increased economic activity (but offset by reduced tariff revenue for the Australian Government). Australian Government revenues increase because income tax revenues increase as economic activity (GDP) increases by more than the decrease in tariff revenues. Net revenues of state and territory governments increase because GST revenues increase with an increase in household consumption.

Tables C.10 and C.11 in appendix C show that for a sample of possible reforms, the relationship between the magnitude of the shock and the CGE results is roughly linear (that is if the shock is halved the effects on GDP and the CPI are approximately halved). Hence, we can estimate the economic effects of the full range of the tariff compliance cost estimates.

On this basis, for the lower estimate of tariff compliance costs for importers saved by eliminating remaining tariffs (\$1.29 billion), real GDP would increase by roughly \$3.3 billion (0.13%) and the CPI would decrease by roughly 0.13%. For the upper estimate of tariff compliance costs for importers saved by eliminating remaining tariffs (\$3.9 billion), real GDP would increase by \$10.1 billion (0.38%) and the CPI would decrease by 0.38%.

Restrictions on foreign shipping lines providing coastal shipping services

The Australian Government regulates domestic cargo shipping between interstate ports under the *Coastal Trading (Revitalising Australian Shipping) Act 2012* (Cth). Cargo shipping in intrastate voyages (between ports in the same state) does not require licensing under the Act. Registered Australian-owned vessels, subject to Australian workplace relations law at all times, and with crews who are all Australian citizens, permanent residents or with a visa with work rights, can engage in coastal shipping without restriction.

Foreign flagged vessels can be licensed to engage in coastal shipping for twelve months but are restricted in that they must undertake five voyages in that period and provide details of those voyages in advance. These licences can be challenged by Australian-owned ship licence holders. Consequently, it is more difficult and costly for foreign vessels and protects Australian owned ships from competition (PC 2022b, pp. 420, 422).

Coastal trading mostly carries bulk cargo. The largest non-bulk routes are the ferry services between Tasmania and mainland Australia and a small amount of containerised shipping between the east coast and Perth (PC 2022b, p. 418).

Effects of the reform

Direct effect: Savings of more than \$667 million over 20 years

Parties affected: Shippers of bulk goods
Shippers of non-bulk goods
Australian flagged ship owners
International flagged ship owners

Submissions to the Commission's inquiry on maritime logistics suggested that the coastal shipping regulatory regime was inflexible and added costs that made it uncompetitive with road, rail and international shipping alternatives. Some submissions suggested that uncompetitive coastal shipping increased the substitution of international products for locally produced goods (PC 2022b, p. 422).

Legislation was presented in the Australian Parliament in 2015 to replace the two-tiered permit system with a single permit. The legislation was not passed but modelling of the changes showed potential economic benefits of \$667 million over 20 years (average of \$33 million per year)⁸, of which 69% was for dry bulk goods, 13% for liquid bulk goods and 11% for non-bulk goods between Tasmania and the mainland (Parliament of Australia 2015, p. 105).

The potential economic benefits have not been included in the Commission's general equilibrium modelling for this study as they are too small to create a large effect across the economy. However, the modelling quoted here from 2015 shows it would be beneficial to remove restrictions on foreign shipping lines providing coastal shipping. The Commission has recommended previously that these restrictions be amended to allow more international competition (PC 2022b, p. 424).

⁸ The modelled benefits were not strictly linear over 20 years but for the purposes of comparison with annual benefits of other proposed reforms a simple average has been calculated. In the nine years since 2015, the magnitude of the benefits has likely changed, however, the Commission has not updated the previous modelling.

Reform B8 – Efficient user charging

Reform description (provided to the Commission)

Reform:	Develop prospective benchmark user charging guidelines that can be adopted nationally.
Policy problem:	Poorly designed user charges that do not accurately reflect costs distort resource allocation.
Goal of reform:	Ensure all prospective user charges at all levels of government are efficient, where charges are reflective of the marginal social cost of service provision, including reflecting the sustainability of services and community impact.

Background

Charging the users of government services can provide an important means of improving the efficiency with which these services are produced and consumed. Charges can give messages to users about the costs of the resources involved. Generally, economic efficiency will be improved by linking user charges as closely as possible to the costs of the activity.

The proposal is to implement efficient user charging for government services. Some services are already covered by competitive neutrality policies which require efficient pricing, or cost recovery guidelines which require setting and collecting charges to cover costs. But many other services remain potentially in-scope for this reform.

Taking a broad view, some government activities set fees higher than the efficient level, while others may be lower. For example, Australian Government foreign investment application fees are far higher than would be needed to recover the costs of administration (so high that they are a tax, not a fee-for-service) (PC 2020a, p. 21). Public transport fees across many states and territories, however, represent only a small share of operating costs (although there are good reasons for this, box B1.9). Social services, like early childhood education and care, disability care and support, and health care are significantly subsidised.

Box B1.9 – Social marginal cost pricing of public transport

Public transport fares recover a small share of operating expenses – from about one-third in Sydney to less than 10% in Darwin and Canberra (PC 2021c, p. 30). However, the efficient approach to pricing public transport is not full cost recovery, but rather to equate fares with their ‘social marginal cost’. Under this approach, fares are set to:

- the operating costs of running the service
- *less* the incremental benefits of reducing road congestion
- *less* the gains from more frequent services
- *plus* the costs of overcrowding on public transport
- *plus* the efficiency losses from the taxes used to fund the subsidies to public transport (PC 2021c, p. 3).

A critical element of this pricing approach is that it does not seek to recover average costs, which include the costs of an already built network. Fully cost-reflective prices for an underutilised train service in the

Box B1.9 – Social marginal cost pricing of public transport

off-peak period could be astronomical, even though the cost of an additional trip that used that capacity would be low (PC 2021c, p. 5).

This social marginal cost approach is used by the Independent Pricing and Regulatory Tribunal (IPART) in New South Wales.

Infrastructure Victoria modelled the effects of public transport pricing reform, based on social marginal cost principles. Public transport fare reform would leave Melbourne’s transport users \$520 million a year better off (Infrastructure Victoria 2020, p. 9). These are welfare benefits, such as reduced crowding and better environmental outcomes, and not direct economic effects.

Recent reviews have made recommendations around user charging for the NDIS and for aged care (as did the Commission’s inquiry into Early Childhood Education and Care).

- The Independent Review into the NDIS recommended, among other things, that a new pricing and payments framework be developed, to promote the delivery of efficient and quality supports and continuity of supply (Bonyhady and Paul 2023, p. 10).
- The Aged Care Taskforce said it considered it appropriate for older people to make a fair co-contribution to the cost of their aged care based on their means, and recommended that aged care fees be made fairer, simpler and more transparent so people can understand the costs they will incur if they access aged care. The Taskforce also recommended changing the pricing model for some services (the Support at Home program) to ‘provide price signals for participants to help them prioritise their service needs’ (Australian Government 2024a, p. 23).

To determine which user charges are not set efficiently would require a detailed review into each activity.

In the right circumstances, and if carefully applied, user charging can help to promote more efficient, effective and equitable service provision. Successful application requires, amongst other things, accurate information on the costs of provision, assessment of the best method of allocating costs to different users and consideration of any adverse impacts on access to services and how these could be addressed. (PC 2005b, p. 319)

This means it is not possible to estimate the likely benefits of introducing efficient user charging (where appropriate) across the board. Instead, to illustrate the sorts of benefits that might be achieved and the sorts of issues that should be considered, the Commission has taken a case study approach which focuses on areas that have previously been reviewed. These include rebalancing levies (from the recent Commission paper) and implementing road user charging.

Effects of the reform

Direct effect: A more efficient allocation of investment in government services that is at the socially efficient quantity.

Parties affected: Users internalise the costs of service provision; increased revenue for some government services; decreased revenue for other services.

Users of public services would either face higher or lower prices, depending on whether it was previously being under or overcharged. In areas where there is

currently under charging (such as roads), this would reduce negative externalities (such as pollution, congestion and road accidents). Increasing charges may also lead to more investment in service provision, such as in the case of public transport.

Levies

Broadly speaking, industry levies could be considered a form of user charging (and hence in-scope for this reform). But governments have increasingly used levies as a form of taxation. The Commission found that there are about 70 agencies collecting or administering levies on behalf of different governments (PC 2023j, p. 6). There are two potential reforms that could be considered.

First (as the Commission recommended) governments should weigh the merits of using tax collecting agencies to collect all levies within a jurisdiction (PC 2023j, p. 6). This would save administrative costs. While these savings are important, they are unlikely to significantly affect the economy to the extent they can be estimated through the CGE model.

Second, governments could consider setting all levies equal to the cost of administration. That is, governments could return levies to a user charging framework, rather than just using them for revenue raising (an inefficient tax). While the Commission compiled a stocktake of levies for the *Towards Levyathan?* report, it did not collect the administrative costs data which would be needed in order to model this type of reform.

These reforms could also be combined – governments could move collection of levies to the lowest cost method and reduce them to only cover the cost of administration.

Road user charging

In principle, user charges (prices) based on the (efficient) cost of provision should be used to fund road infrastructure. By giving road users a clear signal about the cost of infrastructure, they will have an incentive to use it efficiently. Moreover, there will be a signal to infrastructure providers where changes in road capacity are warranted (PC 2014b, p. 142). For these reasons, the Commission has recommended road user charging (and wider road infrastructure reform) many times in the past (box B1.10).

In 2006, the Commission modelled the potential benefits of transport reform. Reflecting the uncertainty of both the estimation task and the fact that the previous estimates were prepared for different reforms (box B1.11), the Commission used a 5% increase in the productivity of materials, capital and labour inputs for both road and rail. The Commission's modelling found this would increase GDP by 0.25%, although this excluded implementation and compliance costs (PC 2006b, p. 242) The Commission also modelled a more speculative 10% productivity improvement for roads, given the more fundamental reforms, while maintaining the 5% productivity improvement for rail, which would lead to a 0.6% increase in GDP (PC 2006b, p. G.36).

Box B1.10 – Past advocacy for road user charging

In 1994, the Industry Commission recommended an incremental approach to the introduction of ‘area wide electronic road pricing’ (IC 1994, p. 22).

In its 2005 review of the original National Competition Policy reforms, the Commission canvassed the need for efficient pricing of both road freight and passenger transport (PC 2005b, pp. 211, 231). Subsequently, the Council of Australian Governments agreed to ask the Commission to conduct an inquiry into road and rail freight infrastructure pricing, which was referred by the Australian Government in 2006. The Commission recommended heavy vehicle charging reform, underpinned by institutional reform to establish ‘road funds’ to promote efficient infrastructure spending (PC 2006b, p. LXII).

In its 2014 Public Infrastructure inquiry the Commission recommended more direct charging of light vehicles, combined with reforms that hypothecate the revenue to efficient road provision (PC 2014b, p. 160). The 2017 Productivity Inquiry re-iterated these recommendations and specified steps that could be taken in the immediate term to improve road planning and investment decisions, on the way to pursuing more fundamental reform (PC 2017b, p. 2).

In the 2023 Productivity Inquiry, the Commission recommended the Australian Government work towards an intergovernmental agreement on road user charging for all vehicle types, focusing on distance-priced charging including any road damage premiums, and subsequently, incorporating congestion charges for crowded roads (PC 2023b, p. 62).

Box B1.11 – Potential benefits of transport reform

In 2006, the Commission conducted a research report for Council of Australian Governments senior officials on the potential economic and revenue implications of a National Reform Agenda, including road and rail reform. The report summarised previous estimates of the potential benefits of transport reform.

The Commission previously examined the issue of road and rail reform, suggesting that reforms in road maintenance and construction could lead to a productivity increase of 10 per cent (IAC 1989). In the Hilmer study (IC 1995), the Commission estimated that moving to a uniform regulation system under the then-newly formed NRTC (National Road Transport Commission) would increase labour and capital productivity in road by 5 per cent. The Commission further examined the potential impact of NCP reforms on major infrastructure industries... It found that potential improved productivity in road transport from reforms, such as the adoption of NRTC proposals dealing with heavy vehicle charges, transportation of dangerous goods by road and mass limits, could be around 3 per cent. For rail, it was found that corporatisation and movement to ‘best practice’ service provision could lead to productivity improvements of just over 8 per cent ...

Other studies have examined the socio-economic impacts of increases in the freight task and reforms consistent with NRA, more efficient road pricing and the impact of microeconomic reforms generally on the transport sector. These studies have canvassed productivity gains in the transport sector ranging from 2 to 16 per cent. (PC 2006a, p. 112)

In its 2017 Productivity Inquiry, the Commission came up with a similar estimate to the more speculative earlier result. The Commission estimated the economic impacts of better asset utilisation from road reform (including but not limited to pricing) to equate to a permanent increase in output of 0.7% of GDP in the long run (PC 2017b, p. 17).

Road user charging would not only have economic benefits, but wider social benefits too. The avoidable social cost of congestion (on motorists, businesses and the environment) was estimated to be \$23.6 billion in 2018-19 (PC 2021c, p. 98) or about 1.21% of GDP. One Canadian study found the (regional) GDP effects to be of a similar magnitude to the overall costs of congestion – the GDP effects were about 80% of the broader effects (BITRE 2015, p. 24; Metrolinx 2008, p. 3). Applying the 80% assumption to the 2018-19 estimates of the costs of congestion in Australia would imply an effect of about 0.97% of GDP.

Illustrative CGE modelling

Given the uncertainty about the broad range of this reform, the Commission has undertaken CGE modelling to illustrate the potential flow on economic effects of road user charging. This approach is about estimating the responsiveness of the overall economy to the direct effects of the reform. This means that the CGE modelling results are not a measure of estimated impacts, but are instead an elasticity measure.

This reform may lead to improved productivity in the transport sector, which will have flow-on effects for the rest of the economy. For this modelling, we have looked at a scenario where the reforms improve travel times across Australia. This improvement leads to an increase in output for a given combination of labour and capital, which is modelled as an improvement in productivity.

The magnitude of the productivity improvement is unclear. However, we have used an illustrative shock that assumes that the reforms increase labour productivity by 1% in the road transport industry. The CGE modelling indicates that such a shock would result in an increase to real GDP of about \$693 million (0.026%) and a decrease to consumer prices by 0.01% in the long run. Net revenue for the Australian Government would increase by \$76 million, while net revenue for the states and territories would decrease by \$67 million. The CGE results are roughly speaking linearly related to the shock – so if, for example, the reform resulted in a 5% labour productivity uplift instead, the economic impacts would be five times that for the 1% shock that we have modelled (0.13% increase in GDP).

Reform B9 – Modern methods of construction

Reform description (provided to the Commission)

Reform:	Lower barriers to the growth in nascent innovative construction businesses including increased automation, modular/prefabricated, off-site housing, 3D printing housing, and transportable housing.
Policy problem:	At present, there are no national set of standards around technology adoption in the construction sector, which is highly fragmented.
Goal of reform:	Incentivise greater uptake of new technology and innovation to raise productivity in Australia's construction sector.

Background

This reform is about updating the National Construction Code (NCC), standards and building regulations to better enable the use of modern methods of construction (MMC), including prefabricated or modular building techniques (box B1.12). Building regulations, codes and standards have been developed for on-site construction and may inhibit or add to the cost of prefabrication or MMC.

Modular and prefabricated construction can have a range of potential economic benefits over traditional onsite construction including reduced construction time, reduced construction cost, better quality control and reduced building material waste.

Overall, we would expect this reform to increase the uptake of prefabricated or modular building techniques in Australia.

Prefabricated and modular construction can be used in both residential and non-residential building construction where buildings require walls, rooms and modules that are amenable to offsite construction and transport.

Construction of infrastructure such as roads, bridges, tunnels, dams, railways, ports, airports, pipelines and electricity grids can also benefit from prefabrication and improved technology but is outside the scope of our analysis for this reform.

Building construction is a large industry:

- residential construction – annual output was \$109.694 billion in 2021-22
- non-residential building construction – annual output was \$67.379 billion in 2021-22 (ABS 2024b, table 1).

Small improvements in productivity or costs of production could have significant economic effects across the Australian economy.

The regulatory framework for construction of buildings

The construction industry regulatory framework in each state and territory refers to the National Construction Code (NCC) (Australian Building Codes Board 2022), which is Australia's primary set of technical design and construction provisions for buildings. The NCC does not include every detailed requirement for design and construction but refers to Australian Standards (AS), protocols and standards published by the Australian Building Codes Board, and other documents. The NCC sets requirements to be met but offers some flexibility in how they are achieved. To meet a requirement under the NCC, there are three options: a

deemed-to-satisfy solution, a performance solution, or a combination of the two can be used. Deemed-to-satisfy solutions are used most often, as performance solutions involve greater cost and risks.

Box B1.12 – What are modern methods of construction?

Modern methods of construction (MMC) and offsite prefabrication cover a spectrum from manufactured building components through to three dimensional modular rooms and buildings.

The NSW Government has described MMC as:

... the wide variety of construction methods that are different to traditional onsite construction. This includes prefabrication, off-site manufacturing, and modular or volumetric dwellings, as well as new technologies such as 3D printing, robotics, and artificial intelligence (AI).

MMC is not a singular approach, rather a collection of 'Methods' to plan, design, and build within the constantly evolving workforce, supply chain and advanced technological landscape (NSW Land and Housing Corporation 2024).

Prefabricated construction includes construction of buildings for permanent occupation as well as buildings which can be used in one location and then moved to another location as needs change.

Automation and technologies such as 3D printing technologies could be used in construction and may be well suited to offsite prefabricated or modular construction or onsite construction. Onsite construction using 3D printing is very new in Australia. Concrete walls built using a 3D printer were used to construct an amenities block in Dubbo (ABC 2023) and a one-bedroom home in Sydney in 2023 (Contour3D 2023). There are plans for the same technology to be used to construct social housing in Dubbo (NSW Government 2024c).

MMC includes a spectrum from manufactured components that are primarily assembled on site in traditional ways to complete three dimensional modular buildings or parts of buildings assembled primarily in factories. Some prefabricated building components are already common in Australia – including precast concrete panels, roof trusses, windows and cabinets for kitchens, bathrooms and laundries. The Commission's analysis here examines the benefits from additional use of MMC beyond what already occurs.

The Queensland Government has developed a range of prefabricated housing designs ranging from studio to four-bedroom homes and expected to deliver 150 prefabricated homes across Queensland by mid-2024 (DHLGPPW 2024a).

The NSW Government announced in its 2023-24 Budget that it was investing \$10 million in a MMC program to show how MMC can be used to deliver quality permanent social housing faster (NSW Land and Housing Corporation 2024). The housing could be single, multiple, midrise or high-rise dwellings.

The Victorian Government published an Offsite Construction Guide that encourages government agencies to consider offsite and modular construction, provides advice and guidelines and includes examples of modular and prefabricated construction that has been used for schools, social and emergency housing, apartment buildings, rail tracks, railway stations, bridges, hospitals and health care (Office of Projects Victoria 2022).

Currently, compliance, such as sign-off and certification from building inspectors or relevant tradespeople mostly occurs on construction sites and could inhibit the greater use and take-up of MMC. Compliance and inspection requirements differ between jurisdictions (Australian Building Codes Board 2021, p. ii). Inspectors and tradespeople on building sites may be reluctant to certify the compliance of components concealed within modular panels or structures unless they have already been certified as manufactured products.

Builders, designers and manufacturers can potentially adapt or apply the NCC and associated Australian standards to prefabricated and modular construction but this may involve additional costs and discourage the use of MMC. The Australian Building Codes Board and the Building 4.0 Co-operative Research Centre are working together to support the growth of modular and prefabricated construction and are developing a handbook to clarify existing regulatory pathways, a process which jurisdictional Building Ministers are supporting (Department of Industry, Science and Resources 2024).

The Australian Building Codes Board administers two product certification schemes, WaterMark, a mandatory scheme for plumbing products, and CodeMark, a voluntary scheme which can be used to certify manufactured prefabricated and modular building products – both locally manufactured or imported. For example, Sync manufactures modular bathrooms in Melbourne in accordance with Australian Standards and certified under the WaterMark scheme, which have been used in residential, commercial and government buildings in various parts of Australia and New Zealand (Sync 2024). On 4 September 2024, the Australian Building Codes Board released a discussion paper on the principles and scope for a risk-based Building Product Registration Scheme that includes a section on MMC and modular/prefabricated building products (Australian Building Codes Board 2024).

The recognition of international standards is discussed under Reform B1 – Overseas standards.

Construction of buildings is also subject to planning and development approval under numerous land use planning schemes overseen by state and territory and local governments. Planning schemes and building permits primarily focus on how land can be used and the size and appearance of buildings on land. If planning schemes and permits require the use of building materials or construction methods that are unsuited to offsite construction and transport, they may create a competition barrier to MMC. Many local governments have rules that affect the design of homes, including the home's materials and size and there can be inconsistencies in whether a residential modular building is defined as a home that can be located in a residential zone. In some places modular homes are only permitted in manufactured home estates, holiday parks or rural settings. These design rules and inconsistencies likely limit the use of prefabricated and modular approaches in residential construction (HIA 2022, pp. 31–34).

Some local governments may impose planning restrictions on the siting of relocatable buildings and buildings on wheels (such as tiny homes) that may be either built onsite or prefabricated offsite – however, these are restrictions on land use rather restrictions on construction methods. Reform B2 discusses land use and zoning in more detail.

Barriers to modern methods of construction

The Housing Industry Association, Advanced Manufacturing Growth Centre Limited and Swinburne University of Technology (2022, pp. 22–29) identified a range of barriers to increasing prefabricated construction in Australia including:

- unclear definitions and terms for offsite construction, town planning delays and inconsistencies
- difficulty in applying design guidelines, standards and building codes (developed for traditional methods)
- compliance and quality control designed for onsite construction
- lack of clarity in the chain of responsibility between manufacturers and builders

- financing processes designed for onsite construction
- lack of incentives, familiarity and experience of prefabrication in the industry.

These and other factors limit the extent to which modular and prefabricated construction will replace traditional on-site construction in Australia. These factors include tastes and preferences for particular types of housing and building materials that are less suited to offsite construction and transport (such as bricks), demand for customisation, transport costs, capital investment in factories, the need for sufficient scale and volume of production to justify capital investment, the small size of many existing construction firms (which can limit their capacity for research and innovation), and the ways banks finance construction (usually in line with completed stages of construction onsite).

This reform is focused on a subset of these barriers – those relating to building regulations, codes and standards. However, to maximise the uptake of MMC, policy-makers will also need to consider the role of government in addressing other barriers.

Effects of the reform

Direct effect:	Costs of construction fall by 0 to 20%
	Housing and commercial buildings can be constructed in 20 to 50% less time
	More housing and commercial buildings can be constructed using the existing pool of labour – prefabricated and modular construction can involve a substitution of capital for some of the labour inputs
Parties affected:	Consumers of housing – buyers and renters
	Firms and government agencies requiring buildings
	Construction firms and construction and manufacturing workers
	Suppliers of building materials
	Transport industry

As the reform does not identify specific changes to codes and regulations, we are taking an outcomes-based approach to modelling the reform. We assume that Australia could potentially move to 10 to 20% prefabricated or modular construction as a share of total residential and non-residential building construction in the medium to long term (a mid-range among comparable countries)⁹. In recent years, prefabricated construction in Australia has ranged from 3 to 5% of all building construction (prefabAUS 2023, p. 23; Savills 2020).

All state and territory building regulations refer to the NCC but regulations vary across jurisdictions. The key opportunities for reform are:

- a certification scheme for offsite construction, which the Australian Building Codes Board, the Building 4.0 CRC and industry bodies are working towards with the support of building ministers
- reforms to state and territory regulations where needed to put offsite construction on an even footing with onsite construction.

⁹ Modular and prefabricated residential construction comprises a higher proportion of total building construction in some other countries – Finland, Norway and Sweden are the highest at 45% (some estimates up to 80% for residential construction) followed by Singapore at 20 to 33%, Germany and the Netherlands at 10 to 20%, Japan at 15 to 20%, Canada at 8 to 16%, UK at 5 to 10%, China at 5 to 6% and USA at 2.5 to 4% (HIA 2022, pp. 7–18; prefabAUS 2023, p. 24; Savills 2020).

A consistent national approach to regulatory requirements could help create a single, larger, market for prefabricated and modular building products and services so that buildings and components can be manufactured or assembled and then transported interstate. This may allow economies of scale and more consistent demand to support the viability of offsite construction firms. The Commission has not recommended specific changes to the regulations, codes or schemes as they are complex, varied and not in scope for this study.

Two key benefits might be expected from increased uptake of offsite modular and prefabricated construction. The first benefit is **time savings** because:

- offsite manufacturing can occur at the same time as foundations and site utility connections are being done on site
- the offsite construction process can be faster through:
 - more productive processes and technologies
 - automated production lines
 - no delays due to weather
 - the ability to work multiple shifts.

In summary this is a technological improvement as capital is substituted for labour. Overall, this means that more dwellings can be built per year – that is, an increase in the supply of housing and building construction for the same labour supply. However, the labour savings will vary according to the type of prefabrication, the scope for automation and the products being produced. A highly automated process using robotics may result in a significant shift in inputs from labour to capital, whereas other offsite construction remains a largely manual process with much less labour saving.

Time savings from offsite construction can vary from 20 to 50% depending on factors such as the type and purpose of the building being constructed (Bertram et al. 2019, pp. 10–12). As an example, the La Trobe Tower building at 323 La Trobe Street Melbourne is a 44-level residential tower and Australia’s tallest prefabricated building. It was completed in 2016, 27% faster than would have been possible using conventional methods (19 months instead of 26 months) (Hickory 2024).

The second effect relates to a change in construction costs. However, this varies between different types of construction projects. Costs of prefabricated construction can vary from savings of 15 to 20% over onsite methods to being 10% more expensive¹⁰ (Bertram et al. 2019, p. 13; Sutrisna et al. 2018). Reasons that costs can be higher are that some consumers may be willing to pay more for modular construction to achieve a faster result, higher quality, or to suit specific requirements. However, given the stated intention of the reform, we assume that the greatest growth will likely be where savings can be made and could range from 0 to 20%.

Other benefits of offsite construction include:

- safer workplaces – the environment can be better controlled for safety in a factory than on site – with less time lost and cost from injury and greater opportunities for workers with disabilities that may prevent them working in onsite construction
- improved building quality – production in a factory makes quality control easier and more standardised.

¹⁰ Several factors influence whether prefabricated construction is more or less expensive than traditional construction. Prefabricated construction has lower net labour costs but some additional capital cost in the factory. The overall result will usually be reduced costs for prefabricated construction. However, for some projects prefabrication could be 10% more expensive – driven by additional logistics costs (transport and cranes) and materials costs (some strong lightweight transportable materials may be more expensive) (Bertram et al. 2019, p. 13).

Small scale trials of prefabricated and modular construction (such as a trial by Sutrisna et al. (2018) and the current NSW Government trial (NSW Land and Housing Corporation 2024) could identify opportunities and barriers but may not yield data on the extent of savings and efficiencies that might be achieved if MMC were to be adopted on a large scale.

MMC may have the most potential for growth where there are larger numbers of standardised units that achieve economies of scale and a continuing stream of work for manufacturers – for example medium to large apartment buildings and complexes, retirement villages, hotels, social housing estates and schools. The non-regulatory barriers to modular and prefabricated construction mentioned earlier in this section mean that even if regulatory barriers were removed, the uptake of MMC in some types of building construction may be slow or limited. Therefore, we have taken a cautious approach in estimating the possible effects.

Results and discussion

The Commission undertook CGE modelling for this reform. The modelling results suggested that removing barriers to modern methods of construction leads to:

- an increase in residential building construction output which causes real GDP to increase by **0.15% (or \$4.1 billion)**, with a decrease in CPI of **0.08%**
- an increase in non-residential building construction output which causes real GDP to increase by **0.06% (or \$1.7 billion)** with a decrease in CPI of **0.04%**.

The results for the changes to residential and non-residential building construction are not strictly additive as the two industries compete for capital and labour resources as they require similar types of skilled labour and materials. If output in one construction industry increases, it will likely draw some labour and capital from the other. The Commission has assumed a (net) 5% increase in labour productivity and a 1% increase in capital productivity (calibrated to increase residential construction output by 2%).¹¹ Productivity improvements lower housing production costs and increase housing output. Resources move toward other industries, lowering their costs and increasing their output, which increases national output and real GDP.

For residential construction, the modelling also suggested that net revenue increases for **\$406 million** for the Australian Government and decreases by **\$146 million** across state and territory governments.

For non-residential construction, the modelling also suggested that net revenue increases by **\$194 million** for the Australian Government and decreases by **\$40 million** across state and territory governments.

Australian Government revenues increase because income tax revenues increase as economic activity (GDP) increases. Net revenues of state and territory governments decrease because (i) the decreasing CPI drives both GST and non-GST grants, a main source of revenues, and (ii) the increase in wages increases wage expenditures, a major driver of expenditures.

We performed sensitivity testing on these results and found that if building construction output were to increase by 1% (half as much as the 2% shock above, or roughly equivalent to prefabricated and modular construction increasing from 5 to 10% of the industry with a 20% construction time saving):

- a 1% increase in residential building construction output causes real GDP to increase by 0.08% (or \$2.0 billion), with a decrease in CPI of 0.03%
- a 1% increase in non-residential building construction output causes real GDP to increase by 0.03% (or \$0.8 billion) with a decrease in CPI of 0.02%.

¹¹ The modelled increase in output of 2% is within a range of possible increases in construction output depending on the assumptions chosen about the construction time savings (20 to 50% reduction in time) from greater use of MMC. The Commission has assumed that prefabricated or modular construction could increase from 5% to either 10 or 20% of total building construction. Multiplying the range of time savings by the range of the increased modular and prefabricated share of the industry yields a range of increases in output of 1, 4, 5 or 15%. Given the range of factors other than regulation influencing the adoption of MMC, the Commission has modelled increased output of 2%.

B2. Net Zero

Reform NZ1 – Right to repair

Reform description (provided to the Commission)

Reform:	Addressing barriers to third-party repair of consumer products. Primarily this would enable independent repairers and consumers access to the necessary parts, information and equipment needed to repair products, including access to embedded software in products.
Policy problem:	Original equipment manufacturers (OEMs) impose significant barriers that prevent third party repair for some products (including repair by consumers). This lowers competition in repair markets, increases prices for consumers, and may lead to increased product wastage.
Goal of reform:	Enable greater access to essential repair inputs for consumers and businesses to increase competition in markets for repair parts and services.

Background

The ‘right to repair’ refers to the ability of consumers to have their products repaired at a competitive price using a repairer of their choice (PC 2021d, p. 2). In practice, access to repair is affected by a range of policy settings, including consumer law, competition law and intellectual property protections.

In 2021, the Productivity Commission published its inquiry report on the right to repair and made a suite of recommendations to remove unnecessary barriers to repair. Information provided to the Commission about the reforms indicates that the following reforms are being considered.

1. For identified goods (e.g. agricultural machinery), require original manufacturers to provide third party repairers with access to repair inputs (spare parts, tools and equipment, and repair information) at a fair price (a ‘repair supplies obligation’). Currently, there is an obligation of this type for motor vehicle service and repair information (ACCC 2022b; Treasury 2021a).
2. Amend the Copyright Act to include a ‘fair dealing’ exception for reproducing and sharing information for the purpose of repair.
3. Amend the Australian Consumer Law to:
 - a) include a new consumer guarantee that requires manufacturers to provide software updates for a reasonable period
 - b) clarify that rights under the Australian Consumer Law are not extinguished when consumers use non-authorised repairers.

In 2022-23, total revenue in the repair and maintenance sector was estimated to be \$49 billion, contributing \$21 billion to GDP (43% of the total revenue) (ABS 2023a).

For the purposes of this report, the Commission has analysed **agricultural machinery** and **consumer electronics** (focusing on mobile phones and tablets). In the right to repair inquiry (PC 2021d, p. 64), the Commission found that machinery and electronics make up approximately a third of the total revenue in the repair sector. And these were identified as the two major markets to focus on during the workshops held with the National Competition Policy Senior Officials Working Group.

Effects of the reform

Direct effect:	Profit margin of 10% for repair services removed (effect on the whole repair market). Value of grain output increases by 3%.
Parties affected:	Lower revenue for original manufacturers and licensed/affiliated repairers in the repair market. Lower input prices/costs and higher demand for third-party repairers. Lower revenue for original manufacturers in the primary market. Cheaper price and increased availability of repair services for consumers. Longevity of capital goods in scope extended.

To model the reform, there are two elements that need to be considered:

- the effects on the repair market
- the downstream effects on sectors or industries that are reliant on repairs – key of which is the agricultural sector.

Effect on the repair market

Together, the two reforms that focus on delivering a repair supplies obligation for certain products and amending the Copyright Act are targeted at increasing the supply of repair services across all repair markets. In broad terms, these measures should enable third-party repairers to access repair inputs, whether by mandating the supply of those inputs for certain products (in the case of a repair supplies obligation) or lowering the cost of obtaining those inputs (in the case of amendments to the Copyright Act).

Decreasing the price of repair inputs or improving accessibility to these inputs for potential third-party repairers is likely to result in an increase in the number of third-party repairers. This is because decreasing barriers to entry (in the case of amendments to the Copyright Act) and increasing the profitability (in the case of a repair supplies obligation) can incentivise more third-party repairers to enter the market. Hence, the reforms are expected to increase competition in the current repair market, lower the costs of repairs and decrease the profit margins for original manufacturers.

Original manufacturers will experience lower revenue through several mechanisms.

The first channel relates to the decrease in profit margin for selling inputs. After the reform is implemented, original manufacturers will no longer be able to sell their repair inputs at a price premium. Instead, they must be sold at a 'fair' price or, for repair information covered by the fair dealing exception, at zero price. The effect through this channel is estimated to be relatively small due to the low proportion of third-party repairers in the current repair market.

The second channel is associated with the decrease in demand for the primary product. As the reform decreases the repair price and improves the accessibility to repair services, more consumers are expected to substitute from repurchasing the primary products to using the repair services. To quantify the scale of the impact through this channel, the European Commission estimated that setting an obligation for producers to repair all products at a fair price is expected to increase the repair take-up rate by 15.2% and avoid purchase of 190.5 million products across all consumer products over 15 years (EC 2023, p. 53).

The last and potentially the most significant channel is that the reform is likely to reduce the rents captured by the original manufacturer in the repair service market (whether attained through the exclusive provision of repair services or through authorised repairer channels). Once the reform is implemented, monopoly pricing will no longer be possible. To quantify the effect, we estimated the expected decrease in rents for the original manufacturers. The average profit margin for the repair sector is reported to be around 5–15% (PC 2021d, p. 331), and we used a central estimate of 10% for modelling purposes. For the CGE model, we first assume a 10% profit margin exists in the repair market ('other repair sector') and then examine the economy-wide effect of removing this profit margin.

In a competitive equipment market, the existence of future repair rents could enable lower prices in the original equipment market. Removing these repair rents could therefore lead to higher equipment prices (PC 2021d, pp. 323–325).

CGE modelling results

In the CGE modelling, removing an assumed rent of 10% in the "other repair sector" increases GDP by **0.01% (\$311 million)** and the CPI by 0.01%, having a relatively minor impact on the whole economy. The modelling uses a base case scenario in which the assumed rents in the 'other repair sector' are identified so that they can be removed in the simulation.

Effect on grain output in the agricultural sector from timely repairs

The right to repair inquiry (PC 2021d, p. 14) found that harm resulting from restrictions on repair supplies was most evident and acute for agricultural machinery. This was because timely repairs are crucial for farmers, especially during harvest periods when equipment downtime can result in significant production losses. Therefore, another effect of introducing a repair supplies obligation for agricultural machinery will be to mitigate those production losses, thereby increasing agricultural outputs.

The Commission has used an illustrative example of the economic impact from delayed repair based on consultations as part of the right to repair inquiry. In an example of a wheat farmer, a faulty wheat harvester requires the central dealership two days to repair because the farm is often a long distance away from the first-party dealership. This delay in harvesting can impact on both total yield and the grain quality. In this scenario, when there is a 50mm heavy rain over the two days, the total yield decreases by 10% and the grain price (reflecting the grain quality) is expected to decrease by 14%. This corresponds to a 23% loss in total revenue for the wheat farmer. Enabling the right to repair reform (item 1 and 2) will allow the farmer to access the repair services from a third-party dealership within one day and completely avoid the potential loss.

The agricultural machinery survey conducted by the Commission as part of the right to repair inquiry further showed that 59% of farmers who answered the survey question experienced a financial loss due to machinery needing repair and 15% of farmers estimated their financial loss to be over \$25,000 (PC 2021d, agricultural machinery survey results).

It is difficult to estimate the aggregate impact of right to repair on agricultural production for several reasons:

- There is no precise data on the proportion of farmers that are experiencing the right to repair problem each year, it can only be inferred from small sample survey data.
- The economic loss of delayed repair varies significantly by the type of commodities and the expected weather conditions during the waiting time. Australian farmers produce a wide range of commodities, so it is difficult to construct an average estimate.
- There are also a range of implicit costs that cannot be easily measured, such as overinvestment in machinery to try to reduce any potential loss that can result from the breakdown.

Given these complexities, the Commission has chosen to focus its modelling on the potential benefits of the reform to the grain industry, using the hypothetical example. To provide a rough estimate of the aggregate effect, we assume 75% of total grain production is susceptible to repair delays¹², with 15% of grain farm businesses likely to experience a significant economic loss due to issues accessing repairs every year.

Assuming this reform can help those farms to mitigate the economic loss from repair delays, this will translate to a 30% increase in revenue for those 15% of grain farm businesses (using the generalised example outlined above). Overall, the value of grain output in the agricultural sector is estimated to increase by 3%.¹³

CGE modelling results

In the CGE modelling, increasing the output of grain industries by 3% has a negligible effect on GDP (an increase of \$97 million or 0.004% of GDP) and raises CPI by 0.01%. The lower grain prices boost production and exports from these sectors. This expansion attracts labour from other parts of the economy, which places upward pressure on wages, increasing employment costs across the economy. This in turn increases production costs and the prices that consumers face.

The consumer electronics market (mobile phones and tablets)

As Australia progresses into an increasingly automated and electrified future, consumers are likely to own more electronics in terms of both numbers and variety. Research from Telsyte (2024) indicates that Australian households owned an average of nearly 24 internet connected devices in 2023.

As of 2024, the market size of the computer and electronic equipment repair industry in Australia was estimated to be \$3.1 billion (IBISWorld 2024).

There is a perception that original equipment manufacturers are making decisions that shorten the life of these products (PC 2021d, p. 3). One mechanism through which this is said to happen is through software updates. As discussed above, the Commission's right to repair inquiry recommended the introduction of a new consumer guarantee for manufacturers to provide software updates for a reasonable time period after the product has been purchased, to reflect the increasing dependence of consumer products on embedded software. This would be expected to extend the life of certain products. In principle, this could lower demand in terms of repurchases – but there is evidence to suggest repurchase and replacement decisions are driven by consumers choosing to replace their products with newer ones, rather than by products breaking or becoming obsolete (PC 2021d, p. 197).

In terms of access to repairs, there is limited evidence to suggest that there was unmet demand for repairs for mobile phones and tablets. In general, consumers do not consider mobile phones to be 'workhorse' or 'investment' products, and are less inclined to seek repairs for them because they replace this type of product more frequently regardless of whether the products are broken (PC 2021d, pp. 57–58). In this area,

¹² Large commercial farms are not expected to be impacted.

¹³ $75\% \times 15\% \times 30\% = 3\%$

the Commission recommended that the government clarify that rights under the Australian Consumer Law are not extinguished when consumers use non authorised repairers. While this would provide more certainty for consumers it would not change the substance of existing consumer rights.

Overall, these reforms will have a marginal effect on the ability of consumers to assert their existing rights and achieve better value for money when purchasing consumer electronics. This will contribute to improved consumer wellbeing, but the intangible nature of these benefits means that they are difficult to meaningfully quantify.

Reform NZ2 – Overseas standards

Reform description (provided to the Commission)

Reform:	Streamline the adoption of trusted overseas standards that support the net zero transformation.
Policy problem:	Bespoke Australian standards limit access and increase the costs of some net zero technologies that already comply with trusted overseas standards.
Goal of reform:	Accelerate the net zero transformation by adopting trusted overseas standards where relevant, and improve timeliness of overseas standards adoption for new and emerging technologies and practices.

Background

Australia's regulatory system is fragmented across jurisdictions, and across product and service markets – ranging across sectors including automotives, food, chemicals, construction, and even medical prosthetics. Unnecessarily unique domestic standards prevent access to safe goods from overseas, raise costs to consumers and businesses, and often impede the outcome which the standard is originally set up to achieve.

Under the World Trade Organisation (WTO) technical Barriers to Trade Agreement Code of Practice, Australia has an obligation to adopt international standards wherever possible. Nevertheless, only 33% of current Australian standards are fully or substantially aligned with international standards (ITA 2024).

The economic and social costs of bespoke Australian standards may increase over time as quality goods developed under trusted overseas standards become more prevalent. These costs can include the opportunity costs of goods being unavailable, decreased profits for firms, and increased prices for consumers due to the additional regulatory compliance costs from the domestic standards.

More specifically, standards that differ from trusted overseas standards can directly constrain the uptake of some net zero technologies. Standards that affect the adoption of low and zero emission technologies include:

1. the Australian Design Rules, which are national standards for road vehicle safety, hinder competition in the electric vehicle (EV) and broader road vehicle market (reforms NZ3 and NZ5 provide further detail)
2. AS/NZS4777.2:2020 standards affect the adoption of bi-directional chargers that facilitate Vehicle-to-Grid (V2G) and Vehicle-to-Home (V2H) charging. The ISO15118-20 standard has enabled the use of bi-directional power transfer from 2022.

Under this reform, we use bi-directional charging technology as an illustrative example to demonstrate the potential effect of adopting overseas standards on the uptake of net-zero technologies. To understand the potential benefits from adopting a bi-directional charging standard, we assume that the standards will fully enable the adoption of bi-directional charging – and conversely without reform, bi-directional charging adoption in Australia is not possible. In other words, the full benefits arising from bi-directional charging adoption can be attributed to adopting the overseas standard.

In practice, the regulatory framework may delay the adoption of bi-directional charging technology, but it is unlikely to completely stop it. Therefore, attributing the full benefit of bi-directional charging adoption solely to regulatory reforms is an overestimation. Even under the existing regulatory framework, bi-directional charging technology is expected to evolve and be introduced in Australia eventually. However, the Commission did not have reliable data to estimate the cost of delayed adoption. For this reason, the

quantitative estimates below are only used to provide some insight to the size of the problem and will not be used in CGE modelling as it does not accurately reflect the effect of the reform.

Nevertheless, bi-directional charging is just one example of a net-zero technology; if the current regulatory framework delays the adoption of new technologies, the cumulative benefits of faster adoption could be much larger.

Effects of the reform

Direct effect:	Lower prices and greater availability for V2G technology.
	Increased uptake of V2G technology reduces electricity price volatility and investments in storage capacity.
	Increased uptake of V2H technology reduces costs of blackouts to households.
Parties affected:	Electricity consumers: Reduced energy bill, greater availability of new net zero technology, increased demand for EVs.
	Whole economy: Reduced capacity investment cost, reduced emissions through increased uptake of EVs.

V2G uptake can reduce the amount of grid-scale battery storage required ...

The Australian Energy Market Operator's (AEMO) 2024 Integrated System Plan reported that the National Electricity Market (NEM) will require 660 GWh of all forms of storage by 2050 (AEMO 2024, p. 66). According to AEMO's prediction of the future EV fleet (ARENA 2023, p. 3), the usable storage in Australia's EV fleet at 2050 will be nearly four times the total NEM storage requirements. Compared to investing in grid-scale battery storage, enabling V2G technology can be more cost-effective, as the batteries are already built within the cars and installing a V2G-capable charger only marginally increases the cost. Based on AEMO's Inputs Assumptions and Scenarios Consultation workbook (AEMO 2023), the annualized cost of 1MW capacity grid scale battery is \$105,230¹⁴. The Commission has estimated the annualized cost of V2G chargers that might enable 1MW capacity, over and above smart chargers that cannot enable that capacity, as \$16,500¹⁵. This is equivalent to only 16% of the cost of grid-scale batteries on a simple equivalent capacity basis. To quantify the benefit of fully enabling V2G technology, the Commission used forecasts for the growth of V2G capacity from 2030 to 2050 published by the AEMO (2023) to calculate the cost difference between building the capacity through installing V2G chargers and building the capacity through grid-scale batteries. The result demonstrated that the net present value of the net benefit of enabling V2G is around \$2 billion.¹⁶

EVs that are enabled for bi-directional charging can be a substitute for home batteries. Adoption of overseas

¹⁴ The Commission has estimated the annualised cost of 1MW of grid scale battery using the figures published by AEMO (2023) for the life of a grid-scale battery (20 years), its fixed operating and maintenance cost (\$17.31 per kW per year) and the discount rate used by AEMO for the 2023 Integrated System Plan (7%).

¹⁵ This estimate assumes that a bi-directional charger for a V2G enabled EV that provides 0.01MW of capacity costs a premium of \$1,500 over the cost of a smart charger (that would be used in the absence of V2G). Assuming the charger has a 15 year lifespan, this produces an annualized cost of \$164.49 (using a discount rate of 7%). Multiplying this by 100 (to convert to per MW cost) gives a total cost of approximately \$16,500.

¹⁶ This figure covers the NEM only, which does not service Western Australian and Northern Territory. An Australia-wide estimate that included both jurisdictions would exceed this value. The Commission's estimate involves a number of simplifying assumptions, including that if V2G was not enabled then its capacity would be replaced by grid-scale batteries and not other forms of generation or storage. The Commission also disregarded the cost of aggregating EVs through Virtual Power Plants (which would allow V2G to more closely substitute for grid-scale storage).

bi-direction charging standards would enable V2H and therefore potentially lowers the need for vehicle owners to invest in home batteries.

... which flows through to the price of electricity

The reduction in the amount of grid-scale battery storage required means the same electricity services can be provided with less capital investment. This should flow through to all consumers through lower electricity bills. The Commission estimates a saving of \$3.80 per annum per residential consumer in electricity costs.

V2G owners may also benefit from price arbitrage opportunities

V2G is currently highly preferential for some users in all jurisdictions (ARENA 2023, p. 14) due to the potential for price arbitrage across dynamic retail tariffs between peak-times and off-peak times. The average of net benefits of V2G compared to smart charging (a charging device that optimises one-way charging decisions for EVs) across all jurisdictions ranges between \$1,560 per annum in Tasmania and over \$6,000 per annum in New South Wales and South Australia (ARENA 2023, p. 15).

Currently, the volatility in renewable generation supply and consumer demand have resulted in an increased daily price spread of the wholesale electricity price and dynamic retail tariff. The lack of storage capacity also means that a supply surplus during the day cannot be used to fulfill the excess demand during the evenings. However, having the additional storage capacity from the V2G technology will enable consumers to charge and store electricity when it is cheap and use it or sell it when electricity becomes expensive. Those additional monetary incentives for consumers may increase the uptake of V2G-enabled EVs and encourage the adoption of V2G technology. This can create a range of benefits for the whole economy including reducing the volatility of electricity prices (Nagel et al. 2024, p. 1,6) as well as reducing emissions.

Nevertheless, as more consumers adopt V2G technology and the storage capacity increases, the price of electricity could become more stable and there will be less arbitrage opportunities for consumers. This means that, the average consumer benefit from V2G may gradually diminish when the adoption rate increases and in the long-term equilibrium, the take up rate of V2G is expected to plateau to where the consumer benefit of having V2G is equal to the cost of installing V2G.

Bi-directional charging can mitigate blackout costs

Bi-directional charging may also be able to reduce the costs of blackouts in certain circumstances.

The majority of blackouts are caused by failure in distribution networks (the poles, wires and other infrastructure that connect consumers to the transmission network, often a nearby substation). Around 95% of the interruptions to supply experienced by electricity customers are due to distribution network issues (AEMC 2020, p. 51). If the distribution network fails, consumers with EVs capable of bidirectional charging may be able to provide electricity to their homes or premises from their car battery using V2H. The Commission estimates total benefits to electricity users of about \$327 million (NPV of benefits to National Energy Market customers until 2050) from avoiding the costs of distribution network blackouts through V2H.¹⁷

V2G can provide blackout resiliency in other circumstances, but since these interruptions represent a small proportion of blackouts, the Commission has not modelled these benefits.

¹⁷ The Commission's estimate for the benefit of avoiding distribution network failures is based on the Australian Energy Regulator's (2022) estimates for consumer willingness to pay to avoid electricity outages, annual unplanned network failure durations (2023b) and average energy usage (2023a). This estimate involves a number of simplifying assumptions, including that blackouts are distributed evenly amongst households, EVs enabled for bi-directional charging are charged and plugged in at the time of each blackout, and that each household consists of one person with one EV.

Reform NZ3 – Heavy EVs

Reform description (provided to the Commission)

Reform:	Lower barriers to the adoption of electric trucks and buses that meet trusted overseas standards by: <ul style="list-style-type: none"> • Ensure Australian Design Rules (ADRs) for heavy vehicles align with trusted overseas standards, where they are at least as safe as Australian standards. And can be updated as they develop without undue delay • Ensure road use regulation supports adoption of updated ADRs on Australian roads (which could include heavier and wider EV trucks).
Policy problem:	Parallel import restrictions, restrictive ADRs, and local road use restrictions and road funding models limit adoption of heavy EVs in Australia.
Goal of reform:	Increase competition for low emissions heavy EVs, which supports reduce road transport emissions by lowering the cost of heavy EVs.

Background

According to the Heavy Vehicle National Law (HVNL), 'heavy vehicles' are vehicles with a gross mass exceeding 4.5 tonnes. This includes vehicles such as trucks and buses, which are key components of Australia's transport and freight fleets. In 2024 Australia had 47,760 heavy buses (47.7% of all buses) and 521,190 freight-carrying heavy trucks (10.8% of all freight-carrying vehicles) (BITRE 2024b).

Currently, very few of Australia's heavy vehicles are electric. Bureau of Infrastructure and Transport Research Economics (BITRE) data (2024b) suggests that in 2024, there were just 210 battery or fuel cell powered electric heavy trucks (0.04% of all heavy trucks) and 285 hybrid electric heavy trucks (0.05% of all heavy trucks). There were 368 battery or fuel-cell powered electric heavy buses (0.7% of all heavy buses) and 24 hybrid electric heavy buses (0.05% of all heavy buses). However, there are some signs that the electric proportion of the heavy vehicle fleet may be on the rise. The Truck Industry Council has reported that the percentage of new trucks sales which are low and zero emission trucks has risen to 0.5% of all sales, up from 0.1% for the previous year and most of the previous decade (2023, p. 4).

Low adoption of heavy EVs in Australia reflects adoption trends observed globally. In 2023, 0.1% of medium and heavy vehicles in the European Union were EVs, with a further 0.02% hybrid vehicles (ACEA 2023, p. 16). In the same year, EVs were 0.3% of all heavy duty vehicles in the United States (ICCT 2024, p. 1).

The EV industry has highlighted a number of barriers to uptake of heavy EVs. These include the cost of electric heavy vehicles, lack of charging infrastructure, the cost of charging infrastructure, limited overall supply, and limits on the range of models eligible for import on account of the Australian Design Rules (Electric Vehicle Council 2022, pp. 12–17).

There are a number of potential benefits of adopting electric heavy vehicles. Compared to traditional internal combustion heavy vehicles, adopting heavy EVs can effectively reduce 60%-70% of greenhouse gas emissions and air pollutants (Irles 2023), leading to improved public health outcomes. Heavy EVs may also reduce noise pollution – Volvo Trucks report that their trucks produce roughly half the noise of equivalent diesel trucks (nd, p. 10). Furthermore, as technology continues to advance, the cost disparity between electric and internal combustion heavy vehicles is expected to decrease, making electric options more economically viable in the long term (Energy Innovation 2024).

This analysis examines the economic effects of three reforms designed to remove barriers to the take-up of heavy EVs.

The first reform is **increasing the steer axle mass limit for heavy electric trucks**. Australian, state and territory standards limit the mass of heavy vehicles to reduce road damage and increase safety (Austroads 2016, p. i; Mitchell 2010, p. 6). Heavy vehicles are subject to mass limits on each axle, as well as a gross combination mass limit which is equal to the sum of each of the axle limits. Mass carried above the steer axle (the frontmost axle on the truck) is subject to a general limit of 6 tonnes, with some exceptions that increase the limit to between 6.5 and 8 tonnes¹⁸ (Eden 2023; Heavy Vehicle Industry Australia 2024; National Heavy Vehicle Regulator 2016). Electric truck engines weigh significantly more than internal combustion truck engines with equivalent power. As a result, the steer axle limit places greater restrictions on electric trucks (relative to internal combustion trucks).

The vehicle mass limits are half of Australia's dual approach to minimising heavy vehicle road and infrastructure damage. Australian governments also restrict the roads on which heavy vehicles can drive. These rules determine which trucks (depending on their configuration and relevant mass limits) can drive on which roads, helping to control and minimise overall damage to Australian roads. The network is relatively complex as the list of permitted roads varies for different truck configurations and weights.

The second reform is **allowing parallel imports of heavy EVs**. Currently, motor vehicles to be imported into Australia are required to enter the Register of Approved Vehicles (RAV) established under the *Road Vehicle Standards Act 2018* (Cwlth) (RVSA). The most common type of approval requires a detailed documentation about designs, manufacturing and quality control processes and access to factories for auditing, such that importers other than manufacturers or their agents are unable to import these vehicles. While a small number of vehicles can be imported under concessional RAV approval, this type of approval can only be individually applied to a narrow range of vehicles. Consequently, apart from the exceptions of obtaining concessional RAV approval, most motor vehicles can only be imported into Australia by the manufacturers of those vehicles and their agents. Restrictions under Section 22 of the RVSA block the parallel imports of motor vehicles, including heavy trucks.

The third reform is **removing the import tariff on heavy EVs**. Imported heavy electric trucks and buses (that are not imported under free trade agreements) are subject to Tariff Concession Orders which place a 5% tariff on their import.

Effects of the reform

Direct effect:	Reduction of transportation cost.
	Increased road maintenance cost.
	Removal of import tariffs on heavy EVs.
	Reduced price of both new and used heavy EVs.
Parties affected:	Increased competition in the heavy EV market.
	State and Territory governments will incur higher road maintenance costs.
	Heavy EV users benefit from reduced price and increased size of heavy EV.

¹⁸South Australia and New South Wales are currently allowing extra weights on a steer axle of heavy EVs on a trial basis, while Victoria and Queensland have approved permanent increases in the mass limit to 7.5 tonnes and 8 tonnes respectively (on specific roads).

Reduced tax revenue for the Australian Government.

Increasing the steer axle mass limit for electric trucks

Under this reform, amendments could be made to the relevant ADRs to increase the steer axle mass limit for electric trucks. The Queensland Transport and Logistics Council (2022, p. 30) has estimated that an electric truck could weigh as much as 30% more than an equivalently powered internal combustion truck, with most impact on the front axle. Under Australia's general steer axle mass limit of 6 tonnes, an exemption of around 1.5 tonnes to 2 tonnes may allow electric heavy trucks the same maximum payload as equivalently powered internal combustion trucks¹⁹. This aligns roughly with the steer axle mass exemptions for EVs currently available in some jurisdictions (as discussed earlier).

Increasing the steer axle mass limit for heavy EVs will have two effects.

The first key direct effect of the reform is to increase the range of electric trucks that can be used on Australian roads, potentially increasing the rate at which Australia's truck fleet transitions towards EVs. As Australia's steer-axle mass limit is less than comparable limits in overseas jurisdictions, it constrains the range of electric truck models which can be imported for use in Australia. The Electric Vehicle Council (2022, p. 9) reported that there were 58 models of electric trucks available for purchase in North America, Europe, and China, compared to 14 in Australia. Members of the heavy vehicle industry, including Volvo, have stated that the steer-axle mass limit restricts the range of electric truck models available in Australia (Heavy Vehicle Industry Australia 2023). Increasing the limit would allow more models to become available for purchase, which may increase the rate of transition towards electric trucks.

The size of the reform's effect on the transition to electric trucks depends on the extent to which the vehicles that become available under the increased mass limit are cost-effective and functional substitutes for internal combustion trucks currently used in Australia. Electric trucks have been found to cost up to three times as much to purchase as an equivalent internal combustion truck and require installation of expensive on-site charging facilities (Mellor 2024). Although this is a general observation, it seems likely that these barriers would also apply to the take-up of trucks made available under this reform. From a functionality perspective, increasing the steer-axle mass limit would allow the use of electric trucks with heavier and more powerful engines capable of completing trips over longer distances and/or with larger payloads. Lack of range has been identified as a barrier to the take-up of electric trucks (Mellor 2024), and this reform may address that to some extent. Given the lack of clarity around which trucks would become available under this reform and the extent to which these barriers may affect their take-up, the Commission has not modelled the size of the reform's impact on the transition to electric trucks.

The second direct effect is to increase the possible payload carried by electric trucks, reducing transport costs at the expense of increased road repair costs. A reduction in transport costs would reduce the cost-disparity between electric trucks and internal combustion trucks, potentially increasing the rate of transition towards electric trucks. As discussed previously, increased take-up of electric trucks would have a range of additional benefits, including higher energy efficiency, and reduced noise and emissions. However, there will also be costs – an increase in the mass carried by heavy vehicles will lead to an increase in the damage they do to roads. Heavy vehicles are restricted to travelling on certain roads, based on their mass. An increase in the steer axle mass will increase damage to this network of roads and therefore increase road maintenance costs for the Australian, state and territory governments. Should the reform to user charging

¹⁹ Assuming a 30% difference in engine weight, a truck with a 6 tonne electric engine would have similar power output to a truck with a 4.2 tonne internal combustion engine. Under the lowest possible steer axle mass limit (6 tonnes), the internal combustion truck's lighter engine would allow it to carry up to 1.8 tonnes more in payload than the electric truck.

also covered in this report (reform B8 – Efficient user charging) be progressed then the cost of increased road damage would be redirected to heavy vehicle owners.

In the following sections the Commission makes a simplified and assumption-based calculation of the reform's potential effect on transport costs and road repair costs. The accuracy of this calculation is heavily limited by the range of available inputs. In particular, the large majority of the data available to make the necessary calculations is not reported by engine type or by steer axle mass. As a result, the Commission made a number of assumptions that the broader datasets were representative of electric trucks whose operating weights are restricted by the steer axle mass limits (either now or in the future). The accuracy of this assumption is likely limited given that heavy electric trucks are a minute proportion of the datasets used.

The reform's effect on transport costs and road damage costs will be determined by the increase in payloads resulting from the increased steer axle mass limit. The average increase in payload is likely to be less than the increase in the limit for several reasons. Most obviously, it is likely there are some electric truck trips which are conducted with payloads less than the maximum payload allowed under axle mass limits. This may be because the total payload is limited by volume rather than weight, or simply that the total freight to be moved has mass lower than the maximum amount allowed. Given this, the Commission has chosen to model the effects of a 1 tonne increase in the payload carried by 84% of heavy EVs. The key motivation for this choice is to align the benefits calculated with the available data on marginal road repair costs²⁰, which is of crucial importance given the non-linear relationship between steer-axle mass and road damage.

The Commission has not modelled the behavioural aspect of this direct effect, again due to the difficulty in assessing the extent to which different barriers to the take-up of electric trucks affect the substitutability between internal combustion and electric trucks. As a result, the Commission has not quantified the potential gains from reduced emissions.

Finally, the Commission notes that any benefits in terms of reduced transport costs that would arise to electric trucks through an increased steer axle mass limit would also arise to internal combustion trucks if they too had access to an increased limit. The size of these benefits relative to the marginal costs of road repair would also be similar (i.e. if there was a net benefit for electric trucks, there would be a net benefit for all trucks). However, extending an increased limit to all trucks may reduce any effect the reform has to increase substitution from internal combustion trucks to electric trucks, and therefore diminish the reform's benefits in terms of reduced emissions.

Reduction in road transport costs

The road parameter values published by the Australian Transport Assessment and Planning Steering Committee (2016, p. 38) give a maximum legal payload of 13.5 tonnes for internal combustion heavy rigid trucks and from 20.5 tonnes to 72 tonnes for a range of (internal combustion) articulated truck configurations (with maximum payload increasing with overall mass), and average annual kilometres for both sets of vehicles

²⁰ The lack of a precise estimate for the average increase in payload resulting from an increase in the steer axle mass limit is a key limitation of the overall estimate. Producing a precise estimate for the average increase in payloads is not possible given the lack of available data on the maximum and average payloads of heavy vehicles in Australia, and the lack of insights into any behavioural changes (in terms of freight strategy) that may arise from a change in the steer axle mass limit.

To estimate marginal road repair costs associated with an increase in steer axle mass, the Commission used estimates published by Austroads (2016) for the damage caused by a 1-tonne increase in the payload carried by fully laden trucks. According to the traffic counts published in Appendix A of Austroads' report (Austroads 2016, pp. 57–81), the modelling of damage caused by fully laden vehicles used a scenario in which approximately 84% of heavy vehicles travelling on each road segment carried an additional tonne of payload.

of 86,000km. Adjusting maximum legal payloads for the additional weight of an EV engine²¹, an increase in the average payload of each configuration by 1 tonne would allow them to move the same tonne-kilometres in 8.5% less trips for heavy rigid trucks, and 3% less trips (on average) for articulated trucks.

The extent to which a reduction in trips (or kilometres travelled) reduces transport costs depends on the proportion of costs which are fixed and variable. Fixed costs, which might include vehicle registration and insurance, must be paid each year regardless of how many kilometres are travelled. Variable costs, such as fuel, tires, and some labour costs, vary with how many kilometres are travelled. To produce a rough estimation of how the reduction in kilometres travelled would reduce costs, the Commission has assumed that variable costs make up 75% of total costs in the road freight transport industry²². Under the assumed cost structure, the percentage reduction in total costs would be 6.4% for heavy rigid trucks and 2.3% for articulated trucks²³.

To estimate the size of these reductions as a proportion of total transport costs, the Commission has scaled them using the proportion of the total freight task completed by heavy rigid trucks and articulated trucks²⁴. Using ABS data (2020), the Commission estimated that in 2019-20 17.9% of the total road freight task was completed by heavy rigid trucks and 77.4% was completed by articulated trucks. Scaling the cost reductions for each vehicle type by the proportion of the heavy vehicle freight task they completed and the proportion of the heavy vehicle fleet carrying additional payload (84%) produces an overall percentage reduction in costs for heavy EVs of 2.6%.

Given the accuracy of this estimate relies on a large number of assumptions, the Commission has chosen to model a decrease in road transport costs for heavy EVs of between 1% and 4%.

Cost of increased road damage

An important consideration for this reform is that for axle masses above those allowed by the general limits, the relationship between mass and the resulting costs of road damage is convex rather than linear:

Pavement damage is very sensitive to mass, with increases in axle mass over standard axle masses having an exponential effect on pavement wear. (Austroads 2016, p. 21)

²¹ The Commission reduced the maximum payload for each vehicle configuration by 30% of the gross combination mass (also published by the Australian Transport Assessment and Planning Steering Committee) (2016, p. 38). This aligns with the Queensland Transport and Logistics Council's estimation (2022, p. 30) that electric trucks can weigh 30% more than equivalently powered internal combustion trucks.

²² This cost structure is based roughly on guidance on average cost schedules for heavy vehicle owner-drivers published by Industrial Relations Victoria (2024). For a 12-tonne rigid vehicle operating 1672 hours a year, Industrial Relations Victoria estimate a total cost of \$60.97, of which fixed costs are \$15.28 per hour (roughly 25%) and variable costs and labour sum to \$35.89 (roughly 75%). Although this provides a rough indication of typical cost structures across the road freight transport sector, it may be an upper bound on the proportion of total costs which are variable. The largest component of variable costs for trucking companies is fuel (Industrial Relations Victoria 2024), and given electricity is significantly cheaper than diesel, this may mean that variable costs are a lower proportion of total costs for trucking companies with EVs rather than internal combustion vehicles. An additional limit to the estimate is that cost structures likely vary depending on configuration (Industrial Relations Victoria model a higher proportion of fixed costs for articulated trucks than rigid trucks).

²³ For rigid trucks, $75\% \times 8.5\% = 6.4\%$. For articulated trucks, $75\% \times 3.0\% = 2.3\%$. This method assumes a linear relationship between variable costs and kilometres travelled, which reflects the Industrial Relations Victoria modelling.

²⁴ This method assumes road freight costs have a linear relationship with output. There is little evidence in Australia to assess the accuracy of this assumption, although international research (Levinson et al. 2005, p. 9) previously found the presence of constant returns to scale in road freight transport – an increase (or decrease) in output of 1% resulting in a corresponding increase (or decrease) in total costs of approximately 1%.

This means that the marginal road maintenance cost associated with this reform will outweigh average road maintenance costs, and further increases in the steer axle limit will offset (or outweigh) the reforms benefits to a greater extent.

Austrroads (2016) modelled the total financial cost of repairing damage caused by different steer axle mass loads on a total of 25 road segments across five Australian jurisdictions²⁵. The increase in road repairs costs modelled for each segment from a 1 tonne increase in steer axle mass loads varied from 0.2% to 15%, with an average increase of 7.5%²⁶.

Given the variance in marginal road damage costs across the 25 road segments and the lack of evidence available to the Commission to judge which segment(s) are most representative of the heavy vehicle road network, the Commission has chosen to model increases of 5% to 10% in road repair costs attributable to EVs on the heavy vehicle road network.

It should be noted that the estimated percentage increase in road repair costs is for all EVs travelling on roads within the heavy vehicle network, not just heavy vehicles. This is important as the additional damage created by heavy EVs is diluted somewhat by the lack of change in the damage caused by non-heavy EVs (whose steer axle loads do not change).

By using Austrroads' modelling, the Commission has assumed that the percentage increase in road damage from an increase in steer axle mass is equal for EVs and internal combustion vehicles (which are the focus of Austrroads' modelling). The Commission has also assumed that the composition of the EV fleet, particularly the proportion of the EV fleet which are heavy EVs, resembles that of the broader fleet and the proportion of heavy vehicles used in the modelling. Should the heavy vehicle proportion of the EV fleet outweigh the heavy vehicle proportion of the broader fleet, the percentage increase in road damage would also be bigger (and vice versa for a smaller than average proportion). In 2024 the heavy vehicle proportion of the EV fleet (3.4%) slightly outweighed the heavy vehicle proportion of the broader fleet (2.6%) (BITRE 2024b).

CGE modelling results

Given heavy EVs currently represent a very small proportion of heavy vehicles, the Commission has focused its CGE modelling on the potential long-run effects of the reform. The Commission has chosen to model a long-run scenario in which 70% of the total freight task is completed by heavy EVs²⁷, with the remainder being carried by heavy internal combustion trucks and light commercial vehicles (of unspecified engine type). The Commission has also assumed that maintenance costs for repairing the heavy vehicle road network are

²⁵ Austrroads' report examines road segments in New South Wales, Northern Territory, Queensland, Victoria, and Western Australia. South Australia, Tasmania, and the Australian Capital Territory are not covered.

²⁶ The Commission has calculated percentage increases in road repair associated with a 1 tonne increase in steer axle loads using the percentage difference in road repair costs modelled by Austrroads (2016, pp. 57–81) for laden vehicles with steer axle masses of 6 tonnes and 7 tonnes for vehicles using narrow tires and laden vehicles with steer axle masses of 6.5 tonnes and 7.5 tonnes using wider tires.

²⁷ This scenario reflects that some of the freight task is undertaken by other vehicle types, and that in some areas there may be barriers to the uptake of heavy EVs. As previously mentioned, the Commission has estimated that in 2020 95% of the total freight task was completed by heavy vehicles. ABS data (2020) shows that of the total freight task completed by heavy vehicles, approximately 60% was in capital cities, other urban areas, or on interstate routes, with the remaining 40% in other areas including remote and rural areas. With freight carried in urban areas or major interstate routes more likely to have access to necessary charging infrastructure and less likely to be limited by range restrictions, the Commission has chosen to model a scenario in which heavy EVs carry almost all of the freight moved by heavy vehicles in these areas and half of the freight moved by heavy vehicles in all other areas, or around 75% in total. Multiplied by the proportion of the freight task completed by heavy vehicles, this gives a scenario in which heavy EVs move around 70% of freight.

50% of all road maintenance costs²⁸, and that 90% of these costs are attributable to EVs²⁹. Based on these proportions, the Commission has entered the increase in road damage in the higher scenario as a 2.5% decrease in the productivity of heavy and civil engineering construction used by the road transport industry.

The Commission has used the CGE model to examine two scenarios: a higher scenario in which heavy EV transport costs reduce by 4% and road maintenance costs for the heavy vehicle road network attributable to EVs increase by 5%, and a lower scenario in which heavy EV transport costs reduce by 1% and road maintenance costs increase by 10%. Together these two scenarios provide a range for possible outcomes from the effects of the reform on heavy EV road transport costs (reduction of 1%-4%) and EV road maintenance costs (reduction of 5% to 10%).

In the CGE model, the higher scenario produces an increase in GDP of **0.005% (\$134m)**. The small net increase in activity leads to a 0.003% increase in CPI. As the economy adjusts, State and Territory revenue falls by \$40m and Australian Government revenue also falls by \$2m.

The reported revenue changes exclude changes in government spending on road maintenance. This is because the changes in government spending on road maintenance are an input to the CGE model – the results stem from these changes and are in addition to the increased spending on road maintenance. The fiscal effects associated with the shock are not captured in the revenue module and would have to be added manually.³⁰

The lower scenario produces a decrease in GDP of 0.0004% (\$11 million). The reduction in transport costs is offset by higher road repair costs, leading to a 0.005% increase in CPI. Australian Government and state and territory government net revenues fall by \$5m and \$28m respectively.³¹

Together these results indicate that the reform has a negligible net effect on GDP. The gains in productivity are offset by higher road maintenance costs. The Commission notes that this analysis does not include other potential benefits of the reform (discussed earlier but not quantified), such as the benefits of reduced emissions, nor does it account for the value of accelerating transition towards heavy EVs.

In addition, the Commission notes that technological developments could change the relative sizes of the long-term benefits and costs associated with this reform. There is substantial investment globally into research to develop lighter EV batteries (Elmelin 2023). As technology advances the restraints currently imposed on heavy EVs by the steer axle mass limit may become less relevant. There are also possible truck configurations that better distribute engine weight across multiple axles and therefore would allow greater payloads without breaching the current steer axle limit. As the weight of EV engines is also an issue of relevance in other countries, it is possible that technological solutions like these will be progressed as the market and related technology evolve. The analysis presented therefore assumes that the current level of technology (which determines factors such as battery weight) is constant through the transition to EVs.

²⁸ The Commission has chosen this figure in the absence of specific data on the current proportion of road maintenance costs spent on roads used by heavy vehicles or estimates of how this may change as the transition towards heavy EVs progresses. The 50% figure is based roughly on the disproportionate road damage caused by heavy vehicles and the importance of maintaining roads in the heavy vehicle network (which are often key transport routes travelled at high speed).

²⁹ The Commission has based this scenario roughly on Strategy&'s (2024, p. 23) estimation that EVs will reach 90% of the entire vehicle fleet. As explained previously, the percentage increase in road damage costs calculated by the Commission is damage caused by all EVs travelling on roads in the heavy vehicle network (rather than just heavy EVs).

³⁰ That said, additional information would be required to do so. Capturing the fiscal effects across the jurisdictions would require estimating the distribution of damage across the different parts of the network and allocating the additional costs to jurisdictions according to their responsibility for the parts of the network that sustain the additional damage.

³¹ These net changes exclude any increases in road maintenance costs as mentioned above and in footnote 18.

Given the potential for the long-run effects of the reform to be diminished by technological change, the short run effects of the reform, although small, may have significance for whether the reform should be progressed or not. Specifically, if the benefits of a potential increase in the rate of transition towards heavy EVs outweigh any net short-term economic cost, then this may indicate that the reform should be implemented. Given the current EV proportion of the heavy EV fleet is very small, the economy-wide effect cannot be estimated using the CGE model. The Commission notes that the relative sizes of the two effects would remain the same in the short-run – the higher scenario would still lead to an increase in GDP and the lower scenario would lead to a smaller decrease in GDP – however the magnitude of the net effect would be much smaller.

Allowing parallel imports of heavy EVs

The second reform is to remove the restrictions on parallel imports of heavy EVs. The main impact of these restrictions is to prevent the importation of motor vehicles, particularly second-hand motor vehicles (PC 2014a, pp. 154–158). Allowing parallel imports would therefore be expected to reduce the price of used heavy EVs.

There are two main challenges in quantifying the price effect of allowing parallel imports of heavy EVs. First, Australia's used heavy EV market is very niche and the second-hand market for heavy EVs is essentially non-existent (Sibbald 2024). This likely reflects the fact that take-up of new heavy EVs has been minimal, and also mirrors developments in used EV markets overseas (Drive Electric 2023). Consequently, there is minimal price data available in Australia. Second, the heavy EV models approved for use vary significantly across countries (Global Commercial Vehicle 2024), so it is difficult to compare prices of any given model. Given these challenges, the Commission was unable to compare Australia's market to other similar markets without parallel import restrictions to get a precise estimate of the price effect.

For illustrative purposes, the Commission has chosen to model the reform using a reduction in the price of used heavy EVs of 10%. This is based on the price reduction calculated for non-heavy EVs (i.e. all EVs under 4.5 tonnes) of 15% (reform NZ5: uptake of imported EVs). The Commission has reduced the size of the price decrease for other motor vehicles given there may be greater barriers to increased imports of used heavy vehicles, including limited availability of used heavy vehicles suitable to the Australian freight industry and limited supply of used heavy vehicles in general (relative to global supply of other used vehicles). However, as there are limited available insights on the global availability of used heavy vehicles or future heavy EV markets, the price reduction is uncertain.

This methodology also assumes that complementary reforms are introduced to address differences between the ADRs and similar overseas standards which apply to trucks. This includes the steer axle mass limit issue as discussed above, as well as the ADR standard setting the maximum width of trucks that is not aligned with a number of international jurisdictions, including New Zealand. If these complementary reforms are not progressed, used trucks imported from overseas would require expensive adjustments to meet the ADRs, severely diminishing any reduction in price.

CGE modelling results

The Commission has focused its CGE modelling of this reform on a potential long-run scenario. Given heavy EVs are currently a very small proportion of heavy vehicle imports and that used heavy EVs are a (likely very small) subset of these imports, the short-run effect of this reform is negligible.

The Commission has modelled a scenario in which 80% of heavy vehicle imports are heavy EVs³² and 20% of heavy EV imports are used vehicles³³. Under this scenario, a 10% decrease in the price of used heavy EVs in the CGE model produces an increase in GDP of 0.1% and a decrease in CPI of 0.01%. Reducing the cost of EVs boosts output by reducing producers' costs and demand as consumers allocate the savings from cheaper EVs to other purchases.

As GDP increases, household incomes increase and Australian Government revenues from personal and corporate income taxes increase by \$50 million.

On the other hand, a fall in the CPI results in a net decrease in GST and non-GST grants, and an increase in wages (associated with increased demand for labour from increased activity) increases employment costs. Given the weight of GST and non-GST grants in state revenues and of employment in their costs, the modelled changes all contribute to small declines in state and territory net revenues. The rise in activity drives an increase in wages which increases employment costs and is the main contributor to a \$45 million decrease in state and territory net revenues.

These modelling results, including changes in CPI, use a base case in which the transition of road freight to EVs has reached its long-run equilibrium and parallel import of heavy EVs is not possible. The modelling abstracts from any other influences. In particular, the CPI result represents the contribution of the modelled change to a decrease in the CPI, relative to what it would otherwise be. That is, should prices increase for any other reasons than those modelled, the change would moderate that increase.

Impacts on domestic production of heavy EVs

The restriction on parallel imports was originally intended to protect the Australian vehicle manufacturing industry. For the most part, Australian manufacturing of vehicles has ceased over the last decade. However, Australia still manufactures a significant number of heavy vehicles. According to Truck Industry Council (2019, p. 5) estimates, there are three major factories responsible for manufacturing trucks in Australia, which collectively produce roughly 50% of all heavy-duty trucks sold in Australia and employ approximately 36,000 Australians. It is unclear what proportion of these trucks are electric, but given 0.5% of new truck sales in 2023 were low or zero emission trucks (Truck Industry Council 2023, p. 4), it is likely negligible.

Reduced prices of imported heavy EVs would lead to reduced demand for heavy vehicles manufactured in Australia. Although domestic production of heavy EVs is currently negligible, this industry may expand as the transition towards electric heavy vehicles progresses. Reduced demand would reduce profitability of this industry and potentially have carry-through effects on employment and the broader economy. However, if imported used EVs require adjustments to meet the ADRs, this would balance the overall effect on the domestic heavy vehicle manufacturing industry.

Removing the tariff on heavy EV imports

The final reform is to remove the import tariff which currently applies to imports of heavy EVs. Imported heavy electric trucks and buses are subject to Tariff Concession Orders which place a 5% tariff on their import.

The direct effect of removing the tariff on heavy EV imports would be to reduce their price.

³² The Commission has based this scenario roughly on Strategy&'s (2024, p. 23) estimation that EVs will eventually reach 90% of the entire vehicle fleet, which it has reduced to 80% given the increased barriers to the take-up of heavy EVs (relative to other EVs). The Commission has assumed that the long-run steady-state heavy EV percentage of the heavy vehicle fleet will equal the long-run percentage of heavy vehicle imports.

³³ Given the lack of data available on used heavy vehicle imports, the Commission has taken this proportion from its analysis of parallel imports of all EVs under NZ5.

For those heavy EV imports to which the tariff applies, this would simply be a 5% reduction in price. However, the effect of the reform must be calculated using the proportion of imports to which the tariff actually applies. Many of Australia's preferential trading agreements, such as free trade agreements (FTAs), include provisions which remove the 5% tariff from motor vehicles imported into Australia. Australia currently holds FTAs with many countries it imports heavy vehicles from, including the United States, the United Kingdom, and Thailand (DFAT nd).

CGE modelling results

The CGE model database accounts for the effects of FTAs on the average tariff that affects an import. Given this, the Commission modelled this reform by scaling the average tariff rate in the model database by the assumed share of heavy EV imports affected in the total of 'motor vehicle and part' imports. As trucks make up approximately 23% of motor vehicle and parts imports, and assuming in the long-run heavy EVs are 80% of truck imports (as explained under the previous reform), heavy EVs account for roughly 19% of motor vehicle and part imports. This implies a 19% reduction in the weighted average tariff.

In the CGE model, reducing the tariffs on motor vehicle and part imports by 19% leads to an increase in GDP of **0.01% (\$276 million)** and a decrease in CPI of 0.02%. Australian Government net revenues fall by \$1 million due to the loss of tariff revenues and state and territory net revenues increase \$21 million.

This is relative to a base case in which the transition to heavy EVs is assumed to have reached its long-run equilibrium and tariffs on heavy EV imports are not removed.

Combined CGE results

The Commission has also estimated the combined effect of the three heavy EV reforms considered. In the CGE model, the direct effects of the reforms estimated by the Commission³⁴ (under the long-run scenarios considered under each section) produce a total increase in GDP of 0.03% (\$748 million) and decrease in CPI of 0.02%. These results are mainly attributable to the decreases in the price of heavy EVs, since the productivity improvements are largely offset by increased road maintenance costs.

The base case used to produce these modelling results assumes that the transition of road freight to heavy EVs has reached its long-run equilibrium and none of the reforms are implemented (in alignment with the base cases set out in each reform's CGE modelling section).

³⁴ The combined modelling of NZ3 uses the 'higher scenario' effects estimated for the steer axle mass reform (heavy EV transport costs decrease by 4% and maintenance costs for the heavy vehicle road network attributable to EVs increase by 5%).

Reform NZ4 – EV charging

Reform description (provided to the Commission)

Reform:	Adopt consistent policy settings in the national rollout of EV charging infrastructure (EVCI) that promote efficiency and address potential competition risks.
Policy problem:	There are combined efforts across the public and private sectors to expand Australia's EVCI network. In the absence of coordination and proper governance, anticompetitive market structures could emerge that limit access and availability for consumers.
Goal of reform:	Ensure that EV chargers are generally accessible to the growing range of EVs, and ensure that charging is available at competitive prices.

Background

EV charging infrastructure is not widely developed in Australia

Australia's transition to EVs will require an associated transition from petrol stations to EV charging points. Multiple reports, including the Australian Government's National Electric Vehicle Strategy, have highlighted the lack of consistent access to public charging infrastructure as a key barrier to greater uptake of EVs (Australian Government 2023b, p. 30; Electric Vehicle Council 2022, p. 12).

In contrast to petrol bowsers, which must be installed in petrol stations, EV chargers can be installed in homes, workplaces, shopping centres, carparks, and on the side of roads. The availability of public charging infrastructure is particularly important given that some EV users require additional charge to complete trips, and because many Australians living in multi-resident buildings with shared electricity infrastructure may not have access to residential charging.³⁵ Furthermore, public EV charging generally uses direct current (DC). This allows for faster charging times than using alternating current (AC), which is generally used for charging at home (Schmidt 2024b). However, despite the speed benefits and potential for widely available public charging, as much as 80% of EV charging currently takes place at home (Australian Government 2023b, p. 14).

The low proportion of public EV charging is impacted, in part, by the small number of public chargers in Australia. In December 2022 there were more than 4,900 public chargers located at over 2,390 sites around the country (Electric Vehicle Council 2023a, pp. 7–8). By comparison, there are an estimated 7,000 petrol stations in Australia (Purtill 2021).

Incompatible plug types create uncertainty in the EV market

Part of the complexity in ensuring sufficient access to charging infrastructure is that a range of different charging plug types can be found on EV charging ports and charging station connections. 'Plug type' refers to the connection between the charging station cable and the EV (analogous to the connection between a petrol hose and a fuel tank on the side of an internal combustion vehicle). Plug technology has evolved over time, with many different countries and car manufacturers developing their own plug type. To add complexity, some of these plug types are only able to facilitate charging using either AC or DC, which led to the creation of additional plug types which essentially combine AC and DC plug types.

³⁵ Apartments and townhouses make up nearly 30% of homes in Australia (Asher 2023).

The range of charging plugs is generally not an issue for residential charging – EVs typically come with their own charging cable which can connect the car to a generic electrical outlet. However, it is a substantial issue for public charging stations as the EV charging connector must match the charging station plug for charging to occur. Plug charging types are generally not cross-compatible (Antonio 2023).

There is currently no global standard for EV plug types, however the EV industry is gradually shifting towards a few main options (box B2.1). In Australia, the combined charging system type 2 (CCS2)³⁶ has become the dominant plug type.

Box B2.1 – Assessment of current options for a standardised EV plug

The global Electric Vehicle (EV) industry has largely converged towards three charging plug types: the combined charging system type 2 (CCS2), the CHAdeMO and the North American Charging Standard (NACS – the Tesla plug type).

The CCS2 is currently the most common plug type observed in Australia, which reflects its high compatibility with the Australian power grid, its widespread adoption by Chinese EV manufacturers, and that it has been adopted as the standard plug type in the European Union (Baggs 2023; Schmidt 2024b). Tesla also adapts its exports to Australia to facilitate CCS2 charging. Selecting the CCS2 as the standard plug type would therefore maximise the proportion of the current EV fleet that would match the new standard. Potential drawbacks to the CCS2 are its relatively bulky design which uses a greater amount of raw materials than the NACS and therefore may be more costly to manufacture (Kane 2022). The CCS2 also cannot facilitate bi-directional charging under current standards although this issue would be resolved under the reforms proposed in NZ2 (Schmidt 2024b).

The CHAdeMo is the second most common plug type used in Australia. The CHAdeMo is installed on many Japanese manufactured EVs, including the Nissan Leaf which is among Australia's most popular EVs. However, use of the CHAdeMO charging plug on new EV models has fallen (Williams 2021) and EVs with CHAdeMO ports currently makes up a relatively low proportion of the Australian fleet compared to EVs with CCS2 charging. In 2022, just four EV models on the Australian market had CHAdeMO charging ports, accounting for 1,642 total sales (Elliston 2023). One of the key benefits of the CHAdeMo plug type is that it is the only charging connection which can facilitate bidirectional charging under current Australian standards. However, this benefit has effectively been nullified as the only power inverter in Australia approved to facilitate vehicle-to-grid charging (the Wallbox Quasar 2) has been discontinued (Schmidt 2024b).

The NACS is a unique charging plug design that is able to facilitate AC and DC charging via the same charging pins. The NACS was developed by Tesla, who made its design open for other manufacturers in 2022. Since then, over 15 car manufacturers³⁷ supplying EVs to the North American market have agreed to use the Tesla or NACS charging port on new models from 2025, essentially creating an unofficial standard (Beckford 2024; Graf and Fisher 2023). Like many countries outside of North America, the

³⁶ The CCS2 is commonly referred to as the CCS in analysis or commentary on EV charging plug types. However, referring to the CCS2 as the CCS could potentially cause confusion with another charging plug type, the CCS1. The CCS1 uses a similar configuration to the CCS2 for DC charging, but a different AC charging configuration. The Commission has chosen to use CCS2 in this paper to avoid any such confusion.

³⁷ As of March 2024, over 15 car manufacturers have committed to using the NACS plug type on new EVs sold in North America. These include major manufacturers such as Audi, BMW, Ford, General Motors, Hyundai, Kia, Mazda, Porsche, Subaru, Volkswagen, and Volvo (Beckford 2024)

Box B2.1 – Assessment of current options for a standardised EV plug

NACS is not widely observed in Australia (Mulach 2023). This is due to compatibility issues with Australia's power grid. In Australia, AC charging uses three-phase power (a connection system using three wires), which the NACS's two-pin connection cannot support (EVSE Australia 2019; Peacock 2023). Given the importance of AC charging, the NACS does not appear to be a feasible option for the Australian standard plug type (in the absence of technological developments to address the compatibility limitations). Three phase power is also prevalent globally including in Europe, Asia and Oceania (EVSE Australia 2019), which may further limit global take-up of the NACS. Despite this, in 2024 Sony Honda Mobility became the first Japanese manufacturer to announce adoption of the NACS on EV models to be sold in Japan, potentially indicating the capacity for adoption of the NACS in Japan. Given Japan is a major source of both new and used right-hand drive vehicles for Australia, this could have implications for the range of EVs available in Australia and their prices (discussed further in NZ5 – uptake of imported EVs). The hypothetical benefit of adopting the NACS as the Australian standard is that its compact design uses fewer materials than alternative plug types, and therefore may cost less to manufacture (Kane 2022). Tesla also published initial claims that the NACS was 'twice as powerful as [the] Combined Charging System [CCS]' however there is no definitive evidence that suggests any difference between total energy capacity or charging speed (Enphase Energy 2024, p. 8).

The range of plug types observed across the EV market creates uncertainty for suppliers of charging stations as well as consumers of EVs. Suppliers may be less likely to establish new charging stations due to the risk of picking a plug type that could become unpopular in the future. This reduces the coverage of EVCI across Australia. Similarly, buyers may also be less likely to enter the market if they do not want to risk ending up with an EV that is not compatible with future charging stations. The uncertainty created from the absence of a standard plug type is likely distorting the EV market.

Furthermore, low demand for EVs and low supply of charging stations can be self-reinforcing. Supply of EV charging stations may remain low if demand for EVs is low, while demand for EVs may remain low if there is not significant coverage of EVCI.

For this reason, some overseas jurisdictions have adopted a standardised plug type. The European Union has issued a directive that requires, for interoperability purposes, that all DC charging stations have at least one connector fitted with the CCS2 plug type (Directive 2014/94/EU). In North America, car manufacturers have widely agreed to use the Tesla or NACS on new models from 2025 (Graf and Fisher 2023). As part of its National Electric Vehicle Strategy, the Australian Government has committed to collaborating with state and territory governments to ensure consistency in national standards that affect the uptake and use of EVs, and indicated that this would include interoperability standards for charging infrastructure (Australian Government 2023b, p. 4).

An alternate solution which may become more common in the future is the development of EV plug adapters. These adapters may be connected to an EV charging station and allow charging via a previously incompatible plug type. In this way, adapters can future-proof older or less common EVs without needing a costly port upgrade. However, there are inherent difficulties in developing such hardware and they are generally not currently available (Elliston 2023).

The Commission is aware of further issues that may impact the EVCI transition, including competition in the charging infrastructure roll-out. The Commission understands that this issue (and others) are being dealt with through other processes and are not in scope for this study.

Effects of the reform

Direct effect:	More efficient EV charging infrastructure. Greater certainty around access to public charging infrastructure. Greater take-up of EVs.
Parties affected:	Current and prospective EV owners will have greater certainty around access to charging infrastructure. Companies exporting EVs to Australia will have greater certainty around demand for their products.

The direct effect of adopting a standardised plug type would be to require imports of EVs to have the standard plug type and disincentivise the assembly of charging stations with plug types other than the selected standard.

Given the level of complexity in the market for charging plugs (box B2.1) and the lack of comprehensive data on EV charging ports and charging station connectors, it is not possible to meaningfully quantify the potential benefits of this reform. To aid policymakers in deciding whether to proceed with this reform, the discussion below outlines the nature of the key benefits and costs associated with adopting a standardised EV charging plug.

Benefits of adopting a standardised charging plug

Adopting a standardised plug type eliminates some uncertainty that is currently distorting the EV market. Without the risk of picking the 'wrong' plug type, more suppliers will invest in charging infrastructure and potentially more consumers will buy EVs. This will increase the size of the EV market in Australia, improving both EV consumer and charging station supplier confidence, ultimately expanding the coverage of EVCI.

A standardised charging plug type also improves consumer convenience, ensuring all future EVs sold in Australia and all future charging stations installed in Australia are compatible. This would maximise the availability of charging points for all new EV owners as well as current owners with EVs using the standardised plug type. Much like any internal combustion vehicle can go to any of the 7,000 petrol stations in the country, it would mean most EVs can use all charging stations in the country.

Similar benefits from standardisation have occurred for several other products and services, such as mobile telecommunications (GSMA nd), USBs (Frontier Economics nd) and numerous areas of manufacturing (Cawsey 2022). While there are many ways in which the EV market may differ from these examples (such as the price of the product and ease of replacement), they provide helpful insight into the benefits of standardisation in increasing uptake and expanding markets.

A key benefit of expanding the EV market is an emission reduction caused by more electric cars replacing internal combustion vehicles. Numerous studies have shown that EVs replacing internal combustion vehicles can significantly reduce greenhouse gas emissions (Verma et al. 2022). Given that passenger cars and light commercial vehicles make up over 10% of Australia's total emissions (DCCEEW nd), expanding the EV market in Australia and widening the coverage of EVCI would have substantial environmental benefits.

Transition costs for those using non-standard plugs

There will be short-term costs for current owners of EVs with charging types other than the chosen standard. Charging access for these individuals would be limited to currently available compatible stations, and potentially diminished if these public charging stations of non-standard types were removed or converted to

the standard. This would also likely have negative effects on the resale value of their EV and therefore their overall level of wealth. However, the opposite occurs for those who happened to choose the standard plug – they now have greater availability of charging stations and likely higher resale value of their EV.

Furthermore, use of current charging stations with non-standard plug types would fall as a proportion of all public EV charging. This may heavily reduce the use and profitability of particular charging stations or mean station owners incur costs to convert these stations to the standard plug type. However, existing charging station owners would most likely be aware of the possibility of moving to a standard plug, and embed this risk in market prices.

The size of these transition costs will depend on development in the EV market up to the point at which a standard is implemented. If current plug types are adjusted or replaced by new (incompatible) plug types, the range of different plugs on EVs and charging stations will increase and so will the associated transition costs of eventually moving towards a standard. However, if production converges towards one or two main plug types, the diversity of plug types found on EVs in Australia will eventually fall, reducing the eventual costs of transitioning to a new standard. As the market for EVs is currently growing, the absolute number of EVs with plug types other than the standard will grow as the time taken to implement a standard increases.

Risks of adopting a standard too early

The speed in which Australia picks a standard comes at a trade-off between reducing the size of the above costs and risking choosing a standard that differs to the future global market. The earlier Australia picks a standard, the fewer EV consumers and charger suppliers will exist with non-standard plugs (reducing the costs described above) and the earlier the benefits of a standard can be realised. However, Australia is small compared to the global EV market. It may be preferable to wait until the popularity of a particular plug type or technology in the global market is realised before committing to a national standard. Waiting for a global standard avoids the risk of picking a plug type that becomes less popular and more costly in the future. This is particularly significant as models being manufactured with a non-standard charging plug will need to be adapted before being imported. The cost of this will increase the purchase price of these models.

Furthermore, adopting a single standard plug type may mean it is more difficult or costly for Australia to take advantage of future developments in charger plug technology. There are many foreseeable ways that current plugs could be improved – new charging plugs could be cheaper to manufacture, facilitate faster and more efficient charging, and facilitate greater access to bi-directional charging and the benefits of vehicle to grid (NZ2: overseas standards). By adopting a standard charging plug type, Australia potentially limits itself from experiencing the benefits of improvements in plug charger technology (including the possible invention of a new and more efficient charging plug).

Reform NZ5 – EV imports

Reform description (provided to the Commission)

Reform:	Remove barriers that prevent independent EV imports and ensure these vehicles can be used on Australian roads.
Policy problem:	Key barriers to the importation of EVs are restrictive standards, and parallel import restrictions on individuals and businesses.
Goal of reform:	Increase competition in vehicle retail, lower vehicle prices, reduce road transport emissions via faster transition to EVs.

Background

EVs will play a key role in achieving Australia's emission reduction targets. Although take up has expanded rapidly in recent years, EVs still only make up a small proportion of our total fleet and new vehicle sales. In 2024 just 1% of Australia's passenger vehicles were EVs, with a further 3.1% hybrid EVs (BITRE 2024b).

Different demand and supply factors could be contributing to the slow uptake of EVs in Australia.

On the demand side, high cost is among the greatest barriers for consumers in purchasing passenger EVs (DAE 2023, p. 14). However, there are a number of other barriers impacting EV adoption, including driving range, access to public charging infrastructure and the time required to charge (DAE 2023, pp. 14–15). On the supply side, regulatory barriers on EV imports are preventing the introduction of more and cheaper EVs, contributing to higher prices and less choice for consumers.

The proposed reforms target two major regulatory barriers.

1. Parallel import restrictions – As explained under NZ3, the RVSA blocks the parallel imports of motor vehicles. These restrictions apply to all vehicles, including EVs. Parallel import restrictions particularly impact imports of used vehicles (PC 2014a, pp. 154–158).

However, there is one pathway which allows consumers to import a used EV despite the RVSA restrictions. The specialist and enthusiast vehicles (SEVs) register allows for the import of a single used vehicle, subject to a range of eligibility criteria. This includes that the vehicle has not been made available or is no longer genuinely available to Australian consumers as a new vehicle and that the applicant holds a vehicle type approval and therefore satisfies the ADRs (DITRDCA 2024a). Vehicles must also meet one of the criteria listed around a certain aspect of performance, design or rarity. Generally, EVs are eligible for import under the 'environmental criterion', which specifies that vehicles must meet or exceed the current applicable emission standards in Australia.

2. Australian Design Rules – All new road vehicles manufactured in Australia and imported new or second-hand vehicles, must comply with the relevant ADRs and be placed on the RAV before they can be imported into the Australian market (DITRDCA 2024a). ADRs apply to all road vehicles, including EVs. ADRs can differ from design standards adopted in peer countries, creating additional compliance costs for car importers (especially given the relatively small size of the Australian market). While the Electric Vehicle Council reported 91 models of light EVs in 2023 (2023b, p. 15), there are currently around 400 models available for purchase in the European Union (EAFO 2024).

These two barriers are not limited to EVs and affect all road vehicles. Removing the regulatory barriers is expected to decrease the price for both EVs and non-EVs. As a result, it is not clear whether these reforms will increase the uptake of EVs³⁸.

That said, removing such barriers is likely to increase the overall consumer surplus through lower prices and more choice and thus should be pursued. The Commission has previously identified that the non-harmonised ADRs without valid reasons would act as a barrier to trade and create unnecessary compliance costs for both regulators and all road vehicle importers (PC 2014a, p. 162). This reform also aligns with the Commission's previous recommendation that the Australian Government accelerate the harmonisation of Australian Design Rules with the United Nations Economic Commission for Europe (UNECE) Regulations and the mutual recognition of other appropriate vehicle standards (PC 2014a, p. 162).

Further, it is important to consider how these two regulatory barriers interrelate. For example, if parallel imports are allowed, but ADRs do not align with international standards, the benefits associated with parallel imports would likely be reduced.

Effects of the reform

Direct effect:	An increase in the number and a range of models of EVs and non EVs, so long as their global supply is not constrained. All else equal, this should reduce prices.
Parties affected:	Domestic car importers, and related service providers, will benefit from increased imports. Consumers will benefit from lower EV prices and more variety.

The reforms are expected to increase consumer choice as more models become available and lower the price of EVs.

Removing parallel import restrictions

The direct effect of removing the restrictions on parallel imports of EVs would be to increase imports of EVs, increasing the supply of used EVs and reducing prices.

As removing parallel import restriction for heavy EVs (EVs with gross vehicle mass over 4.5 tonnes) has already been examined under NZ3.2, this analysis focuses on all other EVs. This includes electric passenger vehicles and light commercial EVs (such as vans or rigid trucks with gross vehicle mass under 4.5 tonnes).

The Commission has also focused its analysis on vehicles with engines solely powered by electricity, and has not considered hybrid vehicles. Currently hybrid vehicles represent a more energy efficient alternative to internal combustion engines and will play an important role in the transition toward net zero, particularly while EV charging infrastructure is less available. However, as the net zero transition progresses and the infrastructure supporting internal combustion vehicles (e.g. petrol stations) is phased out, hybrids will also likely be phased out.

As mentioned above, limited imports of used EVs are already possible under the SEVs register. In August 2024, 1,380 vehicles (comprising of EVs, hybrids and other low emission vehicles) were imported through the SEVs register under the environmental criterion (BITRE 2024a). BITRE does not report import data by

³⁸ This will ultimately depend on the magnitudes of the effect as well as the cross-price elasticity of demand (substitutability) between EVs and other motor vehicles.

fuel type, and therefore it is unknown what proportion of these vehicles were EVs or what proportion of EV imports came through the SEVs register. For comparison, in August 2024 there were 5,892 new EV sales (Schmidt 2024a). Regardless, the existence of the environmental criterion on the SEVs register may diminish the effects of removing parallel import restrictions for EVs, particularly in the short run. However, as the transition to EVs approaches its long-run equilibrium, a greater proportion of EV models available worldwide may also become available in Australia as new cars. This would decrease the range of EVs eligible for importation under the SEVs register and the significance of the register will fall. The Commission has taken the uncertainty around the magnitude of the effect of the SEVs register into account in the sensitivity analysis for the price shock estimated for this reform (discussed below).

To estimate the likely decrease in the price of imported EVs, the Commission has examined the difference in the price of used EVs in Australia and New Zealand. New Zealand removed its parallel import restrictions in 1989 and therefore provides a comparison point from which to estimate the potential effects of removing parallel import restrictions in Australia. The approach taken by the Commission was to use the price of used EVs in New Zealand as the 'world price', and assume that the price of imports will fall to this price level with the removal of parallel import restrictions (box B2.2).

Box B2.2 – Estimating the reduction in price from removing parallel import restrictions on EVs

To estimate the difference in the price of used electric vehicles (EVs) in Australia and New Zealand, the Commission compared the online listing prices of EVs for sale on carsales.com (Australia) and Autotrader (New Zealand).

To maximise comparability of results, the Commission only compared listings for EVs of identical make, model, and manufacturing year with differences in mileage on 20,000 kilometres or less. The Commission also restricted comparisons to listings published by dealerships rather than by private owners. This may help to limit potential outliers skewing results (for example an individual selling their car cheaply to ensure a fast sale ahead of moving overseas). One key limitation of the methodology is that listing prices may not reflect final sale prices, on which data is not as readily available.

The Commission's analysis found that passenger EVs are on average 18.4% cheaper in New Zealand than in Australia, and that light commercial EVs are on average 7.3% cheaper in New Zealand than in Australia.

Given adoption of EVs into Australia and New Zealand is still relatively low and that the range of models supplied to each country each year has differed, the number of valid comparisons available to the Commission was relatively low. In total the Commission compared the prices of 81 listings across both countries, which spanned seven individual models of passenger EVs (including vehicles produced by Tesla, Nissan, Hyundai, MG and Kia) and 5 models of light commercial EVs (including vehicles produced by Ford, LDV and Mercedes-Benz). Each vehicle had electric engines – internal combustion and hybrid vehicles were not included in the analysis.

The low number of comparison points limits the reliability of the results produced. However, it is notable that the price difference observed is similar to that calculated for combustion vehicles – lower-emitting internal combustion passenger vehicles were 16% cheaper in New Zealand while dual cab utilities were 11% cheaper – for which a far greater number of listings were available (appendix B1 – Business environment).

Box B2.2 – Estimating the reduction in price from removing parallel import restrictions on EVs

For consistency, the Commission has chosen to model both reforms (EVs and internal combustion vehicles) as reducing the price of used cars by 15%, which is within the range of differences found across different vehicle types.

The Commission notes that the low sample sizes available for EVs creates uncertainty around the accuracy of the price differences. Previous reports have looked at the difference in price of used EVs, including the Australian Council for Trade Unions' (ACTU) Inquiry Into Price Gouging, which noted that parallel importing restrictions make second-hand EVs, on average, around 41% more expensive in Australia than in New Zealand (Fels 2024, p. 58). The ACTU did not publish the methodology used to produce this estimate and as such the reason for the large discrepancy with the Commission's estimate is unclear.

There are both merits and drawbacks to the use of New Zealand as a comparison market. Both Australia and New Zealand are right-hand drive markets, meaning that they import vehicles from similar countries and face similar adjustment costs for converting the drive-train of left-hand vehicles. However, demand for and supply of similar types of vehicles may be different in Australia and New Zealand. In addition, Australia is a far bigger market than New Zealand, and it is unclear whether global supply would be sufficient to meet demand from both countries. The majority of the world uses left-hand drive vehicles, and this limits the number of countries from which Australia may source used right-hand drive EVs. In 2021, New Zealand sourced 95% of its used vehicle imports from Japan (Autofile 2023). Should the supply of used EVs from Japan and other right-hand drive countries fall, this may reduce the effect of removing parallel import restrictions. One potential factor is that Japan and the European Union have agreed to collaborate on work to recycle rare metals from used EV batteries (Hayashi 2024). If used EV battery recycling becomes more prominent (either through market forces or by government mandate), Japanese exports of used EVs may fall. In addition, if Japanese manufacturers move to a charging plug that is incompatible with the Australian power grid (box B2.1 under reform NZ4) this may also reduce the supply of used EVs available for import into the Australian market.

As the magnitude of these factors is relatively uncertain, the Commission has been unable to quantify how they might affect the price reduction modelled. However, given the range of potential factors which may diminish the reduction in price of imported EVs (including the SEVs register and the factors explored in the next section on ADRs), the Commission has conducted sensitivity analysis on the modelling results using a smaller price reduction of 5%.

Given a similar reform is also being considered for internal combustion vehicles (reform B7), the effect of the reform on the rate of transition to EVs is unclear. The effect will depend on whether the range of used EVs now available to consumers and the decrease in the average price of EVs (noting that the same decrease in price is modelled for internal combustion vehicles) changes their level of substitutability for internal combustion vehicles.

Harmonising Australian Design Rules

Harmonising ADRs with international standards will likely reduce compliance costs for all road vehicle importers, leading to a fall in prices and more product variety for consumers. Compliance costs would include costs and time incurred to redesign cars to follow ADRs. Government regulatory costs would also fall as internationally approved cars will not have to be re-approved for Australian roads.

It is difficult to assess the magnitude of the effects, as it is unclear to what extent ADRs act as a barrier to the supply of road vehicles (box B2.3), and there is limited evidence on the compliance costs.

Box B2.3 – Do ADRs act as a barrier to the supply of road vehicles?

Over time, Australian Design Rules (ADRs) have begun to harmonise with the United Nations Economic Commission for Europe (UNECE) regulations (the ‘international standards’) due to Government agreements and commitments. However, it appears that Australia still holds an opt-in option for adopting UNECE standards (POA 2017, p. 37) and non-harmonised ADRs remain. The Commission suggested that more than 70% of the ADRs were consistent with UNECE Regulations, and some of the remaining 30% had been superseded by UN-consistent ADRs (PC 2014a, p. 162). While another paper suggested that ‘between 1988 and 2007, the percentage of harmonised ADRs has increased from 60% to 80% [with] this percentage ... still rising’ (DIT 2011, p. 5). As of 2017, Australia had accepted 40 out of 138 United Nations (UN) regulations, with 47 of about 65 ADRs harmonised with the corresponding UN regulations (POA 2017, p. 37). A further seven are partially harmonised, meaning that extra import requirements are needed on top of the UN Regulation to meet Australian standards (POA 2017, p. 37). The Department of Infrastructure and Regional Development (DIRD) explained why Australia has only accepted 40 UN regulations:

There is a whole smorgasbord of UN regulations available. If you look at US regulations, there are about 65. The ADR has about 65. UN regulations have a lot of extra to be picked up, and they also have some old ones that are not used anymore. (POA 2017, p. 37)

One particular ADR which differs from overseas standards is ADR 34: Child Restraint Anchorages and Child Restraint Anchor Fittings. Under ADR 34, passenger vehicles are required to have top-tether anchorage points fitted to three rear seating positions. There is no requirement for top tether anchorage points in most overseas jurisdictions, and vehicle models must be adjusted to meet the ADR before being imported into Australia.

It is unclear whether the Australian Government intends to harmonise all ADRs, and if so, under what time frame. The DITRDCA website states that ‘the Australian Government aims to harmonise our national vehicle safety standards with international regulations’ (2024a), but this harmonisation process started decades ago and is still incomplete.

Some qualitative evidence suggests that car companies have had to delay or not release certain EVs in Australia because of ADRs. For example, the Nissan Ariya electric SUV and the Mitsubishi eK X kei-car were hampered by ADR compliance costs (Carsales 2024; Hagon 2024). Further, a 2018 Regulatory Impact Statement estimated that ADRs cost industry and individuals \$229 per vehicle (or \$230 million in total per year) (DIRD 2018, p. 21) – however, the methodology used was not published and the figure may be an overestimate if further ADR harmonisation has occurred since 2018. Further, it is unclear whether this estimate factored in costs of delays from ADRs.

To the extent that ADRs have restricted new EVs – especially low-price EVs – from entering the market and increased the price of current EVs on the market, this reform could incentivise the adoption and market growth of EVs in Australia. This is likely to be greatest where harmonising ADRs leads to lower relative prices of EVs compared to petrol or hybrid cars.

Harmonizing ADRs can potentially increase the uptake of new EVs through two channels: 1) increase the availability of new EV models— especially low-price EVs and 2) decrease the price of current EVs on the market.

For the first channel, assuming that EV manufacturers incur a fixed regulatory compliance cost whenever they try to introduce a new model into Australia’s market, the compliance cost may increase the cost of selling cheaper EVs proportionally more than selling those more expensive EVs³⁹. Consequently, the high fixed cost of entry can disincentivise manufacturers from introducing cheaper models (Carsales 2024). In this way, harmonizing ADRs can act as a way to reduce the fixed cost of entry.

For the second channel, since harmonising the standards is likely to result in a decrease in price across all types of cars, the effect on uptake of new EVs will be dependent on the relative price drop of EVs compared with other types of cars and the associated cross-elasticity of demand.

Given the lack of quantitative evidence available, the Commission has not chosen to specifically model the benefits of removing ADRs. Rather, the Commission notes that to realise the full benefit of the parallel imports reform, ADRs would need to be harmonised with overseas standards. That is, the full price reduction used in the CGE modelling results below may not be realised if the remaining unharmonised ADRs are not aligned with overseas standards.

CGE modelling results

To understand the long-run implications of this reform, the Commission has chosen to model a scenario in which EVs are 90% of vehicle imports,⁴⁰ and second-hand EVs make up 20% of these imports⁴¹. A 15% decrease in the price of second-hand imported EVs therefore results in a 2.7% reduction in imported vehicle prices.

In the CGE modelling, a 15% decrease in the price of second-hand imported EVs leads to a \$1,095 million increase in GDP (0.04% of GDP) and a 0.04% decrease in the CPI. Reducing the cost of EVs boosts output by reducing producers’ costs and boosts demand as consumers allocate the savings from cheaper EVs to other purchases.

As GDP increases, household incomes increase and Australian Government revenues from personal and corporate income taxes increase. The increase in income tax revenues due to increased activity and incomes contribute to a net increase in Australian Government revenues of \$164 million.

On the other hand, a decrease in the CPI results in a net decrease in GST and non-GST grants, and an increase in wages associated with increased demand for labour from increased activity increases employment costs. Given the weight of GST and non-GST grants in state revenues and of employment in their costs, the modelled changes contribute to declines in state and territory net revenues. The modelling results show a \$124 million decrease in state and territory net revenues.

³⁹ This is also dependent on the expected number of car sales for cheap and heavy vehicles. The fixed cost per vehicle sold will decrease as total sales rise. Assuming cheap and heavy vehicles sell in similar quantities, then the fixed cost will affect cheap car sales to a greater extent.

⁴⁰ The Commission has based this scenario on Strategy&’s (2024, p. 23) estimation that EVs will eventually reach 90% of the entire vehicle fleet.

⁴¹ The assumed proportion of imported EVs which are second-hand is based roughly on the proportion of motor vehicle imports in New Zealand which are second-hand and the respective sizes of the Australian and New Zealand motor vehicle markets. In 2022, 91,781 out of a total 207,673 passenger vehicles imported into New Zealand were second-hand (44.2%) (Moffiet 2023). Given the Australian motor vehicle industry is far larger than the New Zealand industry and that the global supply of used right-hand drive vehicles is limited (Margeit 2024), it is unlikely that Australia would achieve as high a proportion of used imports. The Commission has chosen 20% as a rough estimate of the proportion of used imports possible should parallel import restrictions be removed.

The modelling results, including the decrease in CPI, use a base case in which the economy has reached a long-run equilibrium in its transition to EVs. The modelling abstracts from any other influences. In particular, one might interpret the CPI result in this simulation as contributing to a decrease in the CPI, relative to what it would otherwise be. That is, should prices increase for any other reasons, the modelled change would contribute to moderate that increase.

As discussed previously, there are a number of factors which may reduce the effect of the reform below the 15% decrease modelled above. If, for example, the price reduction was only 5% (a third of the initial assumption), the shock to the average price of the relevant imports would be a 0.9% decrease and the effect on GDP and on CPI would be about one-third of the values mentioned above. This is because the model is nearly linear, especially when shocks are relatively small (appendix C).

B3. Labour mobility

Reform L1 – Restraint of trade clauses

Reform description (provided to the Commission)

Reform:	Adopt a nationally consistent approach to limiting the unreasonable use of restraint of trade clauses, in particular non-compete clauses, in employment agreements to improve job mobility.
Policy problem:	Restraint of trade clauses, specifically non-compete clauses, can hamper job mobility, business dynamism, innovation and wage growth by reducing mobility.
Goal of reform:	Reduce unreasonable restraints that limit the opportunities of workers to job switch when desired (including access to access better, more suitable or convenient jobs), or start their own business. These changes would also allow business to attract the workers they need.

Background

Restraint of trade clauses are clauses within employment contracts that limit what employees can do when their employment ends. Types of restraint of trade clauses include non-compete clauses, client or co-worker non-solicitation clauses, and non-disclosure clauses. The documentation provided to the Productivity Commission about this reform indicated that it is mainly focused on non-compete clauses.

Non-compete clauses are conditions in employment contracts that restrict an employee from moving to a competitor or starting a competing company. They usually define a specific period of time and/or geographic area over which the clause applies after the employee leaves the employer. Non-compete clauses are one tool used to protect an employer's proprietary knowledge, client relationships and contacts, and to incentivise investments in developing workers' skills (Johnson and Lipsitz 2022; Starr 2019, p. 785; Starr et al. 2021, pp. 15–16) (box B3.1). There is evidence that non-compete clauses are associated with firms investing in more training and development, and with sharing private information and client lists (Kini et al. 2021; Starr 2019).

However, there are concerns that the prevalence of non-compete clauses is limiting competition in the labour market. International evidence suggests they restrict the ability of competitors to hire workers and the ability of employees to form a competing firm (U.S. Department of the Treasury 2022, pp. 14–18). They make it more difficult for businesses to attract workers and also reduce workers' employment options, and hence wage bargaining power. Overuse of non-compete clauses will reduce labour productivity. Survey results suggest 46.9% of Australian businesses used some form of post-employment restraint in 2023 (ABS 2024g).

The reform seeks to adopt a nationally consistent approach to non-compete clauses, through placing restrictions or conditions on the allowed uses of non-compete clauses.

Box B3.1 – There are avenues other than non-compete clauses to protect company assets

Firms have a range of options to protect company assets other than non-compete clauses. Non-disclosure agreements can also protect investments in company intellectual property, while clauses requiring non-solicitation of clients and non-solicitation of co-workers protect the investment required to attract clients and employees. However, the success of these types of clauses relies on the ability to prove, to an appropriate legal standard, that a worker has taken the asset. The use of each type of clause differs greatly (see table below), and this suggests that the different roles of each clause remain important to firms, and also suggests that there may be different trade-offs to using each type of clause. However, more information is needed to determine how the costs of using these restraint of trade clauses differ.

Firms used non-disclosure clauses more than non-compete clauses^a

Share of firms	Non-disclosure	Non-compete	Non-solicitation of clients	Non-solicitation of co-workers
Clause was used	45.3%	20.8%	25.4%	18.0%
Clause was not used	43.5%	66.6%	60.2%	66.2%
Unsure if clause was used	11.2%	12.7%	14.4%	15.8%

a. As part of the 2023 ABS Employee Earnings and Hours survey, businesses were asked if any of the four restraint clauses applied to their employees.

Source: ABS (2024, *Short Survey of Employment Conditions*, Cat. no. 6306.0, table 1).

There are other aspects of legislation beyond restraint of trade clauses that can protect company intellectual property. Some avenues to protect intellectual property include patents (Patents Act 1990 (Cth)), trade marks (Trade Marks Act 1995 (Cth)) and copyright (Copyright Act 1968 (Cth)). These laws mostly protect a specific product that a firm creates, and do not provide the same broad protection of company intellectual property and training investment as non-compete clauses do.

Effects of the reform

- Direct effect:**
- An increase in productivity, with estimates of a 0.24% increase for service industries, and 0.14% increase for all other industries (except agriculture, where productivity does not increase).
 - Increase in firm entry, depending on the nature of the reform and how this changes the use of restraint clauses.

Parties affected: Businesses:

- Can access larger talent pools for recruitment.
- Face an increased challenge to retain staff, leading to higher wages.
- Increased competition due to workers setting up competing businesses.

Workers:

- Increased bargaining power, leading to higher wages.

Non-compete clauses are a barrier to labour mobility due to the limits they place on job matching (box B3.2). This reform is about limiting the ‘unreasonable’ use of restraint of trade clauses (focusing on non-compete clauses specifically). This could improve job matching, and therefore labour productivity, through two channels.

- Limiting non-compete clauses in employees’ contracts would increase their ability to switch employers and move toward jobs that better match their skills and circumstances.
- Limiting non-compete clauses from employees’ contracts would also improve their ability to start new firms, again better utilising their skills.

Box B3.2 – How non-compete clauses affect labour mobility

Incidence

A starting point of an analysis of non-compete clauses is how prevalent they are – in other words, the incidence of non-compete clauses. The number of employment contracts containing non-compete clauses is the most common measure of their incidence. The incidence of non-compete clauses can also be a measure of width (which industries and occupations they appear in) and depth (what share of contracts in each industry or occupation have them).

Enforceability

Enforceability refers to the extent to which non-compete clauses in contracts would be legally upheld. When non-compete clauses are challenged legally, they are sometimes found unreasonable and therefore do not legally stop an employee changing employers or starting a competing business. As a result, enforceability is important to consider alongside incidence when estimating the effects of any reform.

Chilling effect

Non-compete clauses also have a ‘chilling effect’ on labour mobility. An employee with a contract that has a non-compete clause will likely reduce their labour mobility - even if this clause is not likely to be enforceable - because there is an uncertain threat of enforceability.

While non-compete clauses do impose costs on employees in the form of reduced mobility, employers could, in principle, efficiently compensate employees for these costs in the form of higher wages. Employers may be willing to pay this additional compensation because non-compete clauses increase the retention of any investments the firm makes in human capital (knowledge or skills), the benefits of which could otherwise be lost when an employee leaves. However, information asymmetries and imbalances in bargaining power are possible reasons why employees may not be efficiently compensated. Information asymmetries occur when one party has access to more information than the other, and can create or exacerbate power imbalances, leading to inefficient transactions. Employers likely have more knowledge about the likelihood of clause enforceability than employees, and potentially more knowledge of how many other employers use these clauses. A survey of employees in the United States found that many workers do not negotiate for higher wages when offered an employment contract including a non-compete clause, and that over 30% of non-compete clauses were given to the employee after they had already accepted a job offer (Starr et al. 2021, p. 8). In any case, non-compete clauses clearly restrict labour mobility.

What are the policy options?

There are several possible policy options for addressing non-compete clauses. Some of these methods have been implemented overseas or are being considered overseas (Treasury 2023c, p. 3).

- **Banning all non-compete clauses:** A ban on all uses of non-compete clauses in employment contracts was announced by the US Federal Trade Commission (FTC) in April 2024 (FTC 2024). The ban applies to all future contracts and the vast majority of existing contracts that contain non-compete clauses.
- **Selective or limited bans:** A ban on non-compete clauses in employment agreements could be applied to employees below an income threshold, or to specific sectors or occupations.
- **Limiting the duration of non-compete clauses:** The UK Government proposed a restriction on the length of non-compete clauses in employment agreements to three months.
- **Mandatory compensation:** Firms wishing to impose non-compete clauses would need to compensate workers for the duration of the non-compete clause.
- **Enhancing transparency about non-compete clauses in employment agreement:** This could be done through public awareness campaigns or obligations on employers to improve clause transparency.
- **Controlling and monitoring the use of non-compete clauses:** This may involve registering the non-compete with the government and monitoring non-compete agreements.

One key factor for ensuring that benefits are maximised is that the chosen policy option should balance the value of protecting employers' knowledge and investments against the objective of increasing labour mobility. As discussed above, non-compete clauses can incentivise firms to invest in employees' training as they reduce the likelihood of employees taking the benefits of training to a competitor, without that competitor having made any investment themselves. This means that the reform is not necessarily about fully eliminating non-compete clauses or achieving the maximum level of labour mobility, but rather about finding optimal arrangements, given these trade-offs. Determining these optimal arrangements was not the focus of this study. That said, it is clear that some policy options would be too blunt to achieve this balance (table B3.2).

How this reform is implemented will affect the magnitude, distribution and timing of the effects. For example, a blanket ban would directly impact industries across the economy, whereas a selective ban might only affect specific sectors. (discussed below).

Some options may also introduce entirely new effects. Some of these new effects are broadly considered to be small or very difficult to estimate, and therefore are not directly considered in the Commission's modelled estimates of the benefits of the reform.

- Economic effects that are difficult to model include changes to firm investment in skills and training, changes to firm investment in capital and changes to job quality. Attempting to quantify these potential costs or benefits in the absence of further data and consultation would be a highly speculative exercise. As an example, there may be welfare benefits generated from increased job quality as individuals find jobs that better match their circumstances. While some of this benefit would be captured in increased productivity, there may be other benefits when an individual can change jobs in response to unsafe or hostile working conditions which are not captured in our estimates.
- Economic effects that are considered too small to materially change modelled results include administrative costs of the reform incurred by government, costs of changes to firm employee turnover and changes to firm and individual legal costs. These costs are not expected to be substantial compared with other effects estimated here so are not included in the computable general equilibrium (CGE) model.

Table B3.2 – Most policy responses do not target unreasonable clause use

Policy response	Does the policy reduce non-compete clause use?	Can the policy target unreasonable clause use?
Increased transparency and information provision	This policy is unlikely to substantially decrease clause incidence and will have no impact on enforceability. Instead, it would help employees understand if their clause is enforceable, reducing chilling effects.	The campaign could be designed to target certain employees and potentially employers that are considered more likely to have or use unreasonable contracts. If the campaign is effective, employees may become more likely to negotiate on the inclusion of a clause in their contract. This would lead to a greater internalisation of the costs of clauses and reduce unreasonable use.
Selective or limited bans	Yes. The policy would substantially reduce the incidence and enforceability of clauses depending on the design.	No. But the design of the ban may mean that a greater share of clauses banned may be unreasonable.
Complete ban	Yes. Clauses would be removed from almost all future contracts, and any remaining clauses would not be enforceable. Chilling effects would also be greatly reduced.	No. All clauses will be in scope, whether they are unreasonable or not. Because this policy can not be designed to target unreasonable clauses, it is not considered in further analysis.
Mandatory compensation	Yes. If the level of compensation required is appropriate, clauses will not be used in cases where the expected gain to the employer does not exceed the expected cost (compensation)	Yes. Most employers will only use clauses where the expected gain exceeds the expected cost (in terms of compensation). If the method to determine the mandatory amount is optimal, it should remove cases where employers use clauses to reduce labour mobility despite the clause providing minimal protection of company investment.

However, given that an implementation pathway has not been nominated, we have not sought to model any specific policy options. Instead, we have modelled what achieving the intended outcome – that is, an uplift in labour productivity while minimising the negative effects on employer investment decisions – could look like. This approach enables us to model the potential benefits of the reform, without necessarily knowing what policy options will be used to target ‘unreasonable’ restraints. In practice, however, as discussed above, achieving this outcome will be challenging.

Estimating the increase in labour productivity

Estimating the effect of non-compete clauses on labour productivity is difficult. Labour productivity measures the amount of output produced for a unit of labour input (output per hour worked is the most commonly used measure). There is limited research that isolates how changes to non-compete clauses change labour productivity. However, there is research that quantifies the effect of changes made to non-compete clauses on more easily observable outcomes, such as changes to wages, job entry and exit and firm entry and exit (Hausman and Lavetti 2021; Johnson et al. 2023; Starr et al. 2018, 2021). The Commission has drawn on the available evidence on changes in wages for use as indicators of changes to labour productivity.

Research on the effect of changes to enforceability captures some clear outcomes

Empirical research that estimates the effects of changes in clause enforceability has historically used individual bans in US states as case studies. While these measurements are useful, recent studies have used the more comprehensive approach of quantifying and comparing enforceability through indices representing laws and policy in multiple states. Using this approach, wage outcomes have been clearly repeated.

Research that follows the method of using aggregated enforceability indices has found that the net effect of reducing non-compete clauses is an increase in wages (table B3.3). However, research on the effect of changes to enforceability of non-compete clauses on prices for goods and services has less clear results, due to the difficulty in isolating the effect of changes due to clause enforceability alone.

An increase in wages was used to estimate a possible increase in labour productivity

The studies in table B3.3 were used by the FTC as evidence to support their finding that ‘non-competes tend to negatively affect competitive conditions in labor markets’ (FTC 2024, pp. 140–143). All of these studies analysed either specific events or enforceability changes in US states. Enforceability indices used in the first two studies are not directly interchangeable with Australian policy and legal settings. Instead, these changes in enforceability indices are used in this appendix as an illustrative way to quantify the potential economic effects of a reform that targets non-compete clause use.

Wage changes are indicators of changes to labour productivity and were used to estimate the size of the labour productivity uplift in CGE modelling. The range of estimates used in the modelling relate to how benefits of the improvement in wages are shared between employees and employers.

The Commission used Johnson, Lavetti and Lipsitz (2023, p. 26) as the benchmark for a potential increase in wages across an industry. We used this study because it was found to provide the broadest evidence by the FTC when they estimated the effect of non-compete clauses (FTC 2023, p. 141). The changes to wages from this study were used to estimate a possible change in labour productivity following the reform’s change to non-compete use and enforceability.

Assumptions were required to apply the findings from the Johnson, Lavetti and Lipsitz study to a CGE model. This was due to the lack of evidence comparing non-compete clause enforceability across Australia to clause enforceability in the United States, uncertainty of the policy change being implemented in this reform, and a lack of empirical evidence measuring labour productivity responses to enforceability changes. As a result, 10% of the wage uplift estimated in Johnson, Lavetti and Lipsitz was applied as an increase in labour productivity. The increase of 10% was chosen to measure the elasticity of any change to economic output in response to any policy change.

The change in labour productivity was distributed in the model as follows:

- ‘high’ clause use industries were assumed to receive a larger increase in labour productivity, as per the 2.4% increase in wages estimated in the study. After applying the 10% assumption, this resulted in a 0.24% increase in labour productivity
- ‘low’ clause use industries were assumed to receive a slightly smaller increase in labour productivity, as per the 1.4% increase in wages estimated in the study. After applying the 10% assumption, this resulted in a 0.14% increase in labour productivity.

Table B3.3 – On average, reducing (the enforceability of) non-compete clauses increases wages

Study and context	Results
<p>Johnson, Lavetti and Lipsitz (2023, p. 26)</p> <p>This study measured how different levels of non-compete clause enforceability effect wages in the US.</p> <p>The study used an index to quantify the enforceability of clauses in different states and across time. A score of 0-10 was assigned across multiple legal dimensions. The dimensions were then weighted and combined to provide a final index value.</p>	<p>The study found that an increase in enforceability results in a decrease in wages for all workers in the labour market.</p> <p>It was estimated that an increase in enforceability from the 25th to the 75th percentile of the index resulted in a 2.4% wage decrease for all workers in industries with high non-compete clause use, and a 1.4% decrease for all workers in industries with low non-compete clause use.</p>
<p>Starr (2019, p. 799)</p> <p>This study used changes in an enforceability index to explain changes in income, mobility and training between states and over time.</p>	<p>The study found a one standard deviation increase in non-compete enforceability was associated with a 1% decrease in hourly wage for all workers. If a non-enforcing state adopts a mean level of enforceability, wages for all workers were estimated to decrease by 4% (p 799).</p> <p>The study also estimated changes in the probability of a worker receiving training. If a non-enforcing state adopted the enforceability of an average state, there is a 14.7% increase in the likelihood of receiving training (p. 796-797).</p>
<p>Lipstiz and Starr (2021)</p> <p>This study measured the effect of one policy – in 2008, Oregon banned the use of non-compete clauses in the contracts of hourly workers.</p> <p>Wage outcomes for hourly workers were compared with control groups of regional neighbours to Oregon (p. 11).</p>	<p>It was estimated that wages for individuals paid hourly increased by 2.3-3.1%.</p> <p>Results showed the increase in wages for occupations with a high rate of non-compete sage (4.5%) was larger than those with a low rate of use (2.3% increase) (p. 13).</p>
<p>Balasubramaniam et al. (2020, p. 9)</p> <p>This study looked at the effect of a specific policy change – in 2008 Hawaii banned the use of non-compete clauses in the contracts of ‘tech sector’ workers.</p>	<p>Monthly worker wages across the entire state of Hawaii increased by 0.7% following the ban (p. 9).</p> <p>Earnings of new hires increased by 4.2%.</p>

There is also a lack of clear evidence estimating how an increase in labour productivity could flow through to a wage increase. The increase in labour productivity may result in an increase in capital – or more specifically profit – as well as an increase in wages. In this case, an increase in labour productivity larger than the increase in wages would be required to result in the increases estimated by Johnson, Lavetti and Lipsitz. In such a case, the gains of an increase in labour productivity would be shared between employees and employers.

Given that changes to labour productivity are the key input being altered in the CGE model, it follows that changes to wages and goods and services prices in relevant industries will be seen in modelling outputs. Any policy that reduces non-compete clauses and produces an improvement in labour productivity will have a range of other broader economic effects. While it is the intention that many of these will be captured in CGE modelling, other economic effects not captured in CGE modelling are discussed in more detail below.

Use of non-compete clauses in Australia

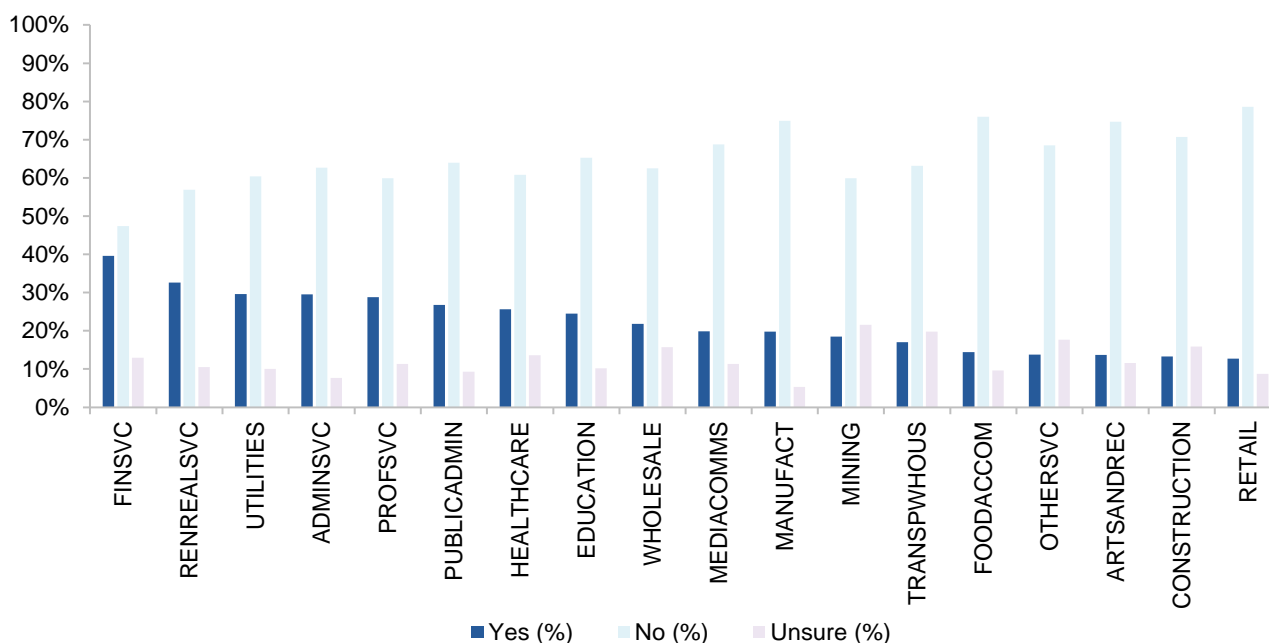
By industry

A breakdown of non-compete use by industry is one way to distribute the effects of any changes to labour productivity more accurately. Changes to non-compete clause use are likely to have greater effects on labour productivity in industries with high levels of clause use when compared with industries with lower levels of clause use.

A 2023 ABS survey asked firms about clauses they had in their employment contract (ABS 2024g). This survey included responses at the ANZSIC 1-digit industry level (figure B3.1). The share of firms that used clauses varies greatly by industry. At the high end of clause use, just under 40% of firms in the financial and insurance services industry have non-compete clauses in their contracts. At the low end, just under 13% of firms in the retail industry used non-compete clauses.

Figure B3.1 – Non-compete clause use varies substantially by industry^a

Proportion of surveyed employers that used non-compete clauses, by industry, 2023



a. ANZSIC 1-digit industry abbreviations: FINSVC - Financial & insurance services; RENREALSVC – Rental, hiring & real estate services; UTILITIES – Electricity, gas, water & waste services; ADMINSVC – Administrative & support services; PROFSVC – Professional, scientific & technical services; PUBLICADMIN – Public administration & safety; HEALTHCARE – Health care & social assistance; EDUCATION – Education & training; WHOLESALE – Wholesale trade; MEDIACOMMS – Information media & telecommunications; MANUFACT – Manufacturing; MINING – Mining; TRANSPWHOUS – Transport, postal & warehousing; FOODACCOM – Accommodation & food services; OTHERSVC – Other services; ARTSANDREC – Arts & recreation services; CONSTRUCTION – Construction; RETAIL – Retail trade.

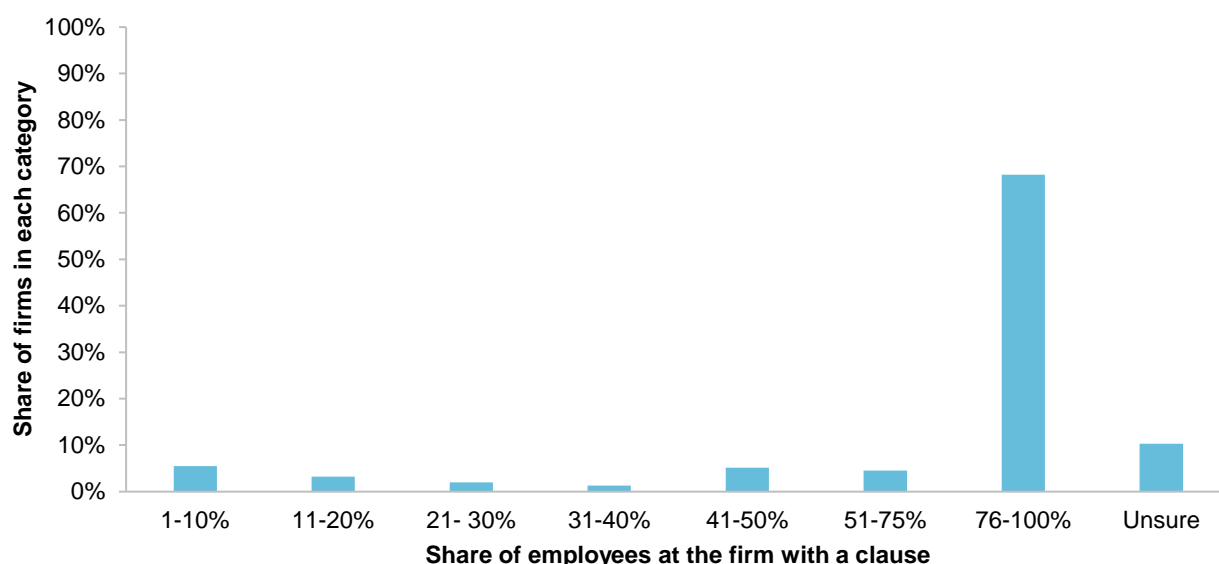
Source: ABS (2024, *Short Survey of Employment Conditions*, Cat. no. 6306.0, table 1).

Data on the use of clauses at the occupation level is likely to be more accurate when assessing the use of non-compete clauses, given there is likely to be a greater variation between occupations within each ANZSIC industry. Unfortunately, the ABS data does not include occupation level figures beyond a breakdown between management and non-management roles.

The 2023 ABS survey also included data on the share of workers in each firm that had clauses in their contracts (figure B3.2). Most firms that did use non-compete clauses used them widely. However, this data is

relatively incomplete, as it only includes responses from firms that did use restraint of trade clauses in their employment contracts.

Figure B3.2 – Most firms that use clauses use them in the majority of contracts^{a,b}
Share of employees with non-compete clauses in their contracts, 2023



a. These responses only include firms that answered that they currently use clauses. **b.** Larger band sizes above 51% were provided in the the ABS data, and cannot be disaggregated further.

Source: ABS (2024, *Short Survey of Employment Conditions*, Cat. no. 6306.0, table 3).

Following the finding in Johnson, Lavetti and Lipsitz (2023) that there are different wage increases for ‘high’ and ‘low’ non-compete clause use industries, we have modelled different impacts on different industries. However, due to the structure of the CGE model used and the lack of available data on clause incidence, it has been assumed that the 24 service industries in the model have a high rate of non-compete clause use, agricultural industries have no non-compete clause use, and the remaining 83 industries have a low rate of non-compete clause use. A full list of industries used in the CGE model can be seen in appendix C.

By jurisdiction

Changes in non-compete clause use will differ across jurisdictions, mostly due to the different distributions of occupations in each state and territory and the different use of clauses in each occupation. These differences mean that a potential reform would produce different economic effects in different states and territories. However, the ABS data does not include spatial information. While this could be imputed by spatial employment by industry data, the level of assumption required in this approach would reduce the accuracy and usefulness of modelled outputs.

Additionally, enforceability of non-compete clauses may also differ based on differences in regulation between states and territories. New South Wales is the only state that has specific legislation on non-compete clauses (Treasury 2023c, p. 3). The Restraint of Trade Act 1976 (NSW) sets out that all clauses are presumed valid unless they are considered to operate ‘against public policy’ (s. 4). While data on different enforcement outcomes in NSW is not available, it is expected that non-compete clauses are more enforceable (and potentially more prevalent) in the state due to the legislation being more favourable toward their use.

Alternative approaches to modelling a change in clause use

An underlying change to productivity may not be the only factor driving the changes to wages that have been captured in existing research.

The change in wages may instead – or also – be driven by a transfer of firm profit to employees, as the bargaining power of employees increases. This would represent removing an economic rent that firms are currently collecting, allowing wages to more accurately reflect the value of an individual's work. The size of this increase in wages could represent the size of the rent, and could be estimated using the increases shown in previously mentioned research.

Evidence on such an effect would be difficult to collect and research estimating the effect was not found. Isolating and measuring a decrease in profits – in response to a change in non-compete clause use – could support this concept, using much the same methods as those used to isolate the effect on wages. There are many factors that contribute to aggregate profits, which makes isolating this effect very difficult.

Modelling results estimate an increase in GDP and decrease in prices

The effect of a potential reform to non-compete clause use was simulated using CGE modelling. The modelling results suggested that increasing labour productivity increases real GDP by **0.2% (about \$5.14 billion)** and decreases prices in the economy by **0.1%**. The increase to GDP and decrease to prices are among the largest of any reform that was modelled as part of this project, reflecting the large share of the economy that receives the uplift in labour productivity.

Improvements in labour productivity decreased the number of labour hours required to produce the same amount of output in those industries prior to the uplift occurring. This resulted in an aggregate increase in economic output and an aggregate decrease in prices throughout the economy.

The modelling also suggested that net revenue could increase by **\$666 million** for the Australian Government and decrease by **\$55 million** across states and territory governments. Again, this was among the largest increases in revenue simulated for any reform that was modelled in this study.

The large increase in Australian Government revenue was mainly due to increased economic output. This increase in economic activity had the effect of increasing income tax revenue. State and Territory Government net revenue decreased, mainly as a result of increased expenses. Increased employee expenses due to higher labour costs, and increases in other operating expenses - in response to increased economic output - were the main contributors to the increase in State and Territory Government expenses.

These results suggest that this reform has the potential to generate large economic benefits. However, the results simulated for this reform do not include effects that could decrease labour productivity (such as a reduction in training). Instead, it is assumed that the reform restricts the use of non-compete clauses which are considered unreasonable or inefficient. As defined previously, for the purposes of this analysis unreasonable clauses are those which reduce labour mobility without being required for the protection of firms. In contrast, some clauses could be considered reasonable if they incentivise firms to invest in intellectual property and training, and if employees are adequately compensated for the inclusion of the clause in their employment contract. A reform that is not focused on unreasonable clauses and also bans reasonable clauses would result in decreased investment in training and intellectual property, and would decrease the magnitude of any potential productivity increase.

Sensitivity tests suggest output and prices respond to productivity changes in a linear fashion

Sensitivity testing for this reform would be substantially similar to the sensitivity testing undertaken for reform L2 (discussed below). This is because reform L2 uses the same shock – an increase in labour productivity – of a

different magnitude and applied to slightly different industries. Sensitivity results for reform L2 found that linear changes to the size of the labour productivity uplift produced relatively linear changes to economic output.

Given that the nature of the direct effects for both reforms is the same (a labour productivity uplift), this implies that the roughly linear relationship between direct effects and CGE modelling results would also hold for this reform. For this reason, sensitivity testing was not undertaken for this reform specifically. Instead, it is expected that a labour productivity uplift that is 75%, 50% and 25% as large as that outlined in this reform would produce a change to GDP, CPI and government budgets that is also 75%, 50% and 25% as large respectively. The lower bound of sensitivity testing for the reform (a shock of size 50%) suggests that real GDP would increase by **0.1% (about \$2.57 billion)** and decreases prices in the economy by **0.05%**.

At the time of report finalisation, e61 institute released research estimating the impact of non-compete clauses on the wages of Australian workers. The study estimated that workers at firms using non-compete clauses extensively are paid 4% less than workers at similar firms that only use non-disclosure agreements (Buckley et al. 2024, p. 6). This wage increase was also used to estimate a corresponding increase in productivity as a sensitivity test. The same assumption was made – as in our central scenario – that 10% of this wage increase is caused by a 0.4% increase in productivity. This productivity change results in an increase to GDP that is 105% larger than (or more than double) the central scenario.

There are some important limitations to this sensitivity test. A policy that results in a 4% increase in wages would most likely involve completely banning clauses, rather than a change in clause enforceability as modelled in our central scenario. Completely banning clause use would also reduce firm investment, the cost of which is not estimated in our central scenario. Finally, the 4% wage increase only applies to workers that most likely have non-compete clauses in their contracts, while wage increase estimates used in our central scenario apply to the entire workforce.

Reform L2.1 – Occupational licensing: streamline requirements

Reform description (provided to the Commission)

Reform:	Remove unnecessary licensing and registration requirements and streamline remaining requirements to ensure they are justified by consumer safety risks.
Policy problem:	Approaches to licensing and registration requirements vary between jurisdictions and may be overly burdensome beyond what is required to prove the worker is safe and competent to practice. This unnecessarily restricts both domestic and overseas-trained workers from entering or moving between professions or locations.
Goal of reform:	Ensure licensing and registration arrangements allow all workers to practice in a job that aligns with their skills and competencies.

Background

Workers are required to have occupational licenses to provide some services in Australia. Requirements and licences themselves can differ between states and territories, which can mean that a license issued in some states and territories may not be recognised in others.

In 2018, the Senate Select Committee on Red Tape found that there is excessive duplication and inconsistency between states and territories. Prior to this inquiry, there had been a previous effort to establish a national licensing system, but Senate Committee participants contended that it had been abandoned due to lack of agreement (Senate Red Tape Committee 2018, p. 14). The inquiry recommended a renewed approach, and this reform effort again sought to achieve automatic mutual recognition of occupational licenses between states and territories (Senate Red Tape Committee 2018, p. 18).

Since 2018, there has been ongoing reform related to the recognition of occupational licencing between jurisdictions. *The Mutual Recognition Act 1992* (Cth) had already allowed some occupational licences to be recognised across state lines, and an amended version remains in force. In 2020, states and territories (with the exception of Queensland) passed legislation to expand the number of occupations recognised as part of the *Intergovernmental Agreement on the Automatic Mutual Recognition of Occupational Registration*. The ACT government did not sign the agreement (Department of Finance 2024b, p. 6) but still passed legislation and participates in the scheme. Queensland is the only jurisdiction yet to have passed legislation related to the automatic mutual recognition scheme, and therefore does not participate. Given reform related to the Automatic Mutual Recognition scheme is already underway, the benefits of the scheme are not in scope for this research. We recommend that an evaluation of the Automatic Mutual Recognition scheme be referred to the Productivity Commission in 2025, in line with the terms of the intergovernmental agreement.

Improving interstate labour mobility was - and remains - the key goal of achieving automatic mutual recognition. While automatic mutual recognition has been achieved for many occupations, some licences are still not recognised between states. Furthermore, other reforms recommended in the Senate Committee inquiry, such as a study by the Council for the Australian Federation on the health and safety benefits of licences (Senate Red Tape Committee 2018, p. vii), are still yet to be pursued (PC 2023c, p. 85). Due to efforts already underway and the expectation of separate review, changes to interstate recognition were not considered to be part of this reform.

In 2023, as part of the Productivity Commission's *5-year Productivity inquiry: Advancing Prosperity*, the Commission stated that prioritising reform of occupational licencing has the potential to substantially improve productivity in services, but a concrete plan with clearer responsibilities between Australian, state and territory governments is required (PC 2023c, p. 85). As part of the inquiry, the Commission simulated reducing unnecessary licencing requirements through an increase in labour productivity. That approach has been recreated here.

Effects of the reform

Direct effect: An increase in productivity of 0.8% for industries with the highest incidence of occupational licencing:

- construction
- transport and wholesale
- professional, scientific and technical services
- school education
- health and social services.

Parties affected: Businesses:

- Increased labour productivity for firms operating in industries that use occupations covered by licencing
- Greater firm level investment to meet demand for capita

Households and firms:

- Reduced prices for labour intensive industries

It is expected that the reform will reduce restrictions on labour mobility in and between states and territories for occupations that require occupational licencing.

Where unnecessary licencing requirements are removed, the cost of working in those professions will fall, which could lower barriers to entry for new workers and reduce ongoing costs for existing workers.

Removing occupational licence barriers will likely increase competition and productivity

Unnecessary licencing requirements are those which impose costs on workers – thus impeding labour mobility – without providing a justifiable improvement in worker or consumer safety. However, determining which licences should be targeted is not in scope for this study. An independent review of the Automatic Mutual Recognition agreement has been scheduled for 2025 (National Cabinet 2020, pp. 5–6) which could provide an opportunity for these assessments to be made. Due to the likelihood of a dedicated review, analysis and modelling of additional recognition of licences between states and territories (beyond those already on Automatic Mutual Recognition (AMR) lists) is not considered in scope for this research.

The main barrier that would be addressed by a reform to occupational licencing is a barrier to entering and remaining in occupations with licencing requirements. If this barrier were to be reduced (or in some cases removed), more positions would become available to workers otherwise qualified to work in these industries. Like the reform proposed for non-compete clauses, more employment positions could become available to workers, and more workers would be available for each position.

The main economic effect expected from this reform is an increase in labour productivity. Given that licencing acts as a barrier to entry and an ongoing operating cost, it can act as a barrier to productivity

growth both within firms and between firms (Bambalaite et al. 2020, pp. 13–15). Within a firm, barriers to entry for occupations used by that firm restrict access to skilled professionals, reduce incentives to innovate and drive an over-reliance on licences as a signal for employee quality. Between firms, licencing can reduce the reallocation of labour toward highly productive firms. This can be a particular issue where professional skills overlap across occupations, creating a situation where otherwise valuable staff are not able to be hired due to a lack of licence.

An increase in labour productivity drives wider economic benefits and outcomes in the economy, and this is the focus of modelling for this reform. The method for quantifying a productivity increase is outlined below. There are other likely economic effects beyond an increase in productivity that were not able to be estimated, and these are also discussed below.

Potential improvements to productivity have previously been estimated

Our method for estimating an improvement in labour productivity due to a change in occupational licencing requirements is based on a study by Bambalaite, Nicoletti and von Rueden (2020, p. 23) that found that a one unit reduction in an indicator measuring the stringency of occupational entry regulations improved labour productivity among 11 European countries by 1.6 percentage points for the average firm. This indicator was developed by the Organisation for Economic Co-operation and Development (OECD) from qualitative data on occupational licenses provided by OECD member countries (box B3.3).

Box B3.3 – An index has been used to estimate the impact of changes to licensing stringency

Quantifying the stringency of occupational licensing is important when trying to estimate the effects of changes to occupational licencing on labour market outcomes. In 2020, The Organisation for Economic Co-operation and Development (OECD) developed an ‘Occupational Entry Regulations’ indicator (OER indicator) for this purpose (von Rueden and Bambalaite 2020, pp. 6–8).

The OER indicator measured legal restrictions to entry for certain occupations, and sums up multiple questions to determine the index value. Legal restrictions to entry meant that certifications were legally required to complete a job, and voluntary certifications were not relevant. Different types of licences (i.e. for supervisors or protected title certifications) were weighted differently to generate indicator values (2020, p. 12). Higher values in the OER indicator imply that occupational entry in a jurisdiction is more difficult due to licencing restrictions, while a score of zero indicates there are no restrictions.

The indicator dataset created did not cover all occupations and countries. Instead, five occupations in professional services, nine in personal services and nurses were covered. Data was collected for 18 OECD countries as well as India and South Africa (2020, p. 9). Existing OECD datasets were used alongside new data collected by country consultants, converting qualitative legal and policy information into scores for the different dimensions.

Matching a change in the indicator to a potential policy change for the purposes of our research is difficult without being able to estimate detailed legal outcomes that arise from a potential policy change.

The Committee for Economic Development of Australia (CEDA) used the OECD stringency indicator (box B3.3) and provided estimates for changes in productivity related to changes in licencing in Australia (2022, pp. 10–11). CEDA estimated that the level of occupational restrictions in Queensland (and for the

professional services sector in New South Wales) resembled those in Germany, which ranked high among OECD countries for personal services⁴² stringency and around the middle of OECD countries for professional services stringency. A one unit decrease in occupational restriction stringency would reduce licensing requirements to the level required in Sweden (which was among the best performing countries in the combined index). As part of CEDA's analysis, such a level of reform was interpreted as being achieved through removing mobility restrictions across all occupations, and removing licensing of taxi drivers, driving instructors and electricians, plumbers and painters. CEDA estimated that if this 1.6% productivity improvement was applied to 15% of Australia's economy the nation would gain up to \$5 billion in output each year (CEDA 2022, p. 11).

Our approach to modelling this reform

The Commission has previously modelled the effect of changes to occupational licensing in 2023 (box B3.4). This modelling looked at the effect a reduction in unnecessary licensing requirements would have on the Australian economy. This approach modelled an improvement to labour productivity in selected industries that were considered most likely to have occupational licensing requirements (PC 2023g, p. 181). For the purpose of this research, we have adopted the same approach to modelling this reform, but using a different CGE model. The choice of model (rather than changes to any inputs) is the cause of any differences in results compared to the Commission's previous work.

Box B3.4 – The Commission has previously modelled occupational licensing

As part of the Commission's *5-year Productivity Inquiry: Advancing Prosperity*, removing unnecessary occupational licensing requirements was one of a range of potential reforms modelled using a whole-of-economy model. This model was very similar to the one used for this project, with some subtle differences. In *Advancing Prosperity*, the simulations were stylised due to a high level of uncertainty in the effects of proposals and other model assumptions (PC 2023c, p. 179).

Effects modelled

In the model, it was assumed that each unit of labour was 0.8% more productive (PC 2023g, p. 21). This estimate used the method developed in research by Bambalaite, Nicoletti and von Rueden (discussed above), which found that a 1 unit decrease in their stringency indicator increased labour productivity by 1.6% (2020, p. 23).

The reform modelled was very general in nature, but was focused on reducing unnecessary licensing requirements to enable better matching of jobs and workers' skills (PC 2023c, p. 181). As is common in many general equilibrium modelling frameworks, the model used for the estimate was broken up primarily by industries rather than occupations. As a result, labour productivity improvements were applied to industries most likely to have occupational licensing requirements. Licensing applies to occupations rather than industries, and applying the productivity uplift to entire industries means that a slightly wider range of occupations are likely to be affected (there are many occupations within one industry). To reflect this, a 0.5 unit reduction in stringency was assumed, which translates to a 0.8% increase in labour productivity.

This labour productivity uplift was applied to the following industries:

⁴² Examples of personal services used here refer to taxi drivers, driving instructors and electricians.

Box B3.4 – The Commission has previously modelled occupational licensing

- construction
- transport and wholesale
- professional, scientific and technical services
- school education
- health and social services.

These industries were considered the most likely to have occupational licensing requirements, and it was therefore assumed that they would gain the greatest productivity benefits (PC 2023c, p. 181).

Effects on Gross Domestic Product and Gross National Income

The Advancing Prosperity modelling showed an increase in real GDP by 0.3% and an increase in real GNI by 0.4%. Sensitivity testing (varying the productivity change to 0.3% and 1.6%) resulted in a range of real GDP results between 0.1% and 0.7%. This was undertaken to demonstrate the uncertainty in the effects of any reform.

Improving labour productivity in the industries listed above led to a fall in labour hours required to produce the same amount of output, reducing prices of goods and services in these industries. More labour intensive industries experienced greater reductions in prices. Greater demand due to the lower prices was induced, and output increased more broadly across the economy in response. This increase in output was in part due to growth in real household incomes, a need for more investment to meet greater demand for capital and growth in government expenditure (tied to GDP).

Other effects

There were varied effects on hours worked. Hours worked in industries with productivity increases fell, but hours worked in other industries (that did not have the increase applied) increased due to greater demand. The net effect across all industries was that total hours worked was largely unchanged.

Real disposable incomes increased across all groups, as did household consumption. This includes all age groups, genders and education levels. For some the wellbeing benefits differed. Those in older age groups enjoyed greater consumption and increased leisure time. The model estimated an aggregate increase in household wellbeing of \$3.3 billion in 2018-19 dollars (PC 2023c, pp. 181–182).

There are likely to be other economic effects from reducing licensing ...

One key outcome of reducing the stringency of licensing requirements is a reduction in compliance costs. These include the costs of administering the occupational licensing system as well as the costs of training required to achieve and maintain licenses, and the cost to people and firms of acquiring and renewing licences. Submissions to the 2018 Senate Committee inquiry referred to compliance costs associated with occupational licensing. The Shopping Centre Council of Australia observed that ‘compliance costs can be burdensome’ and, by way of illustration, estimated members of their association lost 13,800 hours of staff productivity in Western Australia (SCCA 2018, p. 2) due to licensing requirements (such as continuing professional development training). The 2018 Senate inquiry (2018, p. 17) found that the current state and territory led licensing system in Australia remains complex, duplicative, inconsistent and burdensome.

A lack of evidence on the administrative costs of occupational licensing makes estimating the magnitude of any potential cost savings from this reform difficult to measure. As a first step, a clear policy design would

determine which (and how many) licences would be targeted. Gathering information on how this policy should be designed would benefit from a dedicated review. As a result of these challenges, any estimates of compliance costs are not included in the modelling of this reform's effect.

... but the change in safety and quality outcomes is unclear

Estimating any potential change in safety outcomes arising from this reform is difficult. Maintaining safety outcomes and consumer quality assurance are regularly raised to support the existence of certain occupational licences. The 2018 Senate Committee inquiry heard the 'costs of licensing are offset by the delivery of safe and effective trades' (Senate Red Tape Committee 2018, p. 13). In reality, measuring these costs and benefits is difficult for a range of reasons, such as the somewhat complicated relationship between safety and efficiency, the variety of services provided and therefore variety of associated safety risks associated with any one occupation and the ability for high risk ratings to be applied in risk assessments despite limited evidence.

Safety and efficiency objectives are not necessarily in conflict (PC 2023c, p. 66). Licensing that restricts the accessibility of services (due to restricting the number of available workers) can work against quality and safety goals. This is most evident when health and safety outcomes are compromised due to poor quality service delivery and a lack of access to the services themselves. Poor quality service delivery can be the result of poor incentives to produce high-quality work, due to consumer choice being constrained where licensing reduces supply of a service.

To minimise compliance costs, licence coverage should be kept to the minimum necessary level required to achieve the safety or quality benefit. However, determining the minimum necessary level of licencing can be difficult. This is due to the complexity of the relationship between licensing and safety outcomes in some sectors. In building and construction, there is a range of services provided which have safety risks that vary greatly in severity. Quality is verified throughout the production process, through material and building inspections. Finally, customers vary widely in knowledge bases. Customers for commercial construction projects are likely to have lower likelihood of information asymmetry compared with household consumers. However, licences required for commercial construction tasks and licences for residential construction tasks are very similar.

While these principles should guide the design of the reform, accurately predicting safety or quality costs is very difficult. Risk assessments can be used to determine potential safety effects of different licence settings (IPART NSW 2014, p. 45) and could potentially provide a way of comparing potential safety effects to estimate costs. However in many cases a high risk rating can still be assigned with limited evidence (PC 2023c, p. 69).

The effect of risk assessments is shown in NSW, where some building trades continue to be licensed despite their focus on less complex tasks. Even if these tasks are performed poorly, they have a low likelihood of creating significant risks to safety (NSW Fair Trading 2018, pp. 17–18). There have been recommendations made that licences in these low-risk building trades (such as painters and plasterers) are not needed, and are instead regulated through negative licencing (NSW PC 2021, pp. 142–143), which involves stopping businesses from trading if they breach required standards.

It is estimated that the reform will increase GDP and decrease prices

The Commission used CGE modelling for this reform. The modelling results suggested that real GDP could increase by **0.4% (\$10.33 billion)**, and prices in the economy were estimated to decrease by **0.2%**. These results are the largest of any reform modelled as part of this study, due to the very large share of the economy that receives a productivity uplift.

Labour productivity uplifts were applied to industries that are estimated to have the greatest incidence of licencing (outlined above). The effects of a change to labour productivity play out differently in different industries, in part due to the distribution of the productivity uplift, and in part due to the structure of different industries. Resources (capital and labour) in export-orientated industries are drawn toward industries that had a productivity uplift applied (construction; transport and wholesale; professional, scientific and technical services; school education; health and social services). Given the expansion in output, net revenue increased for both Australian government and State and territory governments. Increased revenue was driven primarily by reduced spending on personal benefits, and higher income tax revenue.

Estimated economic effects were slightly different to those in the Commission's 2023 productivity review. Modelling previously produced by the Commission estimated an increase in GDP of 0.34%, which is slightly below the 0.39% estimated in this simulation. As outlined above, these differences are purely due to changes to the model itself rather than changes to any input assumptions.

The modelling undertaken for this study suggested that net revenue could increase by **\$1,225 million** for the Australian Government, but decrease by **\$144 million** across states and territory governments. The decrease in revenue is in part due to the nature of the CGE model used to generate these results (discussed below).

These results suggest that a reform that effectively reduces the incidence of unnecessary licencing would have large economic benefits. However, these results are general in nature and the ability to achieve these outcomes depends on the design of the policy and its implementation. This simulation assumes that only unnecessary licence requirements are removed, either due to the wider recognition of licences (beyond AMR lists) or the removal of some licencing requirements entirely. More evidence is needed to understand the costs and benefits of licences to determine cases in which the benefits of removal exceed the costs of reduced safety or reduced information provision.

Sensitivity testing was undertaken for this reform. Results of linear changes to the size of the labour productivity uplift produced relatively linear changes to economic output (table B3.4). The columns show the effects of changing the shock to labour productivity, that is 75%, 50% and 25% of the uplift modelled in the main scenario (100%). The sensitivity testing results show that the effect on GDP and CPI of varying the initial shock is linear.

Table B3.4 – Sensitivity test results

Measure	100% shock	75% shock	50% shock	25% shock
GDP increase due to reform (\$ million)	10,333	7,750	5,167	2,583
GDP increase due to reform (%)	0.39%	0.29%	0.19%	0.10%
CPI change	-0.19%	-0.15%	-0.10%	-0.05%

Source: Commission estimates.

States and territories only receive a small increase in revenue as a result of this reform. However, to test the validity of this result, the same scenario was run using the Victoria University Regional Model (VURM) and a net revenue increase to states and territories was estimated (table B3.5). While economic output and price outputs remained relatively similar, VURM uses detailed state level labour markets and this was the main driver of differences in taxation revenue modelling. VURM also has a more detailed list of occupations included within it, which along with the regional labour markets means that employment bases are dispersed and smaller. These smaller employment bases mean that changes to wages seen in response to the labour productivity shock are greater.

Table B3.5 – GDP, CPI and government revenue results from different CGE models

		<i>Shifting the Dial</i> (2023)	PC National	VURM
Macroeconomic effects				
GDP	%	0.34	0.39	0.35
CPI	%	-0.20	-0.20	-0.14
Changes in net revenue				
Australian Government	\$m	n/a	+774	+604
State and Territory Governments	\$m	n/a	+48	+794

Source: Commission estimates.

Reform L2.2 – Occupational licensing: conflicts of interest

Reform description (provided to the Commission)

Reform:	Reform the structure and governance of national professional bodies that make occupational registration and licensing decisions to address conflicts of interest.
Policy problem:	Approaches to licensing and registration requirements vary between jurisdictions and may be overly burdensome beyond what is required to prove the worker is safe and competent to practice. This unnecessarily restricts both domestic and overseas-trained workers from entering or moving between professions or locations.
Goal of reform:	Ensure licensing and registration arrangements allow all workers to practice in a job that aligns with their skills and competencies.

Background

The governance that determines how occupational licences are granted is complex. Commonwealth, state and territory governments along with professional associations all play roles in decisions around the design and award of licences, and licensing bodies. Occupational Licence Advisory Committees develop and update licensing policies for each licensed occupation through the *Occupational Licensing National Law Act 2010* (Cth) s. 134. These committees are made up members from national peak bodies such as unions, occupational professional associations, consumer advocacy organisations, bodies that regulate the occupation and bodies involved in the national training system. However, the role of granting licences differs between occupations. In some instances, professional associations play a key role in determining who is able to receive an occupational licence.

Professional associations are usually made up of already qualified employees and employees within their respective profession. As a result, they have direct knowledge of and experience within their respective occupations. Associations can draw on this expertise to determine who can receive a licence and what that licence should allow.

However, there also exists the potential for a conflict of interest when professional associations make licensing decisions. Licensing has a large influence on the supply of professionals within a respective profession, and any decisions that restrict supply have the potential to increase wages above what they would otherwise be for those already in the profession. This barrier to entry has the ability to reduce competition for relevant employment positions.

Evidence of potential conflicts of interest in an Australian context is not immediately apparent. Likely as a result, there also has been limited policy activity related to reforming or regulating professional associations. The exception to this is the introduction of regulation to govern licencing decisions for health-related occupations (box B3.5).

The proposed reform would look to review and then potentially reform professional bodies where barriers to entry are due to conflicts of interest rather than being set at appropriate levels to maintain a professional standard. Requirements such as those in the National Law that ensure that health profession boards do not have more than two thirds of membership as practitioners has been given as an example of a possible reform to manage this conflict of interest for other sectors. Requirements for competition experts on boards could also be considered, with the OECD in 2020 stating members from 'competition authorities, experts in

economics and advocates of consumer rights would help balance the interests of the public on licencing boards' (OECD 2020, p. 123).

Box B3.5 – Ahpra uses boards with consumers and professionals to grant licences

The health workforce operates under a National Law scheme, with each State and Territory Government enacting consistent legislation in 2009 and 2010 (Parliamentary Library 2023, p. 1). There are 16 health professions regulated under the scheme, and each is required to maintain a national board made up of both professionals and community members (Ahpra 2024). The National Law (a set of nationally consistent laws passed in each state and territory, such as the *Health Practitioner National Law Act 2010* (Qld)) designates the Australian Health Practitioner Regulation Agency (stylised as Ahpra) as the agency responsible for providing a framework under which these boards operate. Ahpra manages applications for the registration of health practitioners. Meanwhile, the National Boards set registration requirements and standards, and approve accreditation (Ahpra 2020, p. 16). Boards include a variety of health and professionals, and at least one third of board members must be community members (Ahpra 2020, p. 19).

The success of Ahpra in increasing the number of licenced professionals is not entirely clear. In 2023, the independent review of Australia's regulatory settings relating to overseas health practitioners (Kruk review) was undertaken to increase the number of skilled health professionals. It was found in the review that there had been shortages of health practitioners in all states and territories, with 44% of vacancies remaining unfulfilled (2023, p. 3). To address these issues, the review recommended steps to streamline licence application settings, in particular for overseas applicants (Kruk 2023, pp. 8–10). While difficulties in finding health practitioners were not directly attributed to Ahpra in the review, recommendations were made to improve the process of registering practitioners, in particular from overseas. In response, Ahpra announced the overseas applicants would no longer need to attend in-person to have their registration granted. Ahpra noted that in 2022--23, there were 19,288 new registered health practitioners from overseas, representing a 92 per cent increase on the previous financial year. In ongoing efforts to improve qualification recognition, Ahpra also stated that they would continue working with 'partners across the health system, including specialist medical colleges, to improve the experience of overseas-trained doctors seeking registration' (Ahpra 2023).

Effects of the reform

Overall, there is not a good evidence base to conclude that there is a clear policy problem. First, there is a lack of publicly available evidence that conflicts of interest are driving adverse occupational licensing outcomes. Second, given the confidentiality of reforms, the Commission was unable to conduct public consultation or engagement on this topic. This has constrained its ability to find new evidence beyond what is available publicly, and test any potential analysis. This is not to rule out that conflicts of interest could be adversely affecting licensing decisions; it is merely to say that such claims could not be substantiated as part of this study.

In the absence of this evidence or any specific data to inform assumptions, this reform was not modelled. Given the lack of information about which occupations (if any) are affected by the conflicts of interest, attempting to introduce reforms runs the risk of yielding net benefits that are close to zero – or possibly negative.

The remainder of this section discusses the in-principle case for reform, in areas where the policy problem is found to exist.

Conflicts of interest, if they exist, would decrease labour supply

- Direct effect:** Supply of professional services may increase due to an increased number of occupational licences granted.
- Parties affected:** Workers within occupations being reformed:
- Average wages may fall
- Workers entering occupations being reformed:
- Wages increase for those that are granted the additional licences in these occupations
- Consumers:
- Wider economic benefits as labour supply increases in these selected occupations
 - Price of services may fall and/or industry innovation may rise

The influence professional associations have on how occupational licensing is set is complex and varies depending on the occupation and relevant association. It is the role of State and Territory Governments ultimately to decide and regulate occupational requirements. State and Territory Governments therefore determine if there is a need for an occupational licence, and determine how licensing requirements should be set. However, professional associations contribute to these decisions - in varying ways.

When professional associations have substantial control on the licensing standards required, they can directly or indirectly control how many applicants can qualify for a licence, or who can apply for a licence. This could allow for preferential treatment of certain groups. In principle, this could be achieved by setting qualification requirements that are unnecessarily high or placing implicit or explicit caps on the number of qualifying applicants.

Reducing the number of applicants that can qualify for an occupational licence increases the barriers to entry for an occupation. Overall, this means that the number of licensed professionals would be lower than otherwise, which may mean that demand for professional services exceeds what can be supplied by the limited number of licensed professionals – leading to higher prices for professional services. For some occupations, this could be driven by a shortfall of labour supply relative to demand – that is, employers are not able to hire as many licensed professionals as they would like. Where this occurs, this would result in higher wages overall, which in turn drive higher prices for professional services

It follows that measures to address these conflicts of interest would remove the artificial constraint on the number of licensed professionals. This would increase the supply of professional services, leading to lower prices for those services. Overall, this would have a small effect in lowering the cost of living for households.

A clear understanding of the policy problem is the first step in progressing reform related to conflicts of interest in occupational licencing. Understanding the policy problem will help determine what type of policy could be effective in addressing potential conflicts of interest in the licencing system. A review of specific occupations could be one way to identify possible policy problems, and a wider systemic (and public) review may also be needed to develop effective policy responses.

B4. Human services

Reform H1 – Matching

Reform description (provided to the Commission)

Reform:	Facilitate the availability and accessibility of service information to better match service users to providers across the health, care and support sectors.
Policy problem:	Users of health, care and support services do not always have the information they need to make informed decisions about their care, which can result in poor outcomes and dull incentives for service providers to innovate and improve the quality of their services.
Goal of reform:	Health and care services users can make informed decisions about the provider that best meets their needs, incentivising innovation in service delivery over time.

Background

Across the health, care and support sectors, information on service providers is not always available or easily accessible to service users (and, where applicable, their families, carers and support workers). When information about the different types of care options, their price and quality is unavailable, there can be suboptimal matching between service providers and users, or low-quality providers can continue to operate in a subsidised market. Once information is publicly available, technology can facilitate comparisons of price and quality, helping to improve the match between service users and providers. The Productivity Commission has previously recommended that governments strengthen their commitment to public reporting with the aim of better supporting patient choice and encouraging performance improvement (2017c, p. 354).

The reform has been framed as a broad direction with specific details yet to be decided. Nevertheless, the information provided to the Commission about the reforms notes that actions could include:

- reforming policy, regulation and laws to remove unnecessary barriers to technology that provides information on options for care, availability of service providers and ability to match user needs to these services. This could include reviewing data sharing arrangements, regulations and laws to ensure there are no barriers to private entities setting up platforms
- identifying and implementing government-led technological solutions where there are insufficient incentives for private solutions
- sharing existing data on provider performance where safe to do so, or developing alternative quality metrics
- supporting the private development of technology that provides information on out-of-pocket costs.

Key sectors for consideration under this reform are health, care and support services where a choice of provider is available (for example, private hospital services but excluding public hospital services). This

includes general practice, specialist medical and allied health services, as well as any support services provided under the National Disability Insurance Scheme (NDIS), Department of Veterans Affairs (DVA) or at-home aged care support arrangements.

Information about the reforms provided to the Commission noted that the reforms could build on existing tools targeted at service users (for example, the NDIS registered provider finder) and expand to other sectors (for example, addressing the limited technology solutions and support available to connect veteran card holders with health providers that deliver treatment under DVA arrangements).

Governments do not make all information available to the public

Information about the quality of service providers is often collected by the government for internal reporting, however, it is not always available to the public. For instance, in 2009, Australian Health Ministers agreed state and territory hospital mortality data should be gathered and presented to hospitals for regular review (SCRGSP 2024, p. 120). The hospital mortality indicators endorsed by Health Ministers include 'death in low mortality diagnoses related groups', 'hospital-standardised mortality ratios' and 'in-hospital mortality for four specified conditions' (acute myocardial infarction, stroke, fractured neck of femur and pneumonia) (ACSQHC 2014, p. 3). However, only New South Wales reports publicly, and this is only on selected mortality measures (SCRGSP 2024, pp. 121–123). Moreover, the New South Wales report does not include all relevant risk factors such as sociological and environmental factors. As such the indicators are not suitable for direct performance comparisons and are more appropriate for trend analysis (SCRGSP 2024, p. 121). Reform could involve making the hospital mortality reports public in other jurisdictions, as well as including appropriate risk factors.

Effects of the reform

Direct effect: Improved matching between service user and provider, leading to improved health outcomes.

Parties affected:

Service users:

- improved health outcomes.

Service providers:

- poor providers exit the market leading to improved quality.

Consumers can make more informed choices

Health and care services users do not always have the information they need to make informed decisions. Consumers can face information asymmetries resulting from a shortage of information about the options available and uncertainty about the pricing, out of pocket costs and the performance or quality of service available. A lack of choice or insufficient information can lead to sub-optimal outcomes for consumers who do not receive the quality of service they desire. Choice is important because it empowers users of human services to have greater control over their lives, enables people to make decisions that best meet their needs and preferences and generates incentives for providers to be more responsive to their needs (PC 2017c, p. 5).

Informed consumers who have access to information can find services providers that better suit their needs. (Beckert et al. 2012, p. 404; CareQualityCommission 2017, p. 4; Gaynor et al. 2012, p. 1). When information is accessible, the reduced search costs help consumers choose a provider that best meets their preferences. However, the release of quality information does not cause a large response from consumers.

- Studies have found that very few patients changed health insurance plans when presented with quality information (Beaulieu 2002; Chernew et al. 2008, p. 171; Jin and Sorensen 2006).
- Pope (2009, p. 1155) found that the average US hospital experiences a 5% yearly change in non-emergency Medicare patient volume due to changes in performance rank.

Consumers typically prefer the view of their friends, family or general practitioner (GP) (Day and South 2016, p. 11; Victoor et al. 2012). This highlights the value in GPs having access to the information, to help inform their referrals and to provide advice to patients.

Although only a relatively small fraction of consumers respond to information, they value it highly. For example, one study found that to avoid health plans with bad ratings, some consumers were willing to pay US\$330. (Chernew et al. 2008, p. 156). Moreover, for many health and care services, users will not change providers after the first match (for example in aged care). This limits their ability to learn about the quality of care available; however, it also means that improved matches will result in sustained long-term benefit for consumers.

The release of health information can help improve equality in the health and care sector. Research in the United Kingdom suggests that patients with higher incomes have better private information about GP quality and that patients with lower income benefit the most from the provision of public information (Brown et al. 2023, p. 33).

Providers are incentivised to improve quality of service

For service providers, evidence suggests that publicly reporting information about provider quality leads to self-improvement (Campanella et al. 2016; Chen 2010, p. 10; Lamb et al. 2013; Totten et al. 2012, p. 27) or for poor providers to exit the market (Jones et al. 2017, p. 118). For example:

- following the release of quality information, New Yorkers were at lower risk of mortality such that patients in other states were 52% more likely to experience short term mortality in cardiac surgery after adjusting for patient risk factors (Hannan et al. 2012, p. 2312)
- public reporting for 259 US hospitals of life saving heart failure outcomes led to an increase in best practice, resulting in the mean length of hospital stay decreasing by 1.3 days (Fonarow et al. 2007, p. 1497).

There may be unintended consequences

The success of reforms to facilitate better matching of users with service providers is not guaranteed as matching solutions can be ineffective. For example, previous Australian attempts to address these issues have been unsuccessful. The \$24 million Medical Cost Finder website contained fee information for only 20 doctors out of a possible 36,000 specialists after five years (Australian Government Department of Health and Aged Care 2021; Pocock and Kelleher 2024, p. 14). Similarly, a review into the Australian aged care star ratings found 'no evidence to suggest the Star Rating system achieved its stated objective of being clear, transparent or effectively driving improvement' (Jilek 2023, p. 11).

Reforms can also run the risk of unintended consequences, including negative health outcomes for patients. There are risks that increased demand for high quality healthcare providers will result in long wait lists and patients delaying care. Furthermore, high-quality doctors may move to the private system where they can charge higher prices. As a result, patients in the public system may receive lower-quality care. This is supported by evidence from China where doctors who received high ratings increased their prices and provided less free care (Zhan et al. 2024, pp. 21–22).

Another possibility is where healthcare providers avoid risky patients to ensure their metrics remain favourable. This occurred in the United States where cardiac surgeons were found to deny surgery to high-risk patients due to the public disclosure of surgical results (Burack et al. 1999, p. 1195). In the short run it had particularly

detrimental welfare outcomes with increased frequency of heart failure for sicker patients and ultimately higher total costs of care (Dranove et al. 2003, p. 558). This is relevant to the proposed reform, as the lack of a uniform adoption by all states and territories can result in high-risk patients being forced to travel to other jurisdictions where health outcomes are not reported in order to receive health care (Omoigui et al. 1996). However, this risk can be mitigated when performance metrics are adjusted for patient risks.

Unintended consequences can also arise from the influence and market power of private technology platforms. The gig economy can provide flexibility helping to match service users and providers, but it can also negatively affect job conditions including security and entitlements (James 2020, pp. 144–187). These platforms also put the onus of care on the individual provider which can leave the user exposed if something goes wrong.

Estimating the impact of the reform is difficult

Overall, uncertainty about how service users and providers will respond to the provision of information makes it difficult to accurately model potential outcomes. The reform could have positive, negligible or negative effects which complicates computable general equilibrium (CGE) modelling. This reflects the mixed evidence on the impact of reforms in health care as well as other sectors (box B4.1). For example, information on service quality and relative prices can theoretically increase the efficiency of the health care sector (Barros et al. 2016). If prices are understood by consumers and quality is observable, evidence suggests that competition will positively impact the quality of care in the sector (Barros et al. 2016, p. 230). However, prices could also increase for higher-rated facilities, reflecting a reputation premium and raising equity concerns (Chen and Miraldo 2022).

Determining an accurate counterfactual is also challenging as private solutions may emerge without government intervention. For example, the platform Mable allows users to find information on, and connect with, support workers providing in-home or community care and support across Australia. Moreover, members of some private health insurers can access discounted services (BUPA nd; HCF nd; Medibank nd), such as a dental check-up, with certain health providers. While the quality of these providers is not officially endorsed by private health insurers, there is an incentive for insurers to encourage their users to access higher-quality health care in order to minimise future insurance claims.

Box B4.1 – Information provision in other markets has had mixed effects

Information provision in other markets has had mixed effects. In petrol markets, some research has found price transparency has led to lower prices and savings for consumers (Griffith University 2021, p. 30). However, other research has found that greater information provision aided tacit collusion leading to higher prices for consumers (Byrne and De Roos 2019). Releasing information can in principle have a detrimental effect because matching platforms not only reduce information asymmetries between consumers and providers, but also between competing providers, which can reduce price competition between firms (Albæk et al. 1997). While price dispersion tends to decrease, the average price and the profit margin can increase due to supply-side coordination (Luco 2019, pp. 278–279). It is unclear what will occur in health and care services as, unlike petrol markets, service offerings are not identical substitutes and hence harder to compare.

Efforts to promote competition in other areas of human services have also had mixed results. For example, the Australian My Schools website provides data on how schools perform, however families often do not move to high-performing schools or leave low-performing ones (Jensen 2013). School

Box B4.1 – Information provision in other markets has had mixed effects

choice programs, such as removing zoning, school vouchers and charter schools which encourage schools to compete for students have shown negative or at best mixed results (Harrison and Rouse 2014; Windle 2009). Reforms in TAFEs and employment services have also faced challenges (Anderson 2005; Education and Employment References Committee 2014, pp. 25–36; Select Committee on Workforce Australia Employment Services 2023, pp. xii–xiv).

This suggests that similar public information provision reforms in health care may also have unintended consequences. Overall, it is difficult to conduct accurate modelling due to uncertainty about the impact of the reform.

Illustrative CGE modelling

Given the uncertainty about the effects of this reform, the Commission has undertaken CGE modelling to illustrate the potential flow-on economic effects of implementing the reform. In this scenario, we assume that this reform leads to improved health outcomes as users find a provider that better suits their needs. The result is an improvement in their health care, with no unintended consequences. This improvement leads to a reduction in absenteeism which can be modelled as an improvement in labour productivity.

The magnitude of the labour productivity improvement is unclear. However, assuming the reforms increase labour productivity by 0.1% across all industries, the CGE modelling indicates that real gross domestic product (GDP) increases by about \$2.6 billion (0.1%) and consumer prices decrease by 0.05% in the long run.

Increasing the effective supply of labour across the economy attracts foreign capital and increases output. Output prices need to decrease to be able to sell this additional production, whether via export or on domestic markets. Lower output prices underpin the reduction in the consumer price index (CPI).

The revenue implications are driven by the increase in the value of economic activity. Improved labour productivity increases wages and the amount of foreign capital. The associated increase in income increases income tax collections which contributes to most of the \$347 million increase in revenue to the Australian Government. Limited increases in the value of consumption and a decrease in the CPI contribute to the small increases in state and territory revenues, whereas small increases in wages contribute to the small increases in states and territory expenditures through their employment costs, resulting in net revenue decreasing by \$35 million.

These results assumed an increase in labour productivity of 0.1%, however the reforms could lead to increases in labour productivity of a larger or smaller amount. The economy-wide effects of other changes to labour productivity can be approximated by scaling the CGE results above. For instance, if reforms were to achieve half of our illustrated improvement, that is, a 0.05% improvement in labour productivity across the economy, then the GDP increase would halve to \$1.3 billion and the increased net revenue for the Australian Government would also halve to \$174 million.

Given the uncertainty about the effects of the reform, the Commission has also modelled a decrease in labour productivity reflecting the potential for adverse outcomes. Detrimental outcomes could include an increase in absenteeism following a deterioration in healthcare quality. This may occur if, in response to a 'provider rating system', service providers try to retain a favourable ranking by refusing to serve high-risk patients. Alternatively, increased information provision could lead to service providers colluding on prices or providers exiting the public health system making health care less accessible for communities with limited financial resources.

The magnitude of labour productivity decline in these scenarios is unclear. For illustrative purposes we have assumed a decrease of 0.1% across all industries, however any actual decrease in labour productivity could be larger or smaller. In the model, real GDP decreases by \$2.6 billion (0.1%), CPI increases by 0.05% while revenue for the Australian Government would decrease by \$346million but increase for the state and territory governments by \$35 million. In absolute terms, the results for a 0.1% decrease in labour productivity is identical to a 0.1% increase. This means that, the economy-wide impact of a negative impact from this reform will be exactly as large as an equivalent positive impact. Further negative decreases in labour productivity can be estimated by approximately scaling the CGE results. The potential for negative economy-wide effects reflects the downside risk of this reform and should be considered when evaluating the possible benefits.

Reform H2 – Labour Mobility

Reform description (provided to the Commission)

Reform:	Remove unnecessary barriers to labour mobility in the health, care and support services, including barriers to workers performing their full scope of practice.
Policy problem:	Regulatory barriers can unnecessarily restrict workers from performing the full range of tasks they are qualified and competent to provide, within and across health, care and support services, exacerbating labour shortages and leading to poor outcomes for Australians unable to access appropriate services.
Goal of reform:	Workers with appropriate credentials will be able to enter, move between (including across borders) and work across the health, care and support sectors, performing the full scope of practice aligning to their credentials. This will improve options available to these workers and improve access to timely and high-quality care for Australians.

Background

Demand for healthcare workers is expected to increase due to a growing and ageing population, rising levels of chronic conditions and workers wanting more flexibility (Kruk 2023, pp. 3–4). The result is a current shortage of health and care professionals in certain parts of Australia which is anticipated to grow (AIHW 2024b; Botha et al. 2024). To help address these workforce shortages, this reform aims to remove unnecessary barriers to labour mobility in health, care and support services, including barriers to workers performing their full scope of practice.

There are several ways in which requirements for health, care and support sectors have been identified as unnecessarily restrictive.

- Some practitioners are not working to their full scope of practice due to restrictions on the tasks they are permitted to carry out and funding arrangements. A health professional's scope of practice means the professional activities for which they are educated, competent in, authorised to do and accountable for.
- Some regulations restrict movement between sectors or between geographical locations within Australia.⁴³

Regulatory requirements should aim to ensure quality and safety in health, care and support services without unduly restricting the ability of appropriately credentialed professionals to work to their full scope of practice across relevant sectors throughout Australia.

Reforms could include clarifying the roles workers are accredited to provide by establishing a single source of truth regarding scope of practice and screening checks within Australia. They could also explore removing unnecessary barriers to workers performing their full scope of practice and expanding the scope of nurse practitioner services, allied health professionals, pharmacists and paramedics. The independent review *Unleashing the Potential of our Health Workforce – Scope of Practice Review* is currently underway and may yield further recommendations in this area (Cormack 2024a).

⁴³ Restrictions on mobility across geographical locations within Australia is explored in Labour Mobility Appendix.

Key sectors for consideration under this reform are health, care and support sectors (both publicly and privately provided). This would include general practice, specialist medical and allied health services, as well as any support services provided under the NDIS, DVA or at-home aged care support arrangements.

Effects of the reform

Direct effect: Improved efficiency in the health care and support system as health professionals provide higher value-add services leading to lower costs.

Parties affected: Service users have more choice and may receive better healthcare.

Health care workers:

- Higher morale and reduced staff turnover
- Changes in workforce composition
- Can facilitate multidisciplinary care teams.

Increased scope of practice has the potential to increase access to services and reduce cost. When health professionals work to their full scope of practice, they utilise all of their skills and knowledge and are able to work on higher value-adding activities. This leads to more efficient and effective care. For instance, a nurse practitioner working to their full scope can diagnose conditions, prescribe medication and manage patient care. This reduces the need for multiple appointments with different service providers, saving time for both the patient and the healthcare system.

Health professionals working to their full scope of practice also allows patients to conveniently access comprehensive services. For example, a pharmacy might not only dispense medication but also provide health advice, administer vaccinations and conduct health screenings. This means patients can access a range of services in one location, making access to health care more convenient.

Service providers working to their full scope of practice can improve user access to health care and support services. For example, in rural and regional areas nurses may not be able to perform skin checks due to medical indemnity coverage (Cormack 2024c, p. 18). The result is that the user either travels to another service, or on some occasions goes without the service.

In addition to improvement in health outcomes, scope of practice reform can reduce staff turnover and health costs (Poghosyan et al. 2017; Weidner et al. 2018, p. 201) and for some health professions, reduce rates of burn out (Weidner et al. 2018, p. 203; Zomahoun et al. 2021, p. 19).

Given the broad range of sectors that may be in scope for this reform, it is not possible to capture the full range of costs and benefits that could result. The Commission has taken a case study approach to modelling this reform to illustrate some of the potential costs and benefits, focusing on nurse practitioners and community pharmacies.

Case study: expanding the scope of practice for nurse practitioners

Nurse practitioners have been providing nursing care to the Australian community for more than 20 years (Australian Government Department of Health and Aged Care 2023c, p. 13). Nurse practitioners are trained to provide high levels of clinically focused, autonomous health care for both acute and chronic conditions across all geographic locations in Australia and within all settings including aged care, primary care, mental health, private practice and hospital care (Australian Government Department of Health and Aged Care 2023c, p. 13). Their role remains under-utilised across the Australian health care system due to scope of practice limitations when compared to the United States, Netherlands and Canada (Maier et al. 2016; Middleton et al. 2016). This occurs due to legislative, policy and funding barriers such as access to the

Medical Benefits Schedule, the Schedule of Pharmaceutical Benefits and the Repatriation Schedule of Pharmaceutical Benefits (Australian Government Department of Health and Aged Care 2023c, p. 28; PC 2023a, p. 12). These barriers may contribute to other health professionals and the public being unaware about the skills of nurse practitioners (Dwyer et al. 2021), contributing to their underutilisation.

Scope of practice reform for nurse practitioners could help alleviate the pressures facing the healthcare system. Domestic and international evidence suggests that nurse practitioners are as effective and efficient, and in some circumstances may perform better than doctors (Laurant et al. 2018, p. 7; Masso and Thompson 2014, p. 3; Stanik-Hutt et al. 2013, p. 498). A study has also found that nurse practitioners are less likely to report an intent to leave when they work for organisations that support their independent practice, suggesting improvements in workforce retention which may lower labour costs (Poghosyan et al. 2017).

Nurse practitioners can also help alleviate workforce shortages in rural and remote Australia (Cormack 2024c, p. 55). Over 30% of nurse practitioners currently work in regional, rural or remote communities where people often face difficulties accessing healthcare services (Australian Government Department of Health and Aged Care 2023b). By expanding their scope of practice, nurse practitioners can help increase service provision to areas where access to providers, such as GPs, is limited (Xue et al. 2018). This can improve health outcomes but also reduce costs as it can allow for early identification and intervention of health issues. The Commission has estimated the potential benefits of improving access to health services in rural and remote areas across several reforms in box B4.2.

Estimating the benefits from nurse practitioner scope of practice reform in General Practice

Scope of practice reform for nurse practitioners will reduce costs. In the absence of nurse practitioner scope of practice reform, patients will put extra pressure on more costly parts of the health system such as overtime for GPs, outpatient hospital care and emergency care. Alternatively, patients may be unable to access primary care and forgo the health service which may lead to more expensive health care later on. This is particularly relevant given the current shortage of primary care staff in parts of Australia (Australian Government Department of Health 2021, p. 16) and will be exacerbated by the increased demand for primary care staff (AMA 2022, p. 20). The increased demand for health care will lead to increased costs, however scope of practice reform for nurse practitioners can be a more cost-effective way of delivering care which leads to savings for the government.

Scope of practice reform will increase the prevalence of nurse practitioners (Kuo et al. 2013). This can be seen in the United States, where between 2010 and 2021, the number of nurse practitioners increased from 56,000 to 270,000. In contrast, the number of GPs only increased from 209,000 to 268,000 (Agency for Healthcare Research and Quality 2018; National Center for health workforce Analysis 2023). While the expansion of education programs have contributed to this increase (Auerbach et al. 2020, p. 273), it has been most substantial in states with the least scope of practice restrictions (Reagan and Salsberry 2013, p. 392).

In Australia, we would expect to see similar workforce composition changes such that the number of nurse practitioners increases from the 1,744 full-time equivalent (FTE) currently employed (Australian Government Department of Health and Aged Care 2023b). This could partially occur as scope of practice reform may attract more health professionals to the nurse practitioner profession and encourage retention among the broader nurse profession (Poghosyan et al. 2017, p. 3). The increase in nurse practitioners would not replace GPs; rather, they would work in collaboration with GPs to address the increased demand for primary care. The collaborative work will also allow GPs to focus on complex patients while nurse practitioners are able to treat patients that are less complex (Cody et al. 2020, p. 10).

CGE modelling and results

To estimate the economic savings for CGE modelling purposes, we have considered the current 29,215 FTE GPs (Australian Government Department of Health and Aged Care 2024a) and 1,744 FTE nurse practitioners (Australian Government Department of Health and Aged Care 2023b) for a total workforce of 30,959. Daele et al. (2010, p. 33) suggests a ratio of one full-time nurse practitioner employed per four GPs and 20 nurse practitioner consultations per day. This suggests that nurse practitioners could comprise 20% of the workforce. With current employment levels this suggests there could be 6,192 nurse practitioners, 4,448 more than currently employed.

Following scope of practice reform, evidence from the United States suggests that salaries for nurse practitioners will increase by 14%, while salaries for GPs will decrease by 7% (Kleiner et al. 2016, p. 500). Hence, we expect a nurse practitioner salary to increase from \$140,000 (Seek 2024b) to \$160,000 and a GP salary to decrease from \$370,000 (Seek 2024a) to \$345,000. In the absence of nurse practitioner scope of practice reform, we assume the health system will need to pay for additional GPs which are \$185,000 more expensive than a nurse practitioner. This is a lower estimate compared to other more costly alternatives such as GP overtime, hospital emergency or patients forgoing medical treatment in the short term. This \$185,000 saving across each of 4,448 new nurse practitioners equates to estimated savings of approximately \$823 million.

For the purposes of modelling this reform, we considered what the economy would look like if this reform had already been implemented. That is, if nurse practitioners made up 20% of the workforce, this would lead to savings of \$823 million. This was implemented in the CGE model as an equivalent reduction of 'rents' to health staff. In practice, however, implementing this reform would not replace existing GPs with nurse practitioners. Rather as demand for health care increases, the number of nurse practitioners would also increase such that the workforce composition eventually reaches 20%. We have modelled the reform as nurse practitioners replacing GPs, as the CGE model is calibrated to the current demand levels in the economy. As such, savings based on forecasted primary care demand into the future would lead to inaccurate CGE results.

In the modelling, scope of practice reforms for nurse practitioners increases real GDP by \$1,172 million (0.04%) and decreases consumer prices by 0.09%. The decrease in costs for primary healthcare staff directly reduces expenditure for governments and consumers, who can reallocate expenditures to other goods and services. The decrease in health care costs is the main driver of the \$196 million increase in net revenues for the Australian Government. A small decrease in wages accounts for most of the decreases in state and territory expenditures and a \$171 million increase in state and territory net revenues.

To determine a lower estimate, we explore the possibility of convergence in wages between nurse practitioners and GPs, a possibility suggested by Perry (2009, p. 500). For instance, the difference in salaries over time could halve to approximately \$90,000. With 4,448 nurse practitioners, the estimated savings would be approximately \$400 million per year. In the model we observe an increase in real GDP of \$567 million (0.02%) and a decrease in prices of 0.04%. Revenue for the Australian Government would also increase by \$95 million and revenue for state and territory governments would increase by \$83 million.

Expanding scope of practice for pharmacists

Many countries, including Australia, have recognised the opportunities to expand the scope of practice for pharmacists to take on some low complexity health care that has typically been provided by GPs (PC 2017h, p. 81). A low complexity case involves only one problem that can be treated with one or two medications and requires no referral or further investigation.

A successful example of this expansion of scope of practice is community pharmacists being able to administer vaccines (PC 2023a, p. 81). As a result, pharmacy vaccination was able to be included in the COVID-19 vaccine national roll-out strategy which notably assisted with the roll-out in regional and remote areas (Hunt 2021).

Another scope of practice expansion has involved trials for prescribing low risk medicines in some Australian states. This began in Queensland with trials of community pharmacy management of urinary tract infections. Evaluation of the program found benefits for patients and pharmacists because of improved accessibility and convenience, while adhering to clinical protocols (Nissen et al. 2022, p. 53). There has been disagreement amongst major stakeholders, including peak medical bodies that represent doctors and pharmacists respectively (Toomey et al. 2022), and the Commission has suggested that further trials should be conducted (PC 2023a, p. 84).

Case study: allowing innovations from hospital pharmacies to be implemented in community pharmacies

Further scope of practice reforms in community pharmacies could involve implementing tech-check-tech (TCT), a process that allows a pharmacy technician to perform the final check of medications prepared by another technician (Tarver et al. 2017). Pharmacy technicians are qualified and trained to fill and label patients' prescriptions under the supervision of pharmacists. A pharmacy technician holds a TAFE-level qualification (Cert III or Diploma), but not an undergraduate pharmacy or nursing degree (The Society of Hospital Pharmacists of Australia 2021, p. 4).

TCT is currently implemented in some Australian hospitals and several studies have found no adverse health effects in hospital settings (Ambrose et al. 2002; Andersen et al. 1997; Becker et al. 1978; Spooner and Emerson 1994). The international literature on TCT in community pharmacies is not as robust as TCT in the hospital setting however studies have found that patient safety is not compromised (Frost and Adams 2017). The prevalence of TCT could be expanded in Australia through reforms to scope of practice. This could align Australia with the United Kingdom, Canada, New Zealand and some US states (Frost and Adams 2017; The Society of Hospital Pharmacists of Australia 2024, p. 5).

Estimating the savings from TCT in community pharmacies

The benefits from expanding the scope of practice of pharmacy technicians to allow tech-check-tech in Australian community pharmacies could lead to cost savings. For example, in the United Kingdom pharmacy technicians earn an average salary of £28,600 (Talent.com 2024b) which is 57% of the £50,000 average salary of a community pharmacist (Talent.com 2024a). The United Kingdom has 6,327 FTE pharmacy technicians and 20,489 FTE pharmacists working in community pharmacies (Health Education England National Health Service 2021, p. 2). Reforms in Australia could result in a similar workforce composition. There are currently 21,655 community pharmacists involved in the dispensing and accuracy checking of prescribed pharmaceuticals and 35,174 community pharmacy sales assistants who work in a retail capacity (Pharmacy Guild of Australia 2024, p. 4).⁴⁴ A change in workforce composition could involve 30% of the current pharmacy workforce being replaced with pharmacy technicians. This would lead to a cost saving of 12.8%.

⁴⁴ A pharmacy sales assistant can accept prescriptions that will be filled by retail pharmacists. They can also advise customers on the correct application and storage of medicines and sell goods such as non-prescription drugs, first aid supplies, toiletries and cosmetics. (ABS 2022).

Based on 18,662⁴⁵ FTE retail pharmacists, earning an average salary of \$80,000 (Pharmaceutical Society of Australia 2024; Seek 2024c), the total labour remuneration is around \$1.5 billion. As such, a 12.8% reduction in labour costs would correspond to savings of around \$200 million.

Some of these cost savings would be passed on to consumers, either through the cost of medicines under co-payments or through other retail products sold in pharmacies. These cost savings are in addition to other benefits, such as freeing up pharmacists' time to focus on other clinical activities (Tarver et al. 2017) and facilitating additional pathways to start a career in the community pharmacy sector.

CGE results

Reforms to community pharmacy scope of practice were modelled as a reduction in labour costs associated with community pharmacy staff. In the CGE model, this was implemented as an equivalent removal of rents of \$200 million.

The modelling suggested that the economy-wide effects of scope of practice reforms for pharmacy technicians would lead to an increase in real GDP of \$33 million and a decrease in prices of 0.03%. The decrease in labour costs in retail pharmacy reduces expenditure for consumers. This saving for consumers allows them to purchase other goods and services resulting in an increase in output and decrease in real prices. The modelling also suggested that revenue would increase by \$104 million for the Australian Government and decrease by \$21 million for the state and territory governments. We did not calculate a lower estimate as the reform has minimal economy-wide effects.

Removing restrictions on labour mobility

Some regulations restrict movement between sectors and/or between geographical locations within Australia. This can arise where regulations have been developed on a sectoral or jurisdictional basis. For example, while there is a national scheme that conducts criminal history checks for registered health professionals, worker screening checks – such as working with children checks or a vulnerable people checks – are not recognised between jurisdictions (Australian National Character Check nd). In some circumstances, the applicant may need to physically be in the state to complete a character check. For example, it is not possible to apply for a New South Wales working with children check when outside of the state (New South Wales Government Office of the Children's Guardian 2024). This disincentive to moving states delays people entering the labour market and inhibits labour mobility. A further discussion and modelling of similar issues that relate to the automatic mutual recognition of occupation licenses can be found in LM2.1.

Barriers to labour mobility can also exist where jurisdictions have different regulations. A practitioner may be endorsed to prescribe through the relevant national board; however their jurisdiction's drugs and poison legislation may limit their scope of practice. This can lead to inconsistencies across jurisdictions. For instance, a health professional may be able to administer vaccines in one health practice, but not another (Cormack 2024b, pp. 12–13). This creates confusion for workers and patients and limits labour mobility between jurisdictions.

Labour mobility can also be inhibited when barriers are put in place that impede workers moving between sectors. For example, across aged care, disability support and veterans' care, similar services are provided, however there are separate and overlapping regulatory frameworks (Australian Government Department of Health and Aged Care 2021). This can be confusing to workers, however it is unclear if the inconsistency is a

⁴⁵ Commission calculations estimated using ABS Census 2021 place of enumeration hours worked for based off ANZSCO 251513 retail pharmacist.

major barrier as 88% of staff working in veteran's care also work in aged care and/or the NDIS (Australian Government Department of Health and Aged Care 2021, p. 5).

Similarly, requirements to work as an early childhood teacher can vary between jurisdictions (PC 2024a, pp. 191–192). This can lead to situations where an early childhood teacher moves to another jurisdiction and is unable to teach as their qualification is not recognised. These inconsistencies between jurisdictions inhibit labour mobility.

Improved labour mobility can help to alleviate current and forecasted workforce shortages. This occurs as workers can more easily move to sectors or locations where there is highest demand. Workers are also free to move into jobs that better suit their needs, such as providing higher pay or more suitable working conditions such as hours of work, workplace flexibility, job satisfaction or security. Due to these benefits, unnecessary regulations that inhibit labour mobility should be removed.

However, there are a number of important considerations in implementing this reform. For instance, there may be valid reasons behind the regulatory differences, reflecting the unique requirements for each sector, or jurisdiction specific needs. Alignment can also limit innovation, as small-scale trials become more difficult as new reforms now require agreement from all jurisdictions. For instance, the initial urinary tract infection (UTI) prescription trials in Queensland (Queensland Government Minister for Health and Ambulance Services 2022), which have been followed in other jurisdictions, may not have been possible if all jurisdictions had to simultaneously implement trials (ACT Government 2023; New South Wales Health 2024; Sanderson 2023; South Australia Health nd; Tasmanian Government Department of Health nd). Moreover, future reforms may be more challenging as it would require agreement across all jurisdictions. A final risk is that the alignment across sectors/jurisdictions takes a lowest common denominator approach, where alignment is achieved by removing beneficial reforms, rather than ensuring that every jurisdiction adopts the best regulations. These factors do not imply that steps should not be taken to improve labour mobility by improving regulatory alignment, rather they underscore the uncertainty involved in modelling the reform.

Reform H3 – Access arrangements

Reform description (provided to the Commission)

Reform:	Reform market access arrangements (including commissioning and other approaches) for human services to improve market functioning and better address thin markets.
Policy problem:	Markets for human services can be thin where there is insufficient supply or demand for competitive market arrangements to occur. Market access arrangements can also restrict providers for a service, which at times may limit choice for users and further restrict competition.
Goal of reform:	Best practice approaches are used to develop, design and implement market arrangements that harness competition either for or within the market as appropriate, supporting sustainable delivery of essential services.

Background

The aim of this reform is to implement best practice market access arrangements for human services to improve market functioning and better address thin markets. Market access arrangements determine who can provide government-funded (or subsidised) services. In some cases, arrangements can unduly restrict competition, which limits choice for service users. When service users do not have the choice to change providers, this can result in poor-quality service providers persisting (PM&C 2023, p. 45). Although there appears to be a broader appetite for reform for market access arrangements, information provided to the Commission about the intended scope of this reform focussed on thin markets, so this is the focus of the Commission's analysis.

Thin markets in Australia

In the case of thin markets, where the demand for services is very low, highly specialised, or spread out across large areas, there may be insufficient incentive for providers to establish services. A lack of economies of scale can result in the cost of delivering the services being higher than customers are willing to pay (PC 2024a, p. 312). This can have a number of negative consequences. If supply in a market is not sufficient, there may be consumers with unmet demand, lower-quality services, less choice and higher prices. This can particularly affect people living in regional, rural and remote areas, Aboriginal and Torres Strait Islander people, culturally and linguistically diverse people and those with the most complex or specialised needs (PC 2017f, pp. 268–269).

Key sectors for consideration under this reform are health, care, support and social services. This includes support services provided under the NDIS, DVA or at-home aged care support arrangements. Previous research has identified and explored the challenges of thin markets for human services in Australia. The Commission summarised evidence of thin markets for disability support, demonstrating issues with supply risks and unmet demand for these services, particularly in rural and remote locations. Similarly, DVA emphasised the importance of improving access to mental health support for veterans in traditionally thin markets in regional and remote Australia (DITRDCA 2022). Previous Commission consultation as part of the *Disability Care and Support* inquiry highlighted that people outside of major cities often go without support or travel long distances at considerable expense to receive supports (PC 2011a, p. 139).

Addressing thin markets

In addressing thin markets, there are several challenges that make it difficult to achieve desired outcomes. Workforce shortages can add to the difficulties in recruiting and retaining staff, communities may be geographically isolated and the costs to deliver services may be high. Improving access to health services in rural and remote areas is a long-standing and unsolved problem that has received considerable attention over the years (AIHW 2024d; Nous Group 2023).

Further, there is a need to build the evidence base of what works. Some trials have been undertaken in Australia. For example, the Australian Government is currently undertaking trials on integrated commissioning, where providers are funded to deliver cross-sectoral services in thin markets (PM&C 2023, p. 17). The National Disability Insurance Agency (NDIA) thin market trials found that coordinated funding proposals and direct commissioning are promising approaches to increase participant use of NDIS supports in thin markets. The evaluation noted that direct commissioning may be more successful for some types of supports, and in remote and very remote locations if market conditions are unfavourable for coordinated funding proposals. However, more evidence is required to further test this conclusion (NDIA 2023, p. ix). Further, on average, there was no statistically significant impact on the use of NDIS supports from their market facilitation projects (NDIA 2023, p. 9). Overseas, Hudson (2011) provided some examples of successful joint commissioning⁴⁶ of health and social care in England, although it noted that there is little evidence that gains from joint commissioning have been widespread. Any future reforms should use this evidence base to make informed changes to market access arrangements for human services, and continue to build the evidence base.

To improve outcomes in thin markets, the information provided to the Commission noted that reforms could include development and implementation of a best practice guide. The best practice guide could cover how to define a market to ensure economies of scale, the advantages and disadvantages of different market mechanisms and the circumstances when they would be appropriate, and approaches to commissioning and contracting that look at cross-sectoral and cross-jurisdictional delivery of services.⁴⁷ In terms of implementation, the focus of the reform is on trials, evaluation and building an evidence base. Opportunities for regulatory harmonisation will also be considered.

Reforms for market access arrangements, such as the development and implementation of a best practice guide, also provide an opportunity to improve awareness and use of culturally appropriate services in thin markets. For example, challenges with thin markets for human services are particularly prevalent for Aboriginal and Torres Strait Islander communities (PC 2017f, pp. 268–269). The NDIS review noted that the limited availability of culturally appropriate care may mean Aboriginal and Torres Strait Islander NDIS participants have to choose between supports that are not culturally safe or not getting funded supports at all (NDIS Review 2023, p. 20). It is important for policy makers and human services providers to understand, listen to and work with communities to action their priorities. Policy makers need to balance potential trade-offs between promoting competition and building a community network that works together. The Commission found in its *Review of the National Agreement on Closing the Gap* that in some instances, competition can reduce or limit the availability of culturally safe services (PC 2024f, p. 355). This can build on work currently underway by the NDIA on taking a ‘whole-of-community’ approach to service provision, by listening and responding to community priorities to build a strong and culturally relevant NDIS (NIAA nd). For

⁴⁶ Process in which two or more commissioners of health and social care services work jointly to shape programs and integrate provision across agencies and professions.

⁴⁷ Similarly, the Department of the Prime Minister and Cabinet is aiming to develop a ‘Pricing and Market Design Action Plan’ that aims to help address thin markets by outlining changes to better align incentives and contribute to well-functioning markets (PM&C 2023, p. 46).

example, a commissioner can contract a provider to support a group of participants (known as ‘alternative commissioning’) to better assist communities as a whole (NDIS Review 2023).

Effects of the reform

Direct effect:

- Increased access to services
- Quality of services improves
- Choice for consumers increases

Parties affected:

- Consumers of human services
- Service providers
- Government expenditure

Improved access to services in thin markets

Addressing thin markets will improve access to services, reduce unmet demand, and afford consumers more choice so they can access services that better meet their needs. The quality of services may also improve as increased competition and contestability creates an incentive for providers to offer higher quality services. This will improve the outcomes for people accessing services in these markets and may also reduce pressure on informal carers.

Addressing thin markets will impact government expenditure. In the short term, it will likely increase the cost to government as new transactions are subsidised. For example, in NDIS thin market trials, introduction of coordinated funding proposals⁴⁸ resulted in 86% of participants increasing their use of targeted functional assessments, with an associated increase in expenditure of \$4982 per participant over a 12-month period (NDIA 2023, p. iii). On the other hand, costs may be reduced in the long run if people are receiving the services they need in a timely manner. Reductions in government expenditure from a more productive health sector are explored in box B4.2. However, it should be noted that these results do not account for any expenses required to improve service provision in thin markets. This includes the fixed cost of rolling out the reform, as well as any ongoing administrative or operational costs. Such a costing exercise would require significantly more detail than what we have been provided about the intended pathway for increasing service provision in thin markets.

Prices may also be lower if providers can achieve economies of scale or scope. However, a key challenge in thin markets is the high cost for service delivery (for example due to the extra travel costs or provider preferences that reduce supply in particular markets). An NDIS consultation report found that ‘respondents advocated for higher prices for service delivery in regional and remote areas to offset travel costs’ (EY 2020, p. 151). Furthermore, a 2018 survey of care service providers in the NDIS market found that 46% of respondents selected ‘addressing pricing’ as their top action for addressing market problems (Carey et al. 2019). Providers emphasised that current price settings are disconnected from the costs of providing services (Carey et al. 2019, p. 718). Therefore, in order to incentivise providers to increase supply in high-cost areas, it may be necessary to increase the price of services.

⁴⁸ Coordinated funding proposals are a way to enable participants to pool funding to more efficiently secure services from providers.

Estimating an increase in labour supply

Despite the existing potential benefits, estimating these impacts directly is challenging. Realising the expected benefits from market access reforms is not easily achieved. Further, different reforms will need to be implemented for different human services markets and in different locations. Each market is unique and requires a solution tailored to the specific circumstances and challenges.

The Commission has therefore taken an outcomes-based approach to modelling the impacts of this reform.

To consider the potential impact from improved access to care and support for people living in regional and remote locations, the Commission has bundled a number of related reforms (box B4.2). The Commission assumes that the improvements in access to care improve health outcomes and increase labour supply for affected people. The methodology and results are discussed further in box B4.2.

Impact on informal carers

Addressing thin markets for care and support services would give informal carers more choice about undertaking their caring role (PC 2022a, p. 180). Some informal carers are unable to work, or work as much as they would like, because of barriers to accessing formal care. In 2022, 11.9% of Australians provided unpaid care to people with a disability or older people, a slight increase from 10.8% in 2018 (ABS 2024d). The majority of informal carers do not receive government payments (AIHW 2023) and have lower employment rates than non-carers – 70.4% of carers aged 15 to 64 were employed in 2022, compared to 79.3% for non-carers (ABS 2024d). Reforms may therefore increase labour supply if informal carers are better able to get the help they need to enter the workforce or increase their formal work hours. Several studies found that a higher quality of formal and informal social support is associated with a lower caregiving burden (summarised by Lindt et al. 2020 in a systematic review of the determinants of overburdening among informal carers). Furthermore, in Australia, informal caregiving is associated with higher rates of absenteeism and presenteeism (Keramat et al. 2023). Addressing thin markets and improving access to formal care helps support informal carers, empowering carer choice and aiding carer employment (PC 2023h, pp. 67–69).

Given the uncertainty around what the proposed market access arrangement reforms will entail, it was not possible to quantify the extent to which such reforms could increase labour supply for informal carers. It is unclear whether the development of a best practice guide will effectively reduce the caregiving burden of informal carers, or whether trials that pool demand across markets will be successful in improving the provision of services in thin markets. Due to the prevalence of thin markets in regional and remote locations, such potential increases in labour supply would likely be concentrated in these areas of the economy. The economy-wide impacts of an increase in labour supply in regional and remote areas is explored in more detail in box B4.2, although the focus of this analysis is on improvements in health outcomes rather than more time available for informal carers.

Finally, reducing the burden placed on informal carers will likely improve the health and wellbeing of carers and potentially reduce the gender pay gap. Many studies find a negative relationship between informal caregiving and carer wellbeing (PC 2023b, box 16), suggesting that reducing the care burden on informal carers will improve their health outcomes. Furthermore, the majority of informal carers are women – 61% of informal carers across 25 OECD countries are women (Rocard and Llana-Nozal 2022, p. 15) and 68% of primary carers in Australia are female (ABS 2024d). Reducing the informal caregiving burden will potentially improve labour market outcomes for women, reducing employment and wage gaps.

Box B4.2 – Improved access to health services in rural and remote areas

Human services reforms to labour mobility, market access arrangements and telehealth are intended to increase access to care in rural and remote areas. The Commission has taken an outcomes-based approach to consider the potential benefits of improving health outcomes in rural and remote areas through these reforms. This analysis does not consider how the benefits can be realised or the contribution of different reforms.

Health outcomes and healthcare access in regional and remote locations

People living in rural and remote locations have, on average, poorer health outcomes and greater difficulty in accessing healthcare services than people in major cities. Rural and remote locations have higher rates of hospitalisations, deaths and injury than major cities (AIHW 2024d). People living outside major cities have, on average, higher rates of heart, stroke and vascular disease, compared to people in major cities (AIHW 2024, figure 4).

People living in regional and remote locations can face barriers to accessing health care due to many factors, including a large geographic spread, low population density and limited infrastructure. Regional and remote locations have a lower concentration of GPs (per 100,000 people) and longer average wait times to see the GP than major cities (RACGP 2020, figures 17 & 18). People in regional and remote locations also have lower use of chronic disease management services (such as GP management plans) than people in major cities (AIHW 2022, figure 5). Removing barriers to health access (such as poor access to transportation or limited healthcare resources) can improve health outcomes (OASH nd), reducing gaps that exist between urban and rural locations.

Estimating the effects of improvements in health outcomes

To the extent that the reforms are able to improve health outcomes for people living outside of major cities, they can also have a positive effect on labour productivity. Several literature reviews find that improvements in health outcomes can increase labour productivity (Burton et al. 2008; Oliveira et al. 2023; Schultz and Edington 2007). In Australia, Cai et al (2014) found that improvements in health outcomes are associated with an increase in hours worked and that adverse health shocks are associated with a decrease in hours worked. Many other studies also established a relationship between health outcomes and a range of work outcomes, including absenteeism and presenteeism (Bubonya et al. 2017; Cai 2010; Stewart et al. 2003).

In addition, improvements in health outcomes can reduce healthcare expenditure through the prevention of treatment for illnesses, avoiding costly healthcare services such as hospitalisations. Several preventative measures, such as better continuity of care with a GP and self-management of health conditions from health education, can avoid hospitalisations (Purdy 2010). Furthermore, 'potentially preventable hospitalisations' increase with remoteness in Australia (AIHW 2024d), suggesting scope for improvements in healthcare access in such areas to reduce hospital admissions. Although there will be some increases in short-term costs due to more service provision outside of major cities, we consider these costs will be more than offset by savings due to earlier intervention.

It is difficult to obtain a precise estimate for how improvements in health outcomes in regional and remote Australia from these human services reforms will increase labour productivity and reduce healthcare costs, particularly with uncertainty around what specific reforms will be undertaken. Cai et al (2014) found that lower health status results in lower labour supply and that health shocks generate further

Box B4.2 – Improved access to health services in rural and remote areas

reductions in hours worked – those who experienced a health shock that made their health ‘much worse’ reduced their work hours on average by 7 to 9 hours per week.⁴⁹ This effect needs to be scaled by, among other factors, the proportion of people in regional and remote Australia with poor access to healthcare as well as the proportion of people with preventable or treatable health issues impacting their labour supply. This is because such potential increases in labour supply can only be experienced by people impacted by the human services reforms.

For illustrative purposes, the Commission assumed an increase in labour productivity in regional and remote Australia of 0.5%. To implement this in a national model requires scaling this assumption by the share of each industry located in regional and remote areas. For instance, 80% of labour income in the Forestry and Logging industry is earned in regional and rural areas based off ABS (2021, 2023c) and hence productivity in the sector was increased by $80\% \times 0.5\% = 0.4\%$.

In the modelling, improving access to health services in rural and remote areas leads to an increase in real GDP of \$2,875 million (0.1%) and a decrease in prices of 0.05%. Improved labour productivity reduces the cost of labour per unit of output, which lowers industry costs. With lower unit costs, industries seek to increase their outputs, attracting labour and capital. With the modelled changes assumed not to affect aggregate employment, wages increase. Additional capital is assumed to be sourced from abroad. The resulting increase in wage and capital incomes increases income tax revenues by \$367 million, which accrue to the Australian Government. Increased employment costs increase state and territory government operating expenditures, decreasing net revenue by \$31 million. It should also be noted that these results do not account for the expense of implementing the reforms or any ongoing administrative or operational costs.

For a lower estimate we assumed an increase in labour productivity in regional and remote Australia of 0.25%. The modelling suggests an increase in real GDP of \$1,437 million (0.05%), a decrease in prices of 0.02%, an increase in Australian Government revenue of \$184 million and a decrease in state and territory government revenue of \$16 million.

This modelling does not account for any possible cost reductions or productivity improvements in the regional and remote health sector due to a decrease in pressure on resources associated with the improved health of the population. The magnitude of cost savings is unclear. Assuming an increase in total productivity of 1% in the healthcare sector, applied to the 29% of the population living outside of major cities, real GDP increases by \$352 million (0.01%) and consumer prices decrease by 0.01% in the long run. Reforms could lead to larger or smaller increases. The economy-wide effects can be approximated by scaling the CGE results above. For instance, if the reforms were to result in half the modelled increase in health sector productivity, the corresponding GDP improvement would also halve.

⁴⁹ The size of the impact varied between women and men, as well as health measure used.

Reform H4 – Medicine pricing

Reform description (provided to the Commission)

Reform:	Reduce the wholesale cost of medicines by adjusting pricing strategies and addressing anti-competitive agreements.
Policy problem:	Limited competition in generic and biosimilar drug markets contribute to higher prices of medicines for consumers.
Goal of reform:	Reduce the price of generic and biosimilar drugs.

Background

Australians pay a higher price for some generic medicines (medicines that are no longer under patent protection) than other countries (Zhang 2022a, 2022b). The marginal costs of manufacturing generic medicines is very low, and producers of generics medicines do not incur direct research and development costs as they did not invent them. However, prices remain high due to the high concentration of suppliers, heavily regulated prices, consumers being insulated from prices by government subsidies and nationally bound markets (Duckett 2013, p. 21).

Once medicines come off patent, price disclosure policies help to reduce prices over time (PBS 2024b). Since the introduction of these policies in 2007, the price of medicines has fallen, however, prices remain higher than other countries (Duckett and Banerjee 2017, p. 3).

To further reduce the price of medicines and save costs for governments and consumers, reforms could include:

- building on existing policies such as the price disclosure policy
- pursuing alternative pricing and procurement strategies such as price setting
- exploring incentives to increase the uptake of generic and biosimilar medicines
- addressing anticompetitive agreements that delay market entry.

Effects of the reform

Direct effect:	Decrease in the sales price of generic medicines from manufacturer by 7%.
Parties affected:	Governments – reduced expenditure on Pharmaceutical Benefits Scheme (PBS). Consumer – possibility for cheaper pharmaceuticals. Pharmaceutical Manufacturer – reduced profitability.

Reforms to reduce prices in Australia could achieve prices similar to those in comparable countries. Of the top generic medicines in Australia, prices for 22 medicines (which represent 40% of consumer and government expenditure) were compared to at least one of New Zealand, Canada and the United Kingdom (table B4.1). After adjusting for dosage sizes where possible and considering the price floor, the comparison suggests that Australian prices could fall by 7%. Given expenditure of \$1.6 billion on generic F2 Formulary medicines in 2023 – consisting of \$1.2 billion from the government and \$0.4 billion from consumers⁵⁰ – the

⁵⁰ Commission estimates based off (PBS 2023) and table B4.1

savings would amount to approximately \$128 million per year. This assumes that medicine consumption is fixed through prescription quantity and demand does not respond to price changes.

Table B4.1 – Price comparisons of generic medicines^{a,b}

Medicine (PBS item code)	2023 Expenditure (millions)	Australian manufacturer price (Dec 2023)	Lowest international price (AUD)	Total savings (millions)
Esomeprazole (11692J)	95.9	4.3	3.4	NA Price floor
Pantoprazole (11681T)	88.6	3.1	0.9	NA Price floor
Salbutamol (12109H)	76.0	5.3	3.5	3.3
Insulin Glargine (11815W)	41.9	34.1	87.9	0
Adalimumab (12390D)	40.2	637.0	1,488.0	0
Rabeprazole (11670F)	30.1	3.6	3.8	0
Budesonide + Formoterol (10018G)	28.4	23.7	19.9	1.8
Adalimumab (12389C)	25.2	637.0	348.8	9.9
Adalimumab (12375H)	23.5	637.0	348.8	9.3
Adalimumab (12363Q)	23.1	637.0	348.8	9.1
Sitagliptin + Metformin (10090C)	19.9	32.8	48.9	0
Estradiol (10203B)	19.7	16.6	15.3	0.8
Etanercept (11220M)	17.7	797.7	976.5	0
Pirfenidone (11410M)	16.7	571.1	217.5	2.5
Etanercept (11218K)	15.5	797.7	976.5	0
Calcipotriol + Betamethasone Dipropionate (11091R)	15.5	72.2	55.8	2.6
Dasatinib (12889J)	15.4	2,104.4	690.3	7.8
Omeprazole (11677N)	14.2	4.3	0.63	NA Price floor
Aripiprazole (10224D)	12.6	271.3	254.4	0.7
Adalimumab (12329X)	11.9	780.0	348.8	6.1
Adalimumab (12414J)	10.2	637.0	353.4	2.0
Tiotropium (11043F)	10.1	31.0	46.84	0

a. International price data not available for Esomeprazole (11692J), Aripiprazole (10219W), Tocilizumab (11567T), Tiotropium (10509D), Insulin Glargine (11302W), Levodopa + Carbidopa (11919H), Abatacept (11684Y), Etanercept (11218K), Certolizumab Pegol (11325C), Desvenlafaxine (10231L), Adalimumab (12446C), Ezetimibe + Atorvastatin (10376D), Adalimumab (10460M), Ezetimibe + Atorvastatin (10377E), Ezetimibe (&) Rosuvastatin (10207F). **b.** Currency converted into Australian dollars at the following rates, correct as of 5 June 2024: New Zealand (0.93), Canada (1.1) and UK (1.92). International price data converted to reflect Australian quantities where possible.

Sources: Australian Government Department of Health and Aged Care (2023a, 2024b), pan-Canadian Pharmaceutical Alliance (2023), Pharmac (2024) and UK department of Health and Social Care (2023).

Lowering the price of generic medicines would directly affect all key market participants.

- **Pharmaceutical manufacturers**, many of which are overseas (Morris 2018), would experience lower margins and reduced revenue from the decrease in prices.
- **Government** expenditure would decrease by approximately \$32 million, consisting of a decrease in PBS expenditure. There are also supply chain security concerns that should be considered in a full analysis of policy reform.
- **Pharmacists** may be able to increase their profit margins, benefiting from lower input costs. Limited competitive pressure in the pharmacy sector will reduce the amount of savings that are passed onto consumers.
- **Consumers** may have access to cheaper medicines (Zhang 2022b). The PBS subsidy ensures that consumers pay a maximum of \$31.60 for their medicines, and as such consumers are partially insulated from the wholesale price (PBS 2024a). Therefore, consumers will only experience savings when the wholesale prices of medicines falls below \$31.60, or \$7.70 for those eligible for concessional pricing. This will particularly benefit older Australians, as over half of medicines are dispensed to Australians aged 65 and over (AIHW 2024c). These cheaper medications may also improve medicine adherence resulting in additional health benefits and cost savings in other parts of the healthcare and support sectors.

CGE results

Lowering medicine prices is estimated to decrease the price of imported medicines by \$128 million. The direct effect of this is to decrease the fiscal impact of acquiring medicines. The economy-wide impacts are negligible.

Estimating the benefits from removing the price floor

Prices could fall further if the price floor, which prevents certain medicines from being priced below \$4, was removed. This price floor was introduced in 2022 to ensure security of supply (Allen 2021, pp. 11011–11013; PBS 2024b). If reforms could allow domestic prices to approach international prices in comparable countries and with removal of the price floor, savings of 9% or \$150 million per year could be achieved. However, allowing prices to fall below the current price floor may produce unintended consequences, particularly if the Australian market is perceived to be less attractive, resulting in supply chain delays or slower introduction of cutting-edge medication. Overall, the economy-wide benefits of further price reductions remain negligible.

Addressing anti-competitive agreements that delay market entry

While under patent, medicines are protected from competition. The patenting system helps incentivise research and development but can also result in high prices. There is evidence that, in some overseas jurisdictions, companies sometimes take steps to extend exclusivity beyond the life of the patent. For example, in settling patent disputes, pharmaceutical companies may reach ‘pay-for-delay’ agreements which result in generic medicine suppliers receiving payment to delay the progress of a generic drug to market (Biscoe et al. 2023). These arrangements can be beneficial for both parties to the agreement, as they allow them to essentially share the monopoly rents earned as a result of the product’s exclusivity, and avoid competing on costs. However, they come at a cost to consumers; delays of this kind limit competition by restricting the number of products on the market and any subsequent price reductions, including those triggered under the PBS (PC 2016b, p. 20).

Regulators have taken legal action to challenge the legality of pay for delay arrangements in Europe (EC 2016) and the United States (FTC nd). However, in Australia, the Australian Competition and Consumer Commission (ACCC) has not taken any enforcement actions in relation to pay-for-delay arrangements, though it is unclear whether this is because such arrangements are not a major concern in Australia (Biscoe

et al. 2023, pp. 111–112). The only patent dispute was recently withdrawn following a draft determination by the ACCC (ACCC 2022a).

The Commission has previously recommended a reporting and monitoring regime (PC 2016b, p. 36) and the recommendations were supported in-principle by government (Department of Industry, Innovation and Science 2017, p. 12), but have not been implemented (Biscoe et al. 2023, pp. 111–112). Given the uncertainty about whether pay-for-delay is a problem in Australia, the Commission has not undertaken any modelling of this reform area. Rather, further monitoring of pay-for-delay agreements should be undertaken.

Reform H5 – Telehealth

Reform description (provided to the Commission)

Reform:	Remove unnecessary barriers to consumer access to telehealth and other digital health services.
Policy problem:	Barriers exist to the use of telehealth by both consumers and service providers.
Goal of reform:	Increase the use of telehealth services where necessary and appropriate.

Background

Use of telehealth has grown substantially in recent years (PC 2024b, figure 3.1). However, there still exists barriers to accessing telehealth, including regulatory barriers, lack of awareness, and low digital literacy. One example of a regulatory barrier is that a patient can only have a Medicare-reimbursed telehealth appointment with a GP if they have had at least one in-person service to the patient in the 12 months preceding the telehealth appointment (12-month rule). According to a survey in March 2023, the 12-month rule prevented 14% of respondents from using telehealth (APA 2023, p. 28).

Telehealth can help address competition issues in rural and remote areas. Australians living in rural and remote areas often have poorer health outcomes than people living in metropolitan areas. Reduced access to – and use of – primary health care services is a contributing factor (AIHW 2024d). Insufficient demand ('thin markets') can lead to under provision of health services in rural and remote areas. Technologies such as telehealth have the potential to transform primary care into a tradeable service with more uniform standards of quality, access and prices across the country. Despite the potential for telehealth to improve access to health services in rural communities, telehealth take-up rates are higher in urban areas: 28% of people in major cities had at least one telehealth consultation for their own health in 2021-22, compared to 23% of those in outer regional, remote or very remote areas (ABS 2023b). This suggests scope for improvements in telehealth utilisation in rural regions.

The specific details of telehealth reforms have not been confirmed. They could include refinements to (or removal of) the current 12-month rule, or policies aiming to increase awareness and use of telehealth (through, for example, improvements in digital literacy). The approach taken by the Commission has been to explore the impacts of a plausible increase in telehealth use, regardless of how this increase is achieved.

Effects of the reform

Direct effect:	<p>Reduced cost and time in accessing primary care</p> <p>Earlier interventions reducing likelihood of more serious health problems and reducing future healthcare expenditure</p> <p>Fiscal cost to Medicare expansion</p>
Parties affected:	<p>Consumers (including those who previously struggled to access healthcare)</p> <p>Primary healthcare providers</p> <p>Governments</p>

Estimating the increase in telehealth consults

In 2023, there were 28 million telehealth GP consultations⁵¹ in Australia, 19.4% of all Medicare-funded consultations (PC 2024b, p. 36). Given the uncertainty around what specific policy changes are intended, we have taken an outcomes-based approach to modelling this reform. We have looked at a scenario where the reforms removing barriers to telehealth have the effect of increasing the proportion of all GP consultations that are done using telehealth to 30%. This uses England as a benchmark – 30% of consultations in England are done using telehealth (NHS 2024). Furthermore, 30% of health encounters in Canada were virtual in March 2022 (Canada Health Infoway 2022, p. 4), higher than Australia at that time (PC 2024b, figure 3.1). Given the many differences between England and Australia (particularly land size impacting digital access in remote communities) and the lack of more recent available data in Canada, this might be an optimistic assumption on the size of potential impacts.⁵² We also tested other values and found that the results scale approximately linearly with the size of the shock.

If telehealth numbers increased in Australia such that 30% of consultations were done using telehealth, and 80% of new telehealth appointments replaced in-person services (as assumed by PC 2024b),⁵³ Australia would have approximately 16.3 million more telehealth consultations per year. Of these new consultations, approximately 13 million would replace in-person services. Alternatively, if the proportion of telehealth consultations increased to 25%, there would be approximately 8.5 million more telehealth consultations (6.8 million replacing in-person services).

Consumer time savings

Increasing access to telehealth can reduce wait and travel times for consumers, allowing people to use that time for other purposes. Previous Commission analysis suggests that a telehealth appointment can save the consumer 65 minutes in waiting and travel time (PC 2024b, p. 44). Here, we assume that reforms removing barriers to telehealth lead to 13 million in-person appointments being replaced by telehealth appointments a year. Therefore, consumers would save approximately 14.1 million hours a year.

Reducing time spent on obtaining medical care frees up time for patients, which could translate to an increase in labour supply hours. Focusing on the 64.3% of the population that are employed (ABS 2024e) and assuming that 75% of the saved time is spent working, such reforms could increase labour supply by 6.8 million hours (or 0.03%) a year.

Not all of time saved would be spent working since some proportion of telehealth users would be too unwell to work or would spend the saved time on leisure activities instead. For example, the Australian Patients Association (2023, p. 28) found that 22% of respondents who had a telehealth appointment chose telehealth because their illness did not allow them to go to the clinic. For leisure, we are unable to reliably estimate this type of substitution and so have assumed that this is a small proportion for simplification. The saved time used for leisure and/or health recovery has its own benefits to consumer wellbeing. Here, we have focused on the potential impact to labour supply since it is easier to measure and estimate the potential ripple effects on the broader economy.

⁵¹ For simplicity, we have focused on GP consultations for the purposes of this analysis. However, reforms to telehealth services could also target specialist services.

⁵² However, 30% is below the peak of telehealth consultations in Australia experienced during COVID-19, where there was a greater need to replace in-person services (PC 2024b, figure 3.1).

⁵³ Similarly, 81% of patients in Canada who experienced virtual care said they avoided an in-person visit (Canada Health Infoway 2021, p. 22).

CGE Results

In the modelling, assuming an increase in hours worked of 0.03% increases GDP by \$793 million (0.03%) and decreases prices by 0.02% across the economy. The economy-wide increase in labour inputs increases output. The largest increases occur in export-orientated industries, because they face demands with relatively large price elasticities. The increase in economic activity increases incomes, and therefore income tax revenue by \$104 million which accrues to the Australian Government whilst state and territory revenue decreases by \$11 million.

Better health outcomes

Better access to telehealth can improve health outcomes for people who would otherwise be unable to access health services. Some people find it difficult to access in-person health services, such as those living in remote locations or those unable to easily travel. Regional and remote locations have lower Medicare Benefits Schedule services expenditure (which includes GP consultations) but higher Emergency Department (ED) presentations per capita, suggesting that difficulty accessing in-person services such as GP consultations may be increasing the need to rely on hospitals (Nous Group 2023, figure 5). The number of GPs providing care per capita declines with increasing remoteness, from 125 per 100,000 people in metropolitan areas to 66.8 in very remote communities (Nous Group 2023, p. 25).

Telehealth can increase consumer choice by providing convenient access to health services that some people would otherwise not receive. Therefore, removing barriers to telehealth will likely improve access to health services, reducing gaps in healthcare access for regional and remote communities, ultimately leading to earlier health intervention and better health outcomes. Some virtual care practices can also better prevent health complications. For example, remote patient monitoring that tracks patients' health data outside of traditional healthcare settings can prevent conditions from escalating and reduce the incidence of hospital admissions (PC 2024b, p. 54).

However, it is worth noting that telehealth cannot replace all in-person services. Where patients need to be physically examined, clinicians cannot provide the same quality of care via phone or video. Replacing services that are better performed in-person with telehealth may result in poorer health outcomes, emphasising the need for telehealth services to target appropriate types of care. Where telehealth is appropriate, it achieves similar clinical outcomes to in-person care (PC 2024b, pp. 41–52). Furthermore, in-person care can also benefit from expanded use of telehealth since practitioners (particularly in remote locations) can work with GPs or specialists via telehealth. Consultation among health professionals in NSW emphasised the importance of greater collaboration using modern technologies to deliver a wider scope of practice (Nous Group 2019, p. 14). Because of this, there is potential for telehealth and scope of practice reforms to work together – for example, improving practitioner technological capability and expanding the scope of nurse practitioners may increase the range of services provided in particular markets.

While it is difficult to estimate the exact health impacts from potential telehealth reforms, the Commission has taken an outcomes-based approach that bundles several health services reforms together. If such reforms realise their potential of improving health outcomes (in particular, for those living in regional and remote locations), the Commission assumes that such health improvements result in an increase in labour productivity for affected people. The Commission has then modelled the economy-wide impacts of such outcomes (box B4.2 for further detail).

Uncertain impact on government expenditure

There are multiple ways in which telehealth reforms could impact government expenditure. For example, consumer time saving leading to an increase in labour supply will positively impact government revenue

(discussed above). However, many other factors relating to potential telehealth reforms will also affect government expenditure. Given potentially competing impacts as well as uncertainty surrounding what the specific reforms will be, it is difficult to determine whether reforms will increase or decrease government expenditure.

As described above, removing barriers to health services can improve health outcomes through better access to health care. Early intervention for people otherwise unable to access certain types of health care (for example people living in remote locations) could reduce the likelihood of affected people needing health services in the future, ultimately reducing future health costs. The rate of potentially preventable hospitalisations⁵⁴ is two to three times higher in remote and very remote locations compared to major cities (AIHW 2024d). This suggests that early intervention could have a sizeable impact on health outcomes and hospitalisations for remote locations that struggle to access primary care. An illustrative example of health improvements increasing productivity in the healthcare sector is provided in box B4.2, ultimately resulting in long-term reductions in government expenditure for healthcare. However, those results do not take into account the implementation and ongoing costs of addressing thin markets.

Furthermore, telehealth can act as a substitute for other health services that are likely more expensive, such as visits to the ED. Given the availability of ED services, it is relatively common for patients to visit the ED in the absence of other alternatives. Almost half of ED visits may not have been an emergency (APA 2023, p. 6) and people living in outer regional, remote and very remote areas are more likely to visit a hospital ED than people living in major cities (ABS 2023b). A 2021 survey in America found that 14% of telehealth users would have sought ED care if telehealth was not available (Sutton 2021, p. 15).⁵⁵ If a series of telehealth reforms leads to 16.3 million new telehealth appointments a year, and we assume that 14% of these new appointments would have gone to the ED, such reforms could save approximately \$1.6 billion in ED costs. This is assuming an average cost of an ED visit of \$692 (SCRGSP 2024, p. 119). Of course, if these new telehealth appointments were government funded under the new telehealth policy settings, the relative cost of the telehealth services would need to be considered. International literature also finds that telehealth results in a small to moderate reduction in hospital service use (Lee et al. 2024; Peters et al. 2021).

Some telehealth reforms may increase government expenditure through more people accessing government funded health services. If telehealth reforms allowed some people to access telehealth consultations where they would not have otherwise used a healthcare service, and if such telehealth consultations were subsidised, this would increase government expenditure on telehealth services. The degree of the increase through this mechanism would depend on the number of new telehealth consultations that would not have been a substitute for a different health service, as well as the average cost of telehealth consultations.

Furthermore, telehealth reforms may result in government expenditure for telehealth services that are currently not funded by government. If telehealth reforms were to target barriers that prevent some service providers from receiving Medicare funding, more businesses could become eligible to receive government funding. Direct-to-consumer (DTC) businesses, for example, are online-only providers that offer a range of health services. These businesses operate largely outside of the Medicare system, influenced by policy settings such as the 12-month rule (PC 2024b, pp. 49–52). If telehealth reforms included changes to the

⁵⁴ Conditions where hospitalisations could have been avoided through provision of appropriate individualised preventative health interventions and early disease management.

⁵⁵ Similarly, 60% of people using Healthdirect's GP helpline call-back service in NSW reported that they would have otherwise gone to ED if the service was not available (Healthdirect 2023, p. 19). Healthdirect is a specific type of telehealth service that triages patients and provides advice on how to manage conditions on their own. We have not used this 60% number in the calculation above since Healthdirect is not necessarily representative of all telehealth services. However, it does provide a clear example of a telehealth service that is being used as a substitute for the ED (see PC 2024b, box 3.1, for further detail).

12-month rule, this could mean that most DTC telehealth services become within scope for Medicare subsidies. Although data on DTC businesses is limited, previous consultation by the Commission suggests that they could make up a significant share of telehealth consultations (PC 2024b, p. 39).

It is difficult to determine the overall impact on government expenditure from these competing effects, particularly given the uncertainty on what the specific telehealth reforms would be. If reforms are well-targeted, improving access to health services and providing effective alternatives to ED, then there is potential to reduce government expenditure. However, if reforms are broad and result in many new businesses falling within scope of Medicare funding, there is potential to increase government expenditure.

Finally, it is worth noting that there exist additional benefits from expanding reforms to address barriers to digital health technologies more broadly. For example, remote care technologies (such as remote patient monitoring and digital therapeutics) can help lessen Australia's growing chronic disease burden, but are yet to be widely used in Australia (PC 2024b, p. 53). The slow uptake has been in-part impacted by poor quality signalling and gaps in funding that incentivise patients and practitioners to opt for in-person care (PC 2024b, pp. 61–69). Broader data and digital reforms (appendix B5) could also address some barriers to the uptake of digital health.

B5. Data and digital

Reform D1 – Consumer switching

Reform description (provided to the Commission)

Reform:	Address the major frictions and impediments that deter consumers shopping around and switching to competitively priced or more suitable products.
Policy problem:	There is limited switching behaviour for several common and central services (e.g., telecommunications, banking, energy). Limited switching can occur due to regulatory barriers, behavioural tendencies, and frictions or impediments imposed by businesses.
Goal of reform:	Empowering consumers with more information and greater ability to switch providers to increase competition and promote innovation by providers.

Background

Consumer switching is where a customer shops around to find a better product offering (based on price or other product characteristics) that matches their preferences. Consumer switching drives competition by creating demand-side pressure, which encourages firms to compete to gain new, and retain existing, customers. This supports competitive markets, where firms will innovate and improve their product offerings to align with consumer demand (PC 2018a, pp. 145–146).

Low levels of consumer switching in markets can mean there is less competitive pressure, which can make consumers worse off due to:

- **increased prices.** A lack of consumer switching creates a trade-off for a supplier. The supplier can charge higher prices and extract rents from ‘captured/repeat’ customers, or charge lower prices to new customers to increase their market share of repeat customers (Klemperer 1987, p. 377; Sharpe 1997, p. 81). In general, theory-based studies suggest the net effect will be higher prices (Klemperer 1995, p. 536; Padilla 1995, p. 521), especially in mature markets with low customer turnover (Sharpe 1997, p. 81). Further, suppliers may be able charge both low prices to new customers and high prices to repeat customers when they can successfully price discriminate
- **lower product quality.** Low levels of consumer switching can reduce firms’ incentives to innovate and compete on product offerings (PC 2018a, p. 146). This is especially true when there is a lack of information on key product characteristics.

For the competitive process to work, consumers should be able to search for, identify and switch to products that are suitable for them with relative ease (PC 2018a, p. 146). Consumers will only switch when the expected benefits of changing to a new product exceed the expected costs of switching. Barriers to switching can lower levels of consumer switching by adding to the expected costs.

- **Search costs** are the costs associated with gathering information and comparing alternative suppliers (OECD 2018, p. 2; Wilson 2012, p. 1070). When key attributes of products are hard to find, interpret, or compare, consumers may find it difficult to identify and switch to products that align with their preferences.
- **Switching costs** are the costs associated with changing suppliers, such as transactions costs, learning costs, or behavioural biases (Burnham et al. 2003, p. 110; Klemperer 1995, pp. 517–518).

In addition, high switching costs can act as a barrier to entry by making it difficult to attract new customers away from larger incumbents (Klemperer 1995, p. 536).

Policies targeted at reducing search and switching costs may aim to: increase information provision to lower search costs; increase the timeliness and ease of switching; or reduce regulatory barriers to switching. For example, one of the potential benefits of the *Consumer Data Right* was that it could lower search costs for consumers, thereby improving consumer switching (PC 2017a, pp. 193, 203).

While search and switching costs are related concepts, it can be important to distinguish between the two, as the requisite policy response to each can be different.⁵⁶

Effects of the reform

Direct effect: Firms face increased competition
Reduce product prices and increase product quality

Parties affected: Businesses and consumers in targeted sector

Greater consumer switching can lead to lower prices (and therefore lower the cost of living), as well as improved product quality and consumer choice (which contributes to living standards).

This reform is about reducing consumer search and switching costs, thereby making it easier for individuals to switch to products that better align with their preferences in certain markets. If effective, this will create more demand-side pressure in markets, potentially increasing the incentive for firms to compete for customers, resulting in lower prices and/or improved product quality. To the extent that consumer switching acts as a barrier to entry, this reform could also improve competition through greater market entry.

However, the reform that the Productivity Commission (the Commission) has been asked to consider is about reducing search and switching costs broadly. No information has been provided about what sectors the reform is intended to apply to; nor are there any specific proposed policy interventions.

In addition, past efforts to improve consumer switching through reducing search costs have had mixed results (box B5.1), with some studies finding that policies led to price decreases and others finding policies led to price increases.

Consumer switching should be assessed on a market by market basis, as each market is different and there is no one-size-fits-all policy. Therefore, to aid the implementation of this reform, the remainder of this section sets out factors that policy makers should consider when deciding whether to introduce policy measures to boost consumer switching in a particular market. This will help ensure that those efforts will produce net benefits and will represent good value for money.

⁵⁶ There are some key differences between search and switching costs. For example, search costs are mainly incurred by uninformed customers and can be incurred without switching, whereas switching costs are incurred by any consumer when they switch products (Wilson 2012, p. 1072).

Box B5.1 – The effects of reducing search costs

There are two potential opposing effects from increasing the price transparency of products for consumers (that is, reducing search costs). To the extent that it reduces search costs, price transparency can decrease prices through greater competition. In contrast, price transparency can also improve supply-side coordination, resulting in tacit collusion and higher prices (Byrne and De Roos 2022, p. 83).

Some literature has exploited new price comparison platforms in various countries and industries to estimate their effect on prices. This literature estimated that increasing price transparency led to:

- an estimated 4-5% average decrease in Israeli supermarket prices (Ater and Rigbi 2023, p. 4)
- an estimated 13% average decrease in German petrol retail margins (Montag and Winter 2020, p. 3)
- an estimated 0.6% average decrease in prices per 1000 clicks for 10 consumer electronics and 5 durable goods in Sweden. Further, the paper also estimated that an increase of 10 retailers on the price comparison website could reduce average prices by a further 1.8% (Lindgren et al. 2021, p. 4)
- an estimated 9% average increase in Chile retail gas prices (Luco 2019, p. 278)
- different pricing strategies to target either informed or uninformed customers in Korean gasoline markets (Jang 2015).

The Australian Competition and Consumer Commission (ACCC) also noted comparison websites can positively impact competition by reducing barriers to entry and search costs (ACCC 2014, pp. 14–16). However, the ACCC (2014, p. 17) also raised the concern that comparison websites may make false or misleading representations when websites only compare products that they have a commercial relationship with.

There are some key takeaways from the above discussion. Information provision will likely work best where: there are high search costs and many uninformed customers; the market is less concentrated; and products are homogenous allowing for a direct price comparison. Further, providing information on quality aspects can be difficult when such aspects are not directly identifiable and measurable – it can also distort supplier incentives to only compete on certain aspects of product quality.

Consumer switching framework

1. What are the current levels of consumer switching in a given market?

There is no ‘healthy’ rate of consumer switching that suggests a market is competitive. For example, if suppliers compete actively for marginal consumers and cannot price discriminate this ‘competition at the margin’ can drive lower prices for all consumers even if most consumers do not switch suppliers over time. The ideal level of switching will differ across product and market characteristics (PC 2018a, p. 151).

In some cases consumers do not need to switch to induce competition, but rather only need to show a credible threat of switching (PC 2018a, p. 146).⁵⁷ Further, consumers can provide feedback, make

⁵⁷ It is not necessary that consumers switch, as a credible threat of switching can still induce providers to compete. Moreover, it may not be necessary for all consumers to threaten to switch. A critical mass of active consumers may exert enough pressure to increase competition in the market (PC 2018a, p. 146).

complaints and negotiate with providers to obtain better product offerings without switching (PC 2018a, pp. 152–153).

That said, markets with concerning low levels of consumer switching should be examined given the potential adverse effects on consumers. Some measures that would help identify such markets include: customer turnover rates (percentage of customers lost in a time period); the ratio of new to pre-existing customers; customer loyalty surveys; or estimates of the cost of switching relative to the value of the product.

2. Would consumers benefit from greater levels of switching?

It is not enough to just identify ‘low-switching’ industries; it needs to be demonstrated that consumers should expect to benefit from greater levels of switching to justify government intervention. For example, some consumers might not switch because they have found a brand or product that meets their demands – such as coffee drinkers who prefer a particular brand of coffee bean. In other cases, consumers may prefer bundling products rather than switching providers (PC 2001, pp. 31–32).

Quantitative and qualitative evidence may suggest that consumers would benefit from greater levels of switching.

- **Higher prices for repeat customers compared to new customers.** Evidence of higher prices for repeat customers compared to new customers could suggest that suppliers are exploiting barriers to switching. While prices may differ between consumer groups due to cost differences, differences not based on cost indicate that suppliers are exerting market power over at least some consumers.
- **High or increasing profit margins.** A firm’s ability to significantly and sustainably increase or maintain profit margins may indicate a lessening of competition from switching costs. However, profit margins can also increase from other factors, such as from innovative new products or firm-based cost efficiencies.
- **Consumer complaints.** High levels of customer complaints about product quality or pricing for repeat customers may suggest that suppliers are exploiting high search or switching costs.
- **Unfair contractual arrangements or costs being placed on consumers to switch providers.** For example, consumers may be charged unreasonably large service fees to move suppliers. Suppliers may also create artificial technical barriers to switching, such as reducing interoperability between competitive alternatives.
- **Evidence of high search costs.** For instance, this could include evidence of: many uninformed consumers; difficulty in finding relevant product information; or suppliers restricting product information.

Further, some market characteristics may suggest that consumers would benefit from greater switching.⁵⁸

- **Mature markets.** Mature markets that have lower customer turnover might result in greater consumer harm in the presence of switching costs (Klemperer 1987, p. 391; Sharpe 1997, p. 81). This is because firms will have less incentive to compete for new customers through lower prices or improved product offerings.
- **High market concentration.** Markets that are concentrated around one or a few firms provide greater opportunities for those firms to raise prices or lower product quality because there are fewer substitutes available to consumers (PC 2021d, p. 316). In turn, this may increase the incentive of suppliers to raise switching costs and prices. That said, even one other firm that is a vigorous and effective competitor can be enough to provide competition in a highly-concentrated market (PC 2021d, p. 316).
- **Repeated transactions with long-term relationships.** Where switching costs give rise to long-term relationships and repeated transactions, consumer harm is likely to be larger (Sharpe 1997, p. 79).

⁵⁸ These characteristics can be interrelated. For example, mature markets can be related with high market concentration. Further, some of these characteristics may be a symptom of switching costs, or vice versa. For instance, concentrated markets may result in high switching costs, or high switching costs may result in concentrated markets.

- **Higher value products.** Consumers may not switch products because the actual cost of holding the product is low (at least at a certain point in time) (PC 2018a, p. 151). Therefore, consumer harm from not switching would be greater for higher value products of material significance (PC 2001, p. 32).
- **Homogenous products.** Customers may be less likely to switch when goods are not functionally differentiated (Klemperer 1995, p. 532). This could allow firms to better exploit repeat customers in certain markets.
- **Market segmentation.** Markets where providers can discriminate between consumers based on characteristics will likely result in less overall competitive pressure to charge lower prices (PC 2018a, pp. 167–170). This is because providers can limit the competitive effects of ‘active’ consumers to a subset of the whole market.

3. What are the barriers to switching?

Identifying the barriers to switching involves understanding which factors affect a consumer’s decision to switch products in a given market. As discussed above, consumers can face search and switching costs.

Search costs can hamper a consumer’s ability to search for, identify and compare products. The extent to which search costs are a barrier depends on the market in question. For example:

- in the petrol market, there is evidence that consumers initially face high search costs when using price comparison platforms, possibly due to technology adoption costs or behavioural factors (Byrne and De Roos 2022, p. 112). After incurring this ‘start-up’ cost, future search costs within that market could be lower (Byrne and De Roos 2022, p. 81)
- in supermarkets, per unit pricing due to government regulation can mean there are low search costs when comparing the value of products within a supermarket. There may, however, still be high search costs when comparing prices across supermarkets. One Israeli study found that providing comparable information across super markets can lead to lower prices (box B5.1)
- in the superannuation market, complex products, a lack of easy to understand information, as well as challenges in finding where to go to get help have led to high search costs (PC 2018b, p. 21). The new Australian government ‘YourSuper’ comparison tool may help reduce some of these search costs.

Switching costs may hamper a consumer’s decision to switch products (Burnham et al. 2003, pp. 111–112; Klemperer 1995, pp. 517–518; PC 2018a, p. 157). Sources of switching costs include:

- product compatibility, where some products might not be compatible with those of other brands
- transaction costs, such as paperwork and set up costs from changing to a new provider
- learning costs associated with using a new brand or product
- uncertainty about the quality of untested brands
- loyalty discounts. For example, a consumer will lose loyalty discounts when they change providers
- ongoing costs and product bundling. Consumers may prefer to deal with one provider with multiple products, than multiple providers.

There are also **cognitive and behavioural biases** that can affect consumers’ decisions to search for and switch to new products, even when there is a sound economic reason to switch (Klemperer 1995, p. 518). For example, consumers may not switch because they perceive the process to be costly, when in reality it is not (PC 2018a, p. 163).

Often, search, switching, and behavioural costs are demand-side problems that naturally exist in markets. However, in some cases suppliers may exacerbate these issues to their own benefit, by limiting comparability with competitors (increasing search costs), or by imposing costs on consumers switching suppliers, such as by requiring excessive paperwork (increasing switching costs) (OECD 2018, p. 2).

Further, it is important to consider the extent to which regulation is a barrier to consumer switching in a given market.

4. What is the appropriate policy response?

The policy response should reduce the major barriers to consumer switching. A range of different policy approaches have been attempted in different markets.

- Disclosure of information can reduce information asymmetries and search costs by improving consumer awareness (OECD 2018, p. 3). Such policies might include product labelling or mandatory text on products, or mandatory product disclosures on websites.
- Shopping around remedies can reduce search costs by facilitating the comparison of products by organising relevant information in an accessible way (OECD 2018, p. 3). Digital product comparison tools provide information across suppliers to help consumers navigate complex information. This can also incentivise competitors to use these platforms to compete on certain product characteristics.
- Some remedies seek to address switching costs. Examples are policies aimed at removing regulatory barriers (PC 2018a, p. 158), reducing the time and effort it takes to switch (PC 2018a, p. 158), or removing supplier imposed barriers (such as removing contractual constraints) (OECD 2018, p. 3).

There are some cases where multiple barriers to switching will require a multi-pronged policy approach. For example, reducing search costs may not increase consumer switching if pervasive switching costs still exist. And in other cases, barriers to switching may not be amenable to policy. For instance, some behavioural biases may be ingrained and difficult to change. It is important that consumer switching remedies take into account the behavioural biases of consumers. As the Commission previously noted in the financial sector, reforms to improve consumer switching were less effective because in 'some cases, reforms have gone 'under the radar'; in others, reforms have paid insufficient attention to behavioural barriers to switching' (PC 2018a, p. 156).

5. Will the policy provide net benefits?

The policy should only be implemented if it provides net benefits. The magnitude of the benefits and costs will depend on the policy design, the barrier to switching and the characteristics of the particular market.

The benefits of this reform can arise from individual customers finding better product deals from lower barriers to switching. Further, to the extent the reform increases competition it could result in overall improved product quality and/or lower prices through greater consumer switching.

The benefits of the policy should be weighed against the costs.

- **Regulatory costs.** These include implementation, administration, monitoring, enforcement and compliance costs. They will depend on governance arrangements, such as how the policy is regulated.
- **Adverse incentives.** When designing the policy it is important to understand how consumers and producers might respond. For example, in the case of price comparison platforms, this might aid in collusive behaviour in markets with fewer players, resulting in higher prices (box B5.1).

The above framework is summarised as a checklist in figure B5.1.

Figure B5.1 – Checklist to assess consumer switching in a given market

1. What are the current levels of consumer switching?	
<input type="checkbox"/> Customer turnover rates	<input type="checkbox"/> Ratio of new to repeat customers
<input type="checkbox"/> Customer loyalty surveys	<input type="checkbox"/> Ratio of cost of switching to product value
2. Would consumers benefit from greater levels of switching?	
Is there evidence that consumers would benefit from greater switching?	
<input type="checkbox"/> High prices for repeat customers	<input type="checkbox"/> Consumer complaints
<input type="checkbox"/> High or increasing profit margins	<input type="checkbox"/> Unfair contract terms or costs to switching
	<input type="checkbox"/> Lack of relevant product information
Do market characteristics suggest consumers may benefit from greater switching?	
<input type="checkbox"/> Mature markets	<input type="checkbox"/> High value products
<input type="checkbox"/> High market concentration	<input type="checkbox"/> Homogenous products
<input type="checkbox"/> Repeated transactions with long-term relationships	<input type="checkbox"/> Market segmentation
3. What are the barriers to switching?	
<input type="checkbox"/> Search costs	<input type="checkbox"/> Behavioural biases
<input type="checkbox"/> Switching costs	<input type="checkbox"/> Supplier and regulatory barriers
<input type="checkbox"/> Consumer preferences	
4. What is the appropriate policy response?	
Is the major barrier to consumer switching policy amenable?	
Are there multiple barriers to switching that would require multiple policy responses?	
What are the policy options to reduce the barriers to switching?	
<input type="checkbox"/> Information provision on the product or website	<input type="checkbox"/> Reducing time and effort to switch
<input type="checkbox"/> Information comparator tools	<input type="checkbox"/> Removing supplier constraints to switching
<input type="checkbox"/> Removing regulatory barriers	<input type="checkbox"/> Product or pricing standards
5. Will the policy provide net benefits?	
Estimate the benefits of the policy	
<input type="checkbox"/> Individuals finding better product deals	<input type="checkbox"/> Lower prices/increased quality from increased competition
Estimate the costs of the policy	
<input type="checkbox"/> Regulatory costs	<input type="checkbox"/> Adverse incentives
Implement the policy if it provides net benefits	
Review the policy after implementation to assess its effectiveness	

Reform D2 – Data sharing

Reform description (provided to the Commission)

Reform:	Removal of technical, legal or resourcing barriers to data sharing to aid: <ul style="list-style-type: none"> • public access (including business access) to (non-sensitive) publicly funded data of significant public value (e.g. publicly funded research data) • acquisition and sharing of private data (where privacy and consumer protection impacts are managed).
Policy problem:	There is a wealth of data held by both the public and private sector that could improve productivity if it were easier or cheaper to access. Government data is not always available, or in a usable format. Small businesses face higher costs to access and draw insights from data. Regulatory barriers and uncertainty limit the sharing of data that does not pose a privacy or security risk.
Goal of reform:	Allow broader usage and sharing of government and private data to enable new research and development, improved matching for consumers, and the provision of better products and services.

Background

Australian, state and territory governments, as well as the private sector, collect large volumes of data. Improving access to this data can create significant value because data is non-rivalrous – when one person uses data, it does not prevent others from using it, resulting in large benefits. These benefits can include:

- **productivity improvements** through more informed public policy design, research and development
- **improved consumer matching.** Providing data to consumers can reduce information barriers, which can allow consumers to choose products or services that better align with their preferences
- **data helping inform the design of new innovative products and services** (PC 2017a, p. 2).

Overall, the benefits of data use could lead to improved product quality and consumer choice (which contributes to living standards), as well as lower prices (and therefore lower cost of living).

However, there are often restrictions on data sharing, which limit the benefits of data use. Regulatory barriers and risk aversion can limit the sharing of data that does not pose privacy or security risks (PC 2017a, p. 121). Other restrictions can result from market structures, which may limit competition. Small businesses may face higher costs to access data, limiting their ability to compete. Market entry may also be restricted if incumbent firms hold large volumes of data and this data serves as a competitive advantage.

Governments have recently implemented policies to expand access to data. The Australian Government has expanded the data it makes available across the public sector through establishing the DATA Scheme (ONDC 2023, p. 1). The Australian Government is also giving consumers more control of their data through the Consumer Data Right (Australian Government 2024b). State and territory governments also have their own principles and policies for data sharing.

More can be done to increase data sharing. Access to government data remains lower for the private sector (such as for businesses and not-for-profits), than the public sector (PC 2023e, pp. 54–56). Greater sharing of data collected by providers of government-funded services, such as health, school education, aged care and childcare, would improve service quality and policy design (PC 2023e, pp. 62–63). Sharing government data

for benchmarking could also increase productivity through better business self-assessment and innovation (PC 2023f, p. 55).⁵⁹ Finally, governments could focus on having common principles for data sharing.

The benefits of this reform could be large

The benefits of improving data sharing could be large (box B5.2). Estimates of the benefits of Australian public sector data availability and use vary from \$625 million to \$64 billion per year (PC 2017a, p. 117).⁶⁰ An Organisation for Economic Co-operation and Development (OECD) (2019, p. 11) literature review also found that '[data] sharing [was] estimated to generate social and economic benefits worth between 0.1% and 1.5% of gross domestic product (GDP) in the case of public-sector data, and between 1% and 2.5% of GDP (in a few studies up to 4% of GDP) when also including private-sector data'.

The benefits of data sharing can be increased through data linkages, where different datasets containing information about the same individuals are brought together (PC 2017a, p. 133). By painting a more complete picture of individuals or businesses, data linkage enables more insights to be derived from information to support research and policy design. For example, Statistics New Zealand manages the Integrated Data Infrastructure, which contains linked data on factors such as education and training, health and housing (Stats NZ 2024). This helps the New Zealand Government make service provision decisions.

Box B5.2 – The benefits of this reform will vary based on policy design

The benefits and costs of this reform, and the parties affected, will depend on its design. Often, a one-size-fits all policy is not optimal as different datasets generate different value and risks. Factors that could affect the value of this reform include the following.

- **The type of data shared.** Different datasets will provide different benefits based on how they can be used. Ideally, data should be in a useable format and of high value for its intended use.
- **The barriers that prevent data use.** Different datasets will have different barriers that prevent data use (see figure below). Governments should identify and remove the relevant barrier, or barriers, for the datasets they want to make available. Further, only focusing on improving data sharing might not result in benefits if other more perverse barriers exist, such as poor data collection or poor data interoperability.
- **Data users.** Government should consider which users would derive the most benefits from the data. Data users may include consumers, not-for-profits, researchers, industry or the public sector.
- **Data accessibility.** The benefits of data are driven by its use. Therefore, data should be widely accessible, while balancing privacy and security risks. Privacy risks will differ across datasets (PC 2017a, p. 100), and might require government to place restrictions on data access and use.

⁵⁹ The benefits of this policy will depend on the type of data used for benchmarking and the industries affected. These factors should be considered by both government and industry when designing such a policy.

⁶⁰ The variability of estimates reflects differences in: the method used to measure the value of data; the type of data estimated; assumptions about how the data is used; and structural differences across countries (PC 2017a, p. 117).

Box B5.2 – The benefits of this reform will vary based on policy design**Examples of the different barriers to data use**

Data collection	Relevant data may not be collected, or may not be collected in a useable format.	Technology	Lack of up-to-date and interoperable technology can impede data collection, storage and linkage.
Skilled labour	The workforce may not have the capabilities or skills to use the data in the most effective ways.	Data sharing	Legislative barriers, risk aversion or restrictive sharing arrangements might limit access to data.
Data linkage	Data may not be able to be linked with other datasets which can reduce its value.	Incentives	Incentives from businesses and consumers may act as a barrier to data collection and use.

Further, the benefits of data could increase over time as technology improves, and the number of datasets increase. For example, Artificial Intelligence (AI) presents an opportunity to enhance productivity in the Australia economy, but the accuracy of AI will rely on access to high-quality data (PC 2024c, p. 1).

However, it is important to also consider the limitations of the evidence base. It is difficult to empirically estimate the benefits of data use on market outcomes, as many of the benefits 'are largely unknown until the data sources themselves are made known and a wide range of users have had opportunities to [use them]' (PC 2017a, p. 99). Further, the available evidence estimates the **total benefits** of data use, but does not link these benefits to **removing specific barriers to data use**.

Case study: healthcare data

This reform is about increasing access to data broadly. However, no information was provided about what sectors and data the reform applies to, or how the data would be shared,⁶¹ making it difficult to model. Therefore, the Commission modelled a case study on healthcare data to illustrate the potential productivity benefits from improving data access.

Health data is collected when individuals interact with the health system – such as through hospitals, general practice (GPs), and pharmacies (PC 2017a, p. 510). Health data includes information about a person's health (physical, mental or psychological) or disability, and any other information collected (PC 2017a, p. 510). This data feeds into system-level datasets collected by Australian, state and territory governments.

Evidence suggests that certain barriers can limit the use of health data in two main ways (box B5.3).

1. **Primary use of the data.** Data is used by health workers to aid in diagnosis, identify appropriate treatment and continuity of care. However, barriers to sharing patient data across healthcare providers (such as between hospitals and General Practitioners) through electronic medical records (EMRs) have restricted the primary use of health data.

⁶¹ Governments would need to consider what mechanisms are possible for compelling the sharing of private data. This is likely to run into legal barriers such as privacy laws. Further, there could be adverse consequences from compelling private businesses to share their data, such as stifling investment into data.

2. **Secondary use of the data.** Policymakers and researchers use system-level data to measure health system outcomes, assign funding, design policy, and inform research. However, barriers to accessing and linking health data can limit the secondary use of health data.

Similar types of benefits from improved data sharing could also be captured in other human services, such as aged care, child care and education services (PC 2023e, pp. 62–63).

Box B5.3 – Background information on health data sharing

How is health data shared?

Data access across health care providers and consumers (primary use of data)

Electronic medical records (EMRs) are increasingly being used by health care providers to document, monitor and manage the delivery of health services (PC 2024b, p. 16). However, sharing EMR data across health providers (for example, between hospitals and General Practitioners) can be difficult due to a lack of EMR interoperability. Recent government EMR initiatives, such as the Australian government My Health Record (MHR), aim to improve data sharing across health providers by creating a centralised data sharing repository. States and territories have also implemented EMR initiatives (PC 2024b, p. 25).

Data access for researchers and policymakers (secondary use of data)

Hospital data, national minimum datasets, and other administrative data held by the Australian Institute of Health and Welfare (AIHW) can be accessed by researchers and policymakers. For data that is not published on the AIHW website, researchers must make a data request online which costs at least \$300 and can take several months to be fulfilled (AIHW 2024a). For linked datasets, researchers must make ethics approval requests, which are considered quarterly by the AIHW Ethics Committee (AIHW 2024a).

There is no single point of access for primary care data from GPs and specialists (PC 2017a, p. 515).

How is health data sharing regulated?

In all jurisdictions, the Privacy Act 1988 (Cth) is the primary legislation for the collection, use, storage and disclosure of personal information in the private sector and the federal public sector (PC 2024b, p. 27). In some jurisdictions (including the ACT, NSW, Victoria, and WA), there is additional private sector regulation. Each jurisdiction has their own legislation for regulating data sharing in the public sector.

What are the barriers to using health data?

Australia performs relatively poorly in health data sharing compared to other countries such as the United States, the United Kingdom and New Zealand (PC 2017a, p. 5). The following are some of the barriers to using health data that have been identified.

1. **Data sharing:** AIHW-held data and primary care data can be difficult to access for researchers and policymakers (PC 2017a, p. 515).
2. **Data collection:** some important health data for research, such as health outcomes, is not widely collected (PC 2017a, p. 538), and data coverage in the MHR system is not complete and sometimes not collected in a useable format for healthcare providers (PC 2024b, pp. 21–24).
3. **Technology:** poor interoperability of technologies across health care providers and governments has hampered data collection and sharing (PC 2024b, p. 23,30).
4. **Incentives:** clinicians may be time-constrained and wary of how their data is used, while consumers may not trust data collectors to preserve their privacy (PC 2021b, p. 115).

Box B5.3 – Background information on health data sharing

5. **Data linkage:** the linkage of key datasets held by the Australian Government is limited by legislation, as well as inconsistent policies on data sharing (PC 2017a, p. 535).

Effects of the reform

Given data limitations (discussed below) and the difficulty in attributing economic benefits to a regulatory change, the Commission modelled illustrative productivity benefits from widespread use of health data.

Direct effect: Capital and labour productivity in the health sector rises by 1%

Parties affected: Health providers, policymakers, researchers and consumers

Improving primary and secondary use of health data can have two direct productivity benefits.

1. **Reduce costs for health providers and improve patient outcomes.** Enabling transfer of records between healthcare providers can improve the accuracy and continuity of treatment for patients and reduce duplication and inefficiency in the way they receive care (for example, reduce duplicate tests and wait times) (PC 2024b, p. 18).
2. **Increase the productivity in the health sector through research.** Allowing greater access to health data for policymakers and researchers can improve productivity through research and policy design.

How can healthcare data sharing be improved?

Primary use of health data could be improved from greater coverage and useability of the Australian Government My Health Record (MHR) system (box B5.3). Storing data in an atomised format (reduced to its most basic format) would improve the useability of the MHR system (PC 2024b, p. 24). The Commission has previously suggested that governments should also focus on making it easier to upload documents to MHR, such as by setting standards for medical software providers to ensure their software is interoperable (PC 2023e, p. 61). Further, governments should ensure that Australian, state and territory EMR systems are interoperable (PC 2024b, p. 30).

Secondary use of health data could be improved from greater data availability and linkage. The availability and use of health data has been affected by a culture that prioritises the protection of data, over promoting its use to improve program design and service delivery (PC 2017a, p. 538). Further, unlike other OECD countries, Australia does not routinely link health data with other datasets (PC 2017a, p. 539). Governments should continue to focus on improved health data sharing and linking, and aim to leverage the MHR system to improve policy design and research (PC 2023e, p. 62).

Method for estimating the benefits of increasing health data sharing

The Commission adopted a scenario-based approach to modelling this reform, applying a 1% shock to capital and labour productivity in the health sector. This productivity shock represents gains from improved health research and policy design, and reduced costs for health care providers (time savings and reduced duplicate testing). The shock was applied to the Health Care Services, and applied equally across states and

territories.⁶² Given the lack of robust studies to inform the magnitude of the shock (box B5.4), the results should be interpreted as illustrative.

Box B5.4 – Studies that estimate the benefits of data sharing in the health sector

Some studies have estimated the total benefits of data use across the Australian health sector (see table below). Other studies have estimated the benefits of data sharing within the health sector (that is, through the primary use of data). A recent literature review on primary use of health data found that studies with more rigorous research designs all reported some beneficial effect (Menachemi et al. 2018, p. 1259).

These studies have limitations which reduced their ability to inform computable general equilibrium modelling. Often, these studies are not specifically related to just the health sector. Further, these studies can differ based on the type/definition of health data, data use and measurable outcomes. This makes it difficult to generalise the results.

Studies that have quantified the benefits of health data sharing

Source	Type of benefit	Magnitude of effect
(PwC 2014, p. 15)	Total estimated economic contribution from data-driven innovation in the Australian health and social assistance sector in 2013.	\$4.9 billion per year.
(Lateral Economics 2014, p. 31)	Total value created from open data in the Australian health sector.	\$5.9 billion per year.
(Lateral Economics 2019, p. 50)	Total estimated annual gross value from the Australian Bureau of Statistics census for the Australian Health sector.	\$137 million per year.
(Sprivulis et al. 2007, p. 531)	Estimated net benefits of implementing health information exchange interoperability among Australian health care providers.	About \$350 million to \$2 billion per year (depending on the level of interoperability).
(Carr et al. 2014, p. 253)	Estimated savings for US health care providers from implementing health information exchange.	About \$2700 US dollar savings per patient.
(VDHHS 2020, pp. 8, 10, 27)	The paper includes estimates of how an electronic health record system affected outcomes in the Melbourne Royal Children's Hospital.	Pathology tests decreased by 6.3% and imaging tests decreased by 12.5%. Median emergency wait time decreased by 21.5%.
(PC 2024b, p. 2)	Using assumptions based on previous studies and cost data the Commission estimated some of the annual benefits from making better use of data in Australian electronic medical record systems.	Up to \$5.4 billion per year from reducing the length of time patients spend in hospital, and up to \$355 million through fewer duplicated tests.

⁶² The benefits of this reform might vary across jurisdictions based on the size of their health sectors; the current level of data adoption; and their capacity to use and store data. Some jurisdictions seem to have a framework for sharing data, and have data linkage units (PC 2017a, pp. 378–379). Further, each jurisdiction has their own EMR system (although the level of coverage can differ across jurisdictions) (PC 2024b, p. 25).

Results and discussion

The modelling for this reform takes a scenario-based approach by assuming that the proposed reform improves labour and capital productivity by 1% in the health sector. Such an improvement, if it were to occur, increases real GDP by an estimated **0.06% (about \$1,642 million)** and decreases prices by **-0.05%**.

The reasons for these results are as follows. As health industries become more productive, this will reduce health care costs to consumers and government. In turn, demand for healthcare will increase leading to greater health output and real GDP.

A more productive health sector will require less labour resources to produce output. 'Freed up' labour resources are employed by other industries, thereby putting downward pressure on wages and production costs across the economy.⁶³ Consequently, consumer prices decrease and real GDP increases.

The modelling also suggested that net revenue increases by **\$205 million** for the Australian Government and decreases by **\$93 million** across state and territory governments. This primarily arises from lower government expenditure brought about by the fall in the prices of the goods and services that government purchase. The reduction in expenditure outweighs the effects on revenue, which is generally small.

The results, while illustrative, highlight the potential benefits of improving data sharing in the health sector. The modelling results should be weighed against the costs of improving data sharing, as well as any privacy or ethical risks of sharing health data.

Similar types of benefits could be captured in other sectors where there is large value from removing barriers to data use. For most types of data, making the data available for research could lead to better research outcomes and productivity improvements in certain markets. There are also some types of customer data – especially in areas of human services, where continuity of service is important – that could lead to improved consumer outcomes and quality of service. For instance, greater data sharing and use in other government-funded services, such as school education, aged care and childcare, could improve services for consumers and policy design (PC 2023e, pp. 62–63).

⁶³ This is because labour and domestic capital resources are held fixed in the CGE model. In effect, labour must be re-employed in the long term.

Reform D3 – Emerging technology

Reform description (provided to the Commission)

Reform:	Remove regulatory barriers that hinder the uptake of emerging technology in commercial activities, including robotics, artificial intelligence, aeronautics and biotechnology.
Policy problem:	In sectors that utilise emerging technology, regulations can lag behind the pace of innovation, or are too inflexible to allow smooth adoption of technology by businesses. In addition, regulatory standards can be inconsistent across jurisdictions and face coordination issues.
Goal of reform:	Identify and remove barriers that limit business participation in markets utilising emerging technology. Adopt consistent and flexible regulatory models that allow emerging technology to be introduced and scaled up without unnecessary costs or delays.

Background

Emerging technologies are those under development with unrealised potential, including in robotics, AI, aeronautics and biotechnology. Under a regulatory framework that is fit for purpose, emerging technologies have the potential to improve living standards and increase productivity in end-user industries. For example, autonomous vehicles and transport services could improve transport safety and efficiency, but achieving these benefits requires a comprehensive revision of road use laws and regulations (PC 2017b, p. 32).⁶⁴

The potential benefits of emerging technologies are large, as evidenced by previous breakthrough technologies. The development of information communication technologies (ICT) in the 1980s allowed firms to undertake pre-existing tasks more efficiently and to introduce new products, processes and organisational structures. According to growth accounting estimates, ICT adoption in Australia contributed up to 0.3 percentage points to annual output growth and up to 0.2 percentage points to annual multifactor productivity growth in the late 1990s (PC 2004, p. 7). Similarly, internet and mobile phone adoption was estimated to increase Australian GDP per capita by about 3% between 2004 and 2014 (Qu et al. 2017, pp. 66–67).

However, emerging technologies can also pose risks to consumers. Emerging technologies can be used in ways that cause harm, either deliberately or unintentionally, as the technologies and their regulatory frameworks are still developing. The rapid pace of technological change among emerging technologies poses challenges for regulators in balancing the potential benefits and harms of both emerging technologies and regulatory interventions (GAO 2024, pp. 1–2).

Nonetheless, the emergence of new technologies does not necessarily imply the need for new regulation. Many potential harms from emerging technologies can be: addressed by existing laws and regulations; captured by adapting existing regulations; or managed by businesses and consumers without regulatory intervention (PC 2024d, p. 1). Creating new regulation can also be costly, involving direct costs in compliance and enforcement as well as indirect costs through changing behaviour (PC 2024d, p. 4). Further,

⁶⁴ Australia's laws are designed for vehicles with human drivers and do not currently support the deployment of automated vehicles. The National Transport Commission has been working with Australian, state and territory governments to develop a nationally consistent regulatory system that supports the safe commercial deployment of automated vehicles (NTC 2024, p. 1).

although a lack of regulation may fail to prevent harms, overly restrictive regulation may inhibit productivity benefits from emerging technologies.

Where regulation is required, the general regulatory approach should be guided by the following principles (DCGI 2018; NSW Productivity and Equality Commission 2021; PC 2024d).

- **Risk-based.** Regulation should weigh the expected harm from emerging technologies with the expected cost of regulating to reduce that expected harm. This requires regulation to be proportionate to the risk – encompassing the likelihood and severity – of the potential harm from each emerging technology use. Risk should be measured relative to a real-world counterfactual where the emerging technology in question was not used.
- **Technology-neutral.** Regulation should focus on the objectives and outcomes it seeks to achieve rather than the technical details or specific uses of emerging technologies. Regulation should give businesses and consumers flexibility in meeting regulatory objectives, without discriminating against particular technologies. Further, regulation should be future-proof and sufficiently broad to incorporate developments in technology.
- **Data-driven.** Regulation should be adaptive, responding to actual uses and potential harms as they arise rather than pre-empting uses and speculating about harms. Regulatory design should be iterative and open to experimentation, with regulatory measures trialled, monitored and reviewed regularly to obtain evidence on what works and what could be improved.
- **Collaborative.** Regulation should be developed in collaboration between industry participants, governments and regulators to align both nationally and internationally. Regulation should take an ‘ecosystem’ approach that considers the regulations applied overseas, applies rules consistently across jurisdictions and builds up technical expertise for governments and regulators.

As an example, the Commission previously applied these principles to the regulation of AI (box B5.5).

Box B5.5 – Regulating artificial intelligence

Artificial intelligence (AI) has the potential to increase productivity across the economy and improve living standards. The AI models that have emerged in recent years apply advanced machine learning to increasingly sophisticated uses, including natural language processing, image recognition, recommender systems, personalised search and social media. Together, these technologies are increasingly undertaking complex tasks that were outside the scope of previous waves of automation (PC 2024d, p. 2).

But, like any technology, there are risks that without proper oversight, AI could harm individuals, businesses, the economy and/or society. Using AI can cause harm, for example, from errors due to low quality technology, or from malicious or reckless use (Solomon and Davis 2023, p. 15). Further, AI has some unknown costs given that both the development and uptake of the technology continue to progress.

There is also no clear view about the costs of managing and harnessing AI, its effects on market entry and whether AI will increase or decrease competition (HORSCE 2024, p. 15). AI could allow new firms to emerge, or allow large incumbents to entrench their position. The OECD (2024a, p. 29) has identified potential competition issues in the supply of AI, including ‘winner takes all/most’ effects whereby incumbent digital firms could leverage advantages like economies of scale to make it harder for new entrants to compete.

Box B5.5 – Regulating artificial intelligence

Although regulation can address some of these concerns, overregulation may depress the potential benefits from AI. For instance, one of the more conservative studies estimated that AI could increase US GDP by up to 1.1% within ten years (Acemoglu 2024, p. 43), while other studies have estimated effects from about 8 to 20% of GDP within ten years (J.P.Morgan 2024). If the same benefits from AI were transferable to Australia, overregulating AI based on perceived rather than real risks could depress such benefits by billions of dollars.

To align productivity and regulatory objectives, the regulatory approach to AI should mitigate potential harms to acceptable levels without stifling innovation. The Commission (2024d, p. 3) proposed the following steps to manage the potential harms associated with the use of AI.

1. Identify how the technology is already being used, or likely to be used in the immediate future.
2. Determine whether this use results in heightened risks of serious harm compared to a counterfactual where the technology was not used.
3. Identify which parties have the scope to influence the risks and outcomes of AI use.
4. Determine whether the risk is adequately addressed by existing regulation, or whether extensions or modifications to this regulation, or improvements to its enforcement, are required. If a new regulatory instrument is needed, consider a technology-neutral approach in the first instance.

The Commission's approach recognises that regulation is only one element in securing safe, ethical AI use in Australia. Risks of harm can be tempered by social norms, market pressures and the coding architecture (Lessig 1998, 2006). The approach also recognises that new technology does not imply 'new rules'. Many of the potential harms that could be associated with AI are harms that are adequately dealt with by existing laws and regulations. Moreover, Australia will be one small part of a global AI ecosystem and regulatory landscape which are still developing.

Case study: Drones

Modelling the benefits of emerging technologies is difficult given that their uptake, by definition, is low. Moreover, the adoption curve of emerging technologies – their cumulative rate of uptake across the economy – is uncertain and likely to vary between technologies. Therefore, to illustrate the potential economic benefits associated with an optimal regulatory approach to emerging technologies, the Commission focused on drones as a case study.

Drones refer to small remotely piloted aircraft systems which have no people onboard (CASA 2022, p. 3). Drones can improve productivity in several end-use industries by completing tasks more efficiently – faster and at lower cost – than alternative technologies. End-use industries can include agriculture, mining, media and entertainment, emergency services, law enforcement and transport.

Drones face regulation for commercial flight operations, as governed by the Civil Aviation Safety Authority. Drone service providers must hold an operator's certificate or accreditation, only hire pilots with a remote pilot license and register all commercial drones (CASA 2021b). Drone users may not need a certificate or license to fly for commercial purposes over land they own or lease, depending on the drone type and commercial activity. Further, a separate application and a minimum 60-day waiting period is required for drone operations 120m above ground level, beyond visual line-of-sight, within 5.5km of a controlled aerodrome and involving more than one drone (CASA 2021a).

Effects of the reform

There is limited evidence to determine the extent to which current drone regulations are constraining economic activity. A recent survey of drone operators in regional Australia found that the process for obtaining approval for beyond visual-line-of-sight operations can be lengthy and complex, posing significant time and resource burdens (CASA 2024, p. 16). Further, when asked what barriers they face to drone operations, of the 443 respondents, 65% stated complex regulations, while 29% stated not enough time to apply for flight authorisation (CASA 2024, p. 14).

Nonetheless, there are likely to be economic gains from greater use of drone technology by adopting a principles-based or outcomes-based approach to regulating drones. Given data limitations and the difficulty in attributing economic benefits to any regulatory change, the Commission modelled illustrative productivity benefits associated from widespread implementation of drone technology in agriculture and mining. These industries:

1. have the strongest case for using drones
2. are large, and therefore, more conducive to computable general equilibrium (CGE) modelling.

The productivity shocks applied to agriculture and mining were conservative estimates of the potential benefits from drones (relative to comparable studies discussed below), given uncertainty over their current and future uptake. The shocks were calibrated using evidence on feasible use cases, but remain illustrative.

Direct effect:	Capital and labour productivity in agriculture rises by 0.1%
	Capital and labour productivity in mining rises by 0.1%
Parties affected:	Cost savings for farmers and miners through higher uptake of drone technologies
	Lower costs for drone service providers and lower prices for drone service consumers through streamlined regulatory approvals

Drone technologies can allow farmers and miners to use production inputs more efficiently, leading to greater output and productivity. Streamlining regulatory approvals for drone operations could also reduce the costs of purchasing and supplying drone services, thereby lowering the price and increasing the supply of drone services.

A principles-based or outcomes-based regulatory approach, focussed on eliminating red tape and avoiding overregulation, is most likely to incentivise drone adoption and innovation to achieve these economic benefits.

There are various use cases for drones in mining and agriculture ...

In agriculture, drone technologies can save costs from using fewer labour hours and intermediate inputs. Drones can monitor crops, aquaculture and livestock faster and more accurately than humans (CIE 2021, p. 8; Malambo et al. 2018; Nurdin et al. 2023; Shendryk et al. 2020), freeing up labour hours and associated wages. Drones can also deploy fertilisers and herbicides more efficiently than competing technologies, one study showing herbicide cost savings of up to 82% in certain scenarios (Hobba et al. 2021, p. 9). Further, drones can reduce fuel costs by substituting away from other technologies (CIE 2021, p. 30) – such as vehicles for inspections and tractors for spraying – which also results in unquantified environmental benefits.

In mining, drone technologies can save costs from using fewer labour hours and cheaper capital. Drones can be used in open cut mining operations to conduct inspections, mapping and surveying faster and at a lower cost than other labour-intensive methods (DAE 2020, p. 30; Lee and Choi 2016). Drones can also replace more expensive capital such as helicopters and other mining vehicles (DAE 2020, p. 30), reducing upfront and

ongoing capital and fuel costs. Further, drones can improve mine safety while allowing inspections to occur without having to stop production, resulting in cost savings (FlyAbility 2024; Wiedemann et al. 2023, p. 43).

... which could provide large benefits

Table B5.1 summarises three studies that modelled the economic benefits associated with drone adoption in mining and agriculture.

- Researchers from the University of South Australia modelled lower input costs and higher productivity for both industries in a comparative static, multi-regional CGE model of the Australian economy (Wiedemann et al. 2023).
- Deloitte Access Economics (DAE) modelled higher yields in agriculture and cost savings in mining in a dynamic, multi-regional CGE model of the Australian economy to obtain cumulative effects to 2040 (DAE 2020).
- PwC modelled multi-factor productivity increases for mining and agriculture in a dynamic CGE model of the UK economy to obtain cumulative effects to 2030 (PwC 2022).

Table B5.1 – Approaches to modelling the benefits associated with drone adoption

Author	Industry	Shock	Effect
University of South Australia (lead author)	Agriculture	20% fall in fuel inputs 5% fall in capital inputs 30% fall in chemical inputs used in broadacre food crops and hay production 10% higher productivity for fruit picking	\$701 million in higher output
	Mining	5% fall in mining services inputs 0.5% higher primary-factor productivity	\$1.7 billion in higher output
Deloitte Access Economics	Agriculture	1.49% higher yield for agricultural businesses, increasing by 0.25% to 1.56% annually to 2030	\$7.7 billion in cost savings \$3.5 billion in higher output
	Mining	\$940m in cost savings, growing at 2.1% annually to 2040	\$5.9 billion in cost savings \$2.5 billion in higher output
PwC ^a	Agriculture and mining	0.4% higher multi-factor productivity	£4.4 billion in cost savings £3.0 billion in higher output

a. PwC modelled agriculture and mining together as one industry called 'Agriculture, mining, water, gas and electricity'. Sources: Wiedemann et al. (2023); DAE (2020); PwC (2022).

These studies found large potential benefits from higher drone uptake in the agriculture and mining industries. However, these studies did not link these benefits to removing regulatory barriers to drone uptake. Furthermore, the shocks used in these studies were informed by limited data and many assumptions. For example, researchers from the University of South Australia described the scenarios they modelled as 'speculative' given that the productivity benefits from drones will only be revealed after many years and that the role of competing technologies is unpredictable (Wiedemann et al. 2023, p. 221). This limits the robustness of the results as well as their ability to inform CGE shocks for the Commission's model.

Method for estimating the benefits of drone use

The Commission adopted a scenario-based approach to modelling this reform, applying a conservative 0.1% shock to capital and labour productivity in the agriculture and mining industries. This shock represents the potential productivity benefits from widespread use of drones in these industries, rather than the benefits from a regulatory change. Specifically, the shock represents savings in labour, capital and intermediate inputs from farmers and miners substituting some current production practices with more efficient ones using drones. The shock is illustrative given the lack of robust evidence to draw on.

The shock was applied to the sub-industries in Agriculture, Forestry and Fishing and Mining that have feasible, productivity-enhancing use cases for drones. These sub-industries were: Sheep, Grains, Beef and Dairy Cattle; Poultry and Other Livestock; Other Agriculture; Aquaculture; Forestry and Logging; Fishing, Hunting and Trapping; Agriculture, Forestry and Fishing Support Services; Coal Mining; Oil and Gas Extraction; Iron Ore Mining; Non Ferrous Metal Ore Mining; Non Metallic Mineral Mining; and Exploration and Mining Support Services. The shock was applied equally across jurisdictions.

Limitations

The Commission's approach to model productivity shocks in end-user industries entails some limitations. By not modelling a direct drone market,⁶⁵ the approach fails to account for the scarcity of drones and competing demand for drones between industries. A comparative static CGE model is also unable to model an adoption curve for drone technology, which is important because the benefits of drones are expected to vary and accrue over time.

Moreover, the costs of modifying the regulatory approach to expand the use of drones was not modelled. However, it is likely that a principles-based or outcomes-based regulatory approach would reduce costs due to more streamlined approval processes and lower overall regulatory burden.

Greater drone adoption also poses several other potential impacts on consumers that ought to be balanced against any estimated economic benefits. These include a more crowded and noisier airspace, the invasion of privacy, disturbance to wildlife, displacing existing jobs and safety risks to the general public from technical failure and malicious cyber-attacks (Wiedemann et al. 2023, p. 9).

Results and discussion

The modelling for this reform takes a scenario-based approach by assuming that the proposed reforms improve primary factor productivity (labour and capital) by 0.1%. Such an improvement, if it were to occur, would increase real GDP by an estimated **0.03% (\$711 million)** and increase prices by **0.02%**.

The reasons for these results are as follows. As labour and capital become more productive in agriculture and mining, their relative cost of production will fall. Agriculture and mining are export-oriented industries and demand for exports is elastic. Hence, as their cost of production falls, these industries will produce more output, most of which will be exported. As export volumes increase, real GDP increases.

The higher relative productivity in agriculture and mining draws resources away from other sectors.⁶⁶ This puts upwards pressure on wages and the price of capital across the domestic economy, increasing other industries' relative production costs and the price of their outputs. Consequently, consumer prices increase

⁶⁵ The Commission's CGE models did not include a drone industry. Further, there was no robust publicly available data that the Commission could draw on to create a drone industry in the CGE model.

⁶⁶ Given that the supply of labour is held fixed in the model, workers are drawn from other industries. Similarly, the supply of domestic capital is held fixed in the model, so capital is drawn from other industries and the rest of the world.

and real wages increase by **0.02%**. This rise in consumer prices occurs because the shock affects the mining and agricultural sectors. It is important to note that other emerging technologies might affect different sectors – such as non-export sectors – which would lead to a different effect on prices.

Higher prices increase both government revenue and expenditure. Net revenue for the Australian Government increases by **\$80 million** as the increase in revenue outweighs the increase in expenditure. The converse occurs for the states and territories, whose net revenue decreases by **\$27 million**. The Australian Government primarily gains from increased income tax revenue. The state and territory governments benefit from increased GST-tied grant revenue from the Australian Government, which reflects higher GST collections from higher nominal household consumption.

These results, while illustrative, highlight the potential benefits of expanding drone use in the agriculture and mining sectors. These benefits should be weighed against any costs of increasing drone uptake, as well as the potential privacy and safety risks of widespread drone use.

Other emerging technologies – such as robotics, AI, aeronautics and biotechnology – could boost GDP through similar mechanisms. New technologies can be enabling, increasing the productivity of existing industries by unlocking faster and cheaper ways of doing things. New technologies can also create new markets and industries directly, but attempting to model these effects would be highly speculative and therefore unlikely to produce meaningful insights.

Overregulation and red tape will depress the potential benefits of emerging technologies by increasing compliance costs. Following a principles-based or outcomes-based approach to regulation – one that is risk-based, technology-neutral, data-driven, and collaborative – is likely to maximise the economy-wide benefits from emerging technologies and reduce the risk of unacceptable harm without restricting their growth.

Reform D4 – Banking

Reform description (provided to the Commission)

Reform:	Remove regulatory barriers to competition in the banking sector that advantage large incumbents and lead to poor consumer outcomes. This could include barriers that hinder customer movement or place a high burden on new or smaller players.
Policy problem:	Complex regulatory barriers to entry and a regulatory focus on systemic risk over competition have contributed to a concentrated Australian banking sector that can result in poor consumer and business outcomes.
Goal of reform:	Allow greater participation in banking by new and smaller businesses that can offer innovative solutions that meet customer needs. Empower customers with the information needed to choose the most suitable services.

Background

The Australian banking sector is highly concentrated and regulated with the four major banks accounting for over 70% of the market across product lines. In 2018, the Commission found that this market power was used by the four major banks to inflate product prices beyond competitive levels (PC 2018a, p. 37). Although new models of banking have emerged which focus on digital and non-traditional services, the ACCC reported in 2023 that the state of the general banking sector is one of 'high barriers to sustainable new entry' and that 'smaller banks face the challenge of competing with larger banks that benefit from scale and scope advantages' (ACCC 2023d, p. 35). One contribution to these high barriers to entry is that regulatory settings are unduly 'impeding effective challenge by new entrants and smaller rivals', reducing competition in the sector (ACCC 2017, p. 1).

We focus our analysis of this reform on two banking products that are likely to have a material economic impact: home loans and business loans.⁶⁷ A lack of competition is inflating prices in both of these markets. In the home loan market, lenders engage in price discrimination through mortgage switching offers which then revert to relatively higher mortgage rates. A House of Representatives committee heard that smaller players do not have deep pools of deposits to finance similar switching offers, making it harder for them to compete for mortgage holders looking to switch lender (HORSCE 2024, p. 114). Furthermore, it was reported that larger banks rely on the difficulties customers face in switching mortgages to retain these customers once they are enticed - at which point their interest rate increases via what has been dubbed a 'loyalty tax' (HORSCE 2024, p. 114). This loyalty tax on 10 or more year-old loans was found by the ACCC to be on average 1.04 percentage points higher than a comparable competitive loan rate (ACCC 2020, p. 18).

In the business loan market, the lack of competition particularly affects small and medium enterprise (SME) loans. The market for these loans is distinctly less competitive than the market for large business loans. The RBA noted in the Commission's 2018 report 'the major banks hold significantly lower shares in the market for large business loans (60–70%), where foreign banks are more active, compared to personal deposits and housing loans (70–80%), with returns on business lending competed down' (PC 2018a, p. 126).

⁶⁷ The PC's report (2018, p. 151) found that, for products such as transactions and savings accounts (those that are relatively inexpensive to hold), many customers already hold multiple products and utilise the account offering the best services at the time.

Market participants have raised concerns that regulations such as prudential capital requirements on small business lending reduces access to loans for SMEs and increases the rates they must pay. This reform aims to boost competition in the sector, particularly from newer entrants. Some reforms include lowering capital requirements for newer digital banks while others focus on implementing behavioural interventions to encourage product switching by consumers. More market participants and competition will provide consumers with a wider choice of banking services as well as better products.

Effects of the reform

Direct effect:	Interest rates charged on mortgages fall by 0.5 percentage points
	Interest rates charged on business loans to SMEs fall by 0.5 percentage points for 45% of SMEs and by 2.5 percentage points for 5% of SMEs
	Increased pass-through of cash rate cuts and reduced pass through of cash rate increases by banks
Parties affected:	Existing and prospective mortgage holders
	SMEs with existing business loans or intentions to secure a business loan
	Banks offering home loans and/or SME business loans

Increasing competition in the banking sector will incentivise lower prices and increased product offerings, improving access to finance for both households and firms. This has the potential to have significant flow-on effects for the Australian economy, with increased private sector financing promoting further economic growth while lower home loan rates could provide a sizeable increase in disposable household income. Additionally, lower mortgage rates can reduce the cost of, and therefore increase access to, homeownership for families or individuals.

The proposed reform does not list specific policy actions; however the reform intends to increase competition in financial services. The channels in which interest rates on a variety of loan types can fall due to increased competition are multiple, with various research supporting the possibility of consumer gains on loan products from competition.

- Evidence of increased competition increasing pass through of rate cuts and decreased pass through of rate rises (Leuvensteijn et al. 2011; Ung 2024).
- Increased customer switching can compound existing rate price competition. As discussed in D1, highly concentrated markets may only require one seller to compete on price in order for greater consumer switching to reduce prices. Behavioural prompts to switch could encourage customers to switch to better rates (Byrne et al. 2020, p. 18; Richards 2015, pp. 38–47).
- More product offerings from new and digital banks, using emerging technology to assess credit risk (PC 2018a, p. 133).

A lack of competition in the home loan market is leading to higher lending rates

Market segmentation of the home loan market is one way in which a lack of competition is leading to poorer consumer outcomes. As the Commission found in its Financial Services inquiry (PC 2018a, p. 167), rather than offering a competitive interest rate and home loan product to all borrowers in the market, the home loan market is segmented into two: active customers (who are likely to switch, leading to stronger competition for their home loans) and inactive customers (who are unlikely to switch, leading to weaker competition for their

home loans). This difference in competition is reflected in the differential interest rates for customers with new versus old loans.

- Existing borrowers pay interest rates which are up to 0.32 percentage points higher than new borrowers (ACCC 2018b, p. 7).
- The ACCC's Home Loan Price Inquiry (2020, p. 18) showed a gap of 1 percentage point in the home loan rates between customers with loans greater than 10 years and those with new loans.

Sign-up bonuses and discounts are not an uncommon strategy to attract customers; however, home loans are unique in that their complexity contributes to low rates of switching and shopping around by consumers when compared to other products (ACCC 2020, p. 7). As a result, some customers stay with a single home loan provider despite there being potential savings from switching (ACCC 2020, p. 10). In contrast to inactive customers, active customers take advantage of sign-up discounts and change provider frequently. In response, home loan providers have segmented the market and charge these types of customers different rates (ACCC 2018b, p. 167).

Consumer switching could be encouraged by providing accessible and transparent product information, utilising behavioural methods to reduce the complexity of home loan switching and otherwise prompting customers to shop around. Several regulations currently disincentivise home loan provider switching.

- The current rules surrounding comparison rates allow major banks to advertise comparisons using these temporary (often 6-12 month) sign-up rates, rather than the higher rate that these home loans graduate to after the discount period.
- Additionally, switching is discouraged by the current mortgage discharge process, whereby the bank currently holding a mortgage always has the last chance to hold a customer and offer them a discount.

Smaller banks appear to face difficulties entering and competing in the market. One reason appears to be that current rules limit funding options for smaller banks that currently rely on a thin market of larger banks for mortgage financing (referred to as warehouse financing). While larger banks can bundle and sell loans, smaller banks face capital constraints. For example, Macquarie Bank has been able to effectively enter and compete in the home loan market partly via opting to increase their deposit takings (increasing from between 37% and 40% in 2016 to 2018, to 43% in 2023) (Macquarie Bank 2016, p. 3; Macquarie Group 2017, p. 18, 2018, p. 16, 2023, p. 29). As a result, they have managed to avoid over-reliance on expensive warehouse financing options by writing some of their new home loans from their customer deposit base.

Replicating this entry into the market is very difficult for other banks, with housing lending from non-banks that lack deposit funding declining sharply over 2023 due to a lack of low-cost funding (RBA 2024h). Barriers to replicating Macquarie's market entrance include issues of scale, whereby smaller entrants find it difficult to fund attractive sign-up mortgage rates that larger banks can offer as well as regulatory barriers to accepting deposits entirely, discussed further in Reform D5. Given the difficulties in using customer deposits to fund home loans, exploring and expanding new funding options for smaller banks could allow new entrants to enter the home loan market. For example, Australia's current regulatory barriers hinder FinTech businesses from accessing superannuation funding – which has proven a successful funding source for mortgages in the Netherlands. Investment from pension funds and institutional investors in the Netherlands mortgage market (disaggregated data not available) increased from €46 billion to €163 billion between 2012 and 2023 (APG 2024). If banks could directly engage with superannuation funds for mortgage portfolios, it could provide more funding options for smaller banks, and investment options for superannuation funds. If this constituted a competitive investment for superannuation funds, it could introduce more home loan competition and reduce the interest rates on home loans while increasing the expected returns for superannuation fund members.

Outsized potential benefits from increasing competition in the home loan market

Even minor decreases in consumer home loan rates arising from increased competition will have large impacts on the Australian economy due to the size and relevance that mortgages have for both Australian banks and their mortgage holders. For Australia's roughly 5 million mortgage holders, a 0.5 percentage point reduction in home loan rates would reduce the average yearly household mortgage repayment by approximately \$1,748. Measuring the impact of increased competition in the home loan market is therefore an exercise in modelling a decrease in the rates paid by mortgage holders to observe the flow-on effects of an anticipated fall in loan-servicing costs.

This flow-on effect is expected to be significant since:

- home loans constitute a repayment on the largest asset and increasingly greatest source of wealth for Australian's, with 67.9% of net household wealth composed of household residential property (ABS 2024a)
- mortgages are the largest asset on the balance sheets of Australia's major banks, with the total size of residential mortgages in Australia in December 2023 being about \$2.2 trillion (APRA 2024). Their size and significance on bank balance sheets underpins the Australian financial sector (APRA 2016).

At the same time, a change in rates is also highly significant in its impact on mortgage holders since mortgage servicing is one the largest single expenses for households.

- The average share of household income Australian mortgage holders spend on their mortgages recently rose from about 30% in March 2020 to about 49% in December 2023 (ANZ 2024, p. 13), owing largely to interest rate rises. The average new mortgage size in Australia reached its all-time high in May 2024 at \$640,998 (ABS 2024f).
- Against Australia's high household wealth, it also has a high household debt to GDP ratio of 106% as of Q1 2024 (FRED 2024). This household debt is primarily constituted of mortgages (van Hoenselaar et al. 2021, p. 19), raising Australian households' sensitivity to high interest rates.
- A September 2023 Roy Morgan survey showed 30.3% of mortgages were classified as 'at risk' or 'extremely at risk' due to repayment size, the highest proportion since the GFC (Roy Morgan 2023, p. 1).
- The above barriers reduce housing affordability in the population broadly. There is evidence that gains from this reform may be more acutely felt by women, who face an average of just over 7 years to save a deposit for the average Australian property (compared to just over 6 years for men) (AHURI 2024) and for whom paying off a mortgage before retirement is important because their median superannuation balances were 23.4% less compared to men in 2018-19 (Workplace Gender Equality Agency 2022).

Method for estimating the benefits of increased home loan competition

An outcomes-based approach was used to model this reform, through removal of a portion of excess mortgage repayments currently paid by mortgage holders. These excess mortgage repayments are captured by a home loan interest rate that is 0.5 percentage points greater than it would otherwise be under the proposed reform. This would reduce the spread (the difference between the RBA set cash rate and interest rate offered on loans by banks) between the cash rate and the average outstanding owner-occupier mortgage rate in June 2024 from 2.05 to 1.55 percentage points (RBA 2024a, 2024f). A reduction of this size would bring Australia closer to peer nations like the United Kingdom, where the interest rate spread on cash rate to average variable rate sits at around 0.5 to 1 percentage points (the fixed mortgage to cash rate spread is lower at between 0 to 0.4 percentage points) (Bank of England nd; Yurday 2024).

Excess repayments are modelled as a removal of a 2.23% return to capital rent (\$3.267 billion) in 'ownership of dwellings'. This additional return to capital rent represents the aggregate additional repayments paid on Australia's approximately 5 million mortgages. This calculation considers average owner-occupier and

investor home loan rates of 6.06% and 6.43% respectively (as of August 2024) on mortgages of average size \$495,301. Sensitivity analysis is also conducted, decreasing the home loan rate reduction to 0.15 percentage points, modelling a lessened improvement in home loan competition.

Results and discussion of home loan competition modelling

The CGE modelling results estimate that a removal in excess loan repayments will increase real GDP by **0.2% (\$4.335 billion)** and decrease prices by **0.4%**.

A reduction in excess mortgage repayments against the 55.8% of Australian dwellings owned via mortgages leads to approximately \$1,748 in savings for the average mortgage holder per year. This reduction leads to a fall in the cost of home ownership. The prominence of mortgages as a household expense in Australia means this decrease in repayment costs has a broad ancillary effect as expenditures are redirected. The result is an increase in output in most industries, particularly export industries. The increase in output leads to a corresponding increase in real wages and an increase in real GDP.

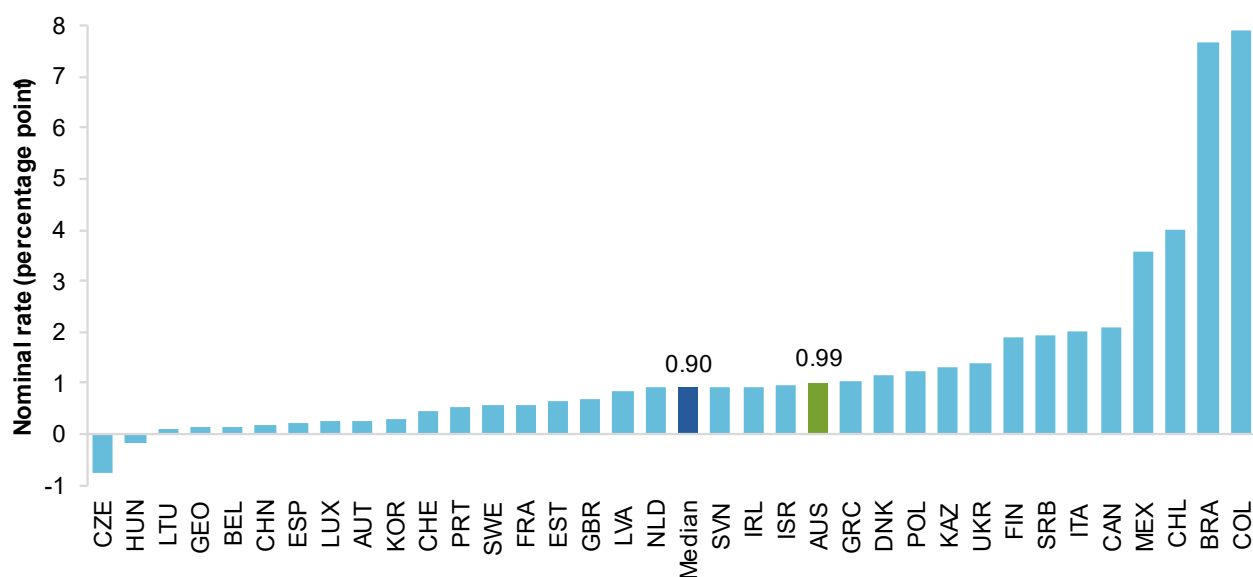
The gains to output also lead to an estimated increase in net revenue of **\$2.164 billion** for the Australian Government. Conversely, the decline in the cost of home ownership decreases net revenues by **\$127 million** across states and territory governments.

These broad estimated benefits with an extensive flow-on effect throughout the Australian economy is expected due to the prominence mortgages have in Australia, both as a principal household expense and as a key financial instrument within the banking sector. Essentially, much of Australia's expenditure is tied up in home ownership costs, with decreases in the cost allowing for diffuse benefits across the economy as resources are directed to more productive uses. A regulatory approach focussing on providing a competitive home loan environment can assist in preventing this principal expense of many Australian households from being excessive, with the benefits then felt across the economy.

Sensitivity analysis reduced the direct the effect on home loan reductions (to a 0.15 percentage point drop). The reduced effect on home loan rates from a modelled smaller increase in market competitiveness results in real GDP gains of \$1.293 billion and decrease in prices of 0.1%. Likewise, net revenue to the Australian Government increases by \$645 million and decreases by \$38 million across state and territory governments.

A lack of competition in the market for SME loans is inflating SME lending rates

Among the 36 OECD countries that report on interest rate spread between large businesses and SMEs, Australia sits above the median, with the 15th greatest spread (OECD 2024c, p. 36). Australian SMEs are charged more than large enterprises for access to finance, and this premium remained above 160 basis points between 2012 and 2021. The existence of a price premium itself is not surprising and in part reflects a fair assessment of the greater default risks of SMEs (Chan et al. 2023, p. 45). Indeed, the elimination of this premium is not a feasible outcome with 36 of the 38 reporting OECD countries having some degree of price premium. Figure B5.2 depicts the interest rate spread of selected OECD countries' SME to large business loans, with Australia sitting above the median spread.

Figure B5.2 – Interest rate spreads between loans to SMEs and to large firms in 2022

Source: (OECD 2024c, p. 36).

Despite some rate spread being expected, the link between a lack of bank competition and excessively high borrower rates is well established (RBA 2024d, p. 3). Australia's relatively high SME borrower spread by OECD standards, and the major banks concentration in the SME loan market, suggests there is scope to reduce the business loan spread between SMEs and large businesses through greater competition.

The impact of excessively high SME loan interest rates relative to larger businesses is apparent in reporting data, with the share of SME's citing a lack of access to additional funds as a business barrier decreasing as firm size grows (PC 2021e, p. 21). In essence, the smaller the firm, the more access to finance is an issue. One of the reported barriers pertains to banking regulations that incentivise the use of the family home as collateral with residential property underpinning approximately half of small business loans by value (PC 2021e, p. 18). Some businesses report being unwilling to place risk on a family home in order to secure lower interest rates (Chan et al. 2023, p. 46) or to avoid paying untenable interest rates on unsecured or other asset secured loans. The Commission (2018a, p. 32) has raised this as an issue before.

The ability of small and medium sized enterprises (SMEs) to access the necessary finance to establish and grow their business has been an issue for policymakers and previous reviews and inquiries, particularly since the GFC. Continued reliance on having a home as security for a business loan – in an era when home ownership in the key entrepreneurial period of life is at a low – will increasingly inhibit SME growth. Around one third of major bank SME loans, and often a higher proportion of smaller lender SME loans, are secured by a home.

Lowering capital requirements for digital banks to enter the relatively uncompetitive SME loan market, and expanding the assets available as loan security for SMEs, will allow more SMEs to take advantage of the lower rates available via secured loans.

Potential benefits from increasing competition in the business loan market

We similarly expect reduced interest rates on business loans to have a large impact on the Australian economy. However, this impact would likely be larger in the business loan market for SMEs due to the

relatively higher existing level of competition in the loan market for large enterprises. The Commission (2018a, pp. 126–127) reported that:

... the major banks hold significantly lower shares in the market for large business loans (60–70%), where foreign banks are more active, compared to personal deposits and housing loans (70–80%) (RBA, sub. 29), with returns on business lending competed down. Over the past few years, the [interest rate to cash rate] spread on large business lending has declined as competition has emerged from foreign banks (RBA, sub. 29, p. 15).

Even if the competition impacts on reduced business loan rates are limited to loans for SMEs, the potential economic benefits of cheaper and better access to finance for SMEs are significant.

- 54% of Australian GDP in 2022-23 was from SMEs (ASBFEO 2023, p. 6).
- SMEs employ about two-thirds of private sector employment (Jones 2024, p. 1).
- SMEs have an increasingly relevant role in Australian innovation, surpassing the contribution to Australian research and development by large businesses since 2020 (Jones 2024, p. 3).
- Of the 2.6 million Australian businesses, 99% are SMEs (Jones 2024, p. 1).
- Loans to SMEs compose over half of outstanding business loans in Australia (Chan et al. 2023, p. 44).

Against their major contribution to the Australian economy, many SMEs have cited inadequate access to finance as a key impediment to both growth (Bakhtiari et al. 2020, p. 1) and to innovating (Jones 2024, p. 8). Increasing product offerings and lowering rates offered to Australia's SMEs could have outsized benefits to economic growth in Australia. Measuring this impact involves modelling the anticipated lower interest rates on business loan offerings to SMEs, which are expected to accompany increased banking competition.

Non-traditional finance for SMEs

Removal of regulatory barriers should target opportunities for competitive market entry by digital and neo-banks, which can improve customer product offerings through the leveraging of new and emerging technologies to more accurately assess risk. Greater market entry from these new entrants is one pathway towards providing SMEs with lower loan rates without the need for onerous collateral requirements. Indeed, the ability to fully assess the risk associated with financing SMEs compared to large businesses is cited as a key impediment to the level of foreign bank entry into the SME market compared to entry seen in the large business lending market (PC 2018a, p. 447). A market participant said:

... banks have been unable to efficiently process the smaller end of the SME credit space as their current processes take time due to the manual nature of information collection and processing. (Craig 2022)

Other studies cite a greater desire for alternative financing for SMEs that are innovative or otherwise financially constrained (Bahati and Aziakpono 2023, p. 7) and the provision of more flexible loan amounts, lower transaction costs and simpler rapid lending processes compared to traditional banks (Hisham and Johan 2021, p. 5; Rosavina et al. 2019, p. 267; Temelkov and Samonikov 2018, p. 30). This has led to SMEs seeking out alternative sources to fund their growth through lending opportunities via non-banks that more fully leverage data availability and technology and which take advantage of big data and social network information (Bahati and Aziakpono 2023, p. 7). The Commission said in 2021:

... combining new data sources with innovative analytical tools (such as artificial intelligence and machine learning) has given many lenders the information and confidence to lend to SMEs without the security of property. (PC 2021e, p. 2)

This development is important as SME lending remains challenging principally due to the greater difficulty in assessing the credit-worthiness of small businesses. Other reviews have found that FinTech businesses are uniquely equipped to overcome the difficulty in accurately assessing SME loan risk through new developments in gathering and sharing information, which has reduced information asymmetries and transaction costs between lenders and SMEs (Bahati and Aziakpono 2023, p. 1).

Another market participant cited an observed shift of existing banks moving further away from SME lending to larger business funding, leaving an 'unsecured finance gap for SMEs within the loan range of \$250,000 to \$5 million' (Kolenda 2022). In response to this gap, Australia's non-traditional finance market has grown but there exists significant scope for further development with these new methods still composing a relatively insignificant portion of the overall lending market. For example, crowd-sourced equity raised only \$70 million for SMEs in 2022 (Chan et al. 2023, p. 47). Other methods show more promise with 'balance-sheet' lending by FinTech businesses, which leverages transaction data to identify low risk businesses having emerged as the largest source of non-traditional finance (McCowage and Nunn 2022, p. 18).

Method for estimating the benefits of increased SME loan competition

An outcomes-based approach was used to model this reform, through the removal of a portion of excess interest rates charged to SMEs currently accessing unsecured business loans (5% of SME loans) and to those currently accessing asset secured (non-residential) business loans (45% of SME loans)⁶⁸. The anticipated effect on the former group is a fall in interest rate charged on loan by 2.5 percentage points, and a fall of 0.5 percentage points for the latter group. Against the 2022 median SME to large business loan spread, this reduction would bring Australia in line with the UK median interest rate spread.

Excess SME loan costs are modelled as a removal of a capital income rent across industries (considering the share of SMEs and large businesses per industry), with an aggregate reduction of \$1.878 billion.

Results and discussion of greater SME loan competition

The CGE modelling results estimate that a removal in excess repayments will increase real GDP by **0.1%** (**\$2.239 billion**) and decrease prices by **0.05%**.

The estimated reduction in excess SME interest rates reduces the average SME loan rate by 0.35 percentage points. As the cost of lending to SMEs declines, the cost of production for firms (against industry SME makeup) leads to an increase in output and of real GDP. Greater output has the flow-on effect of increasing real wages and the use of capital in the Australian economy.

The gains to output lead to an estimated increase in net revenue of **\$714 million** for the Australian Government from greater income tax receipts and lower government expenditure from decreased prices. The loss of net revenues to the state and territory governments totals **\$316 million**.

Reducing the cost of investment and operating costs for a large proportion of Australian SMEs has the potential to provide a broad reduction in prices throughout the Australian economy, and to result in a proportionate increase in output and real wages. A regulatory approach that reduces business operating costs will likely be positive for the economy; however, the impact will differ via industry, as some industries tend to be populated by more SMEs than others. The aggregate impact is estimated as positive across the economy.

⁶⁸ Estimation assumed that loans for medium size businesses shared similar characteristics to loans for small businesses. Figure based on reported half of small businesses using residential property as collateral for business loans (PC 2021e, p. 18).

Reform D5 – Payment systems

Reform description (provided to the Commission)

Reform:	Increase direct access for non-ADI payment service providers to Australian Payment Systems, to clear and settle payments.
Policy problem:	Non-ADI Payment System Providers (PSPs) are currently not eligible to become direct clearing and settlement participants in the New Payments Platform and are subject to additional conditions in other payment systems. Payment systems are typically owned and operated by incumbent banks.
Goal of reform:	Increase competition in payments clearing and settlement, benefiting consumers through improved product offerings.

Background

Australian payment systems include account-to-account services (NPP, High Value Clearing System, BECS), major card schemes (Eftpos, Visa and Mastercard) and the Reserve Bank Information and Transfer System. Against these multiple systems are a varied selection of access requirements which are frequently described as 'not transparent or are perceived as being overly onerous relative to the risks posed by the specific payment system provider' (PSP) (Treasury 2021b, p. 30). Recognising this, an August 2021 Treasury review of the Australian payments system noted the 'need for a simpler and fairer way for PSPs to access payment systems and that standards to gain access should be made clear and transparent' and recommended the development of common access requirements which would increase access to payment systems by non-ADI service providers (Treasury 2021b, pp. 31, 68).

The Treasury review (and subsequent 2023 consultations) found the current access requirements set by payment system operators typically favour authorised deposit-taking institutions (ADIs), limiting direct access by non-ADI PSPs. To attain access, these non-ADI PSPs enter arrangements with an ADI with payment system access, to clear and settle payments on their behalf. In some instances, non-ADIs prefer this method of indirect access to the added requirements of becoming an ADI; however, some market participants have stated that receiving sponsorship from a competitor bank can be fraught with conflicts of interest. FinTech Australia, a peak body for Australian financial technology companies said:

... effectively, banks act as gatekeepers, controlling who, and how, participants can access the payment streams. It is entirely up to the bank to decide who they allow access to the payment rails, including any conditions or limitations imposed. (FinTech Australia 2021, p. 16)

Furthermore, there is evidence that the sub-market for receiving ADI sponsorship is itself uncompetitive, with only a few ADI's offering sponsorship for non-ADI access, principally ANZ, Cuscal, Indue and ASL. Many firms are subsequently limited from entering the various payment product markets as they lack access to the speed and efficiency of Australia's payment systems which they would need to offer a competitive product. The firms are hindered from participating by current access requirements which often mandate being an ADI that takes deposits, or otherwise engaging in sponsorship from an existing ADI.

The Treasury recommendation to introduce common access requirements intends to level the playing field for non-ADI PSPs seeking direct access. It explained that:

... lowering the barriers to entry for PSPs seeking to gain direct access to payment systems is intended to support a more diverse, competitive and innovative payments ecosystem in Australia.
(Treasury 2023d, p. 61)

This sentiment aligns with the Commission's 2018 financial system competition inquiry which advised against unduly restricting NPP access to new entrants and suggested broad access to the NPP would increase competition in the sector (PC 2018a, p. 29).

Effects of the reform

Direct effect:	Reduced barriers to entry and increased competition in several payment product markets. These markets all demand a payment product that is fast, efficient and transparent. We anticipate improved product offerings in the markets for: <ul style="list-style-type: none"> • retail transactions using account-to-account financial transfers • cross border fund transfers • business payments and solutions.
Parties affected:	Market participants, adapting to changing access requirements and opportunities for market entry. Regulators, to address changing payment system access requirements. Consumers and businesses, through greater access to fast financial transfer services and lower fees.

Market reforms aimed at expanding access to payment systems, such as the NPP, can lower barriers to entry into the payment product market for firms. Overseas, the passing of the Second Payment Services Directive in the EU in 2015, which opened access to bank payment systems, and the development of the Unified Payments Interface payment system in India, each led to greater market entrants domestically and abroad (Asian Development Bank 2024, p. 5; Botta et al. 2018; EC 2021, p. 11). Likewise, transparent and accessible payment scheme rules in Brazil have transformed the transaction market from one with 'minimal to no competition' dominated by 'Large banks... and/or the two major global credit card networks', to a market composed of many FinTech businesses offering lower fee payment products (OECD 2024b, p. 13). Similar reforms in Australia could encourage domestic and international entrants into the payment product market including Venmo, Wechat, Cashapp, Block, and others.

The potential benefits from increased competition vary across the sectors of the financial and payments markets. Research on how advanced real-time and low-cost payment systems like Australia's NPP have been used abroad suggests there is scope to:

- reduce intermediary fees such as merchant and interchange fees on transactions
- increase transparency through more standardised payments system access requirements
- introduce competition into the whole sector by reducing sponsorship costs for NPP access.

Currently, many of Australia's payment product markets have become relatively underdeveloped compared to other countries. These products include:

- Account-to-account (A2A) transfers. These services facilitate the direct movement of funds between bank accounts, bypassing intermediaries like card networks. They may be offered to both consumers and

businesses and include an array of consumer and business funds transfers at low cost and high speed, for example in retail transactions or direct peer-to-peer payments without intermediaries.

- Cross border transfers. These facilitate international money transfers and often emphasise speed, reliability, efficient transfers, low fees and favourable exchange rates. These products can feature multi-currency accounts, connections to local banks in multiple countries, real-time rate notifications, and digital and physical debit cards.
- Business payment products. These facilitate efficient and secure transactions through the use of Point of Sale and real-time billing, invoicing systems and payroll for businesses.

Although these markets and products exist in Australia, we anticipate that greater payment system access would facilitate the development of better payment products, improving consumer and business outcomes.

Improving the market for account-to-account payment products

The current access requirements for firms to enter and compete in the market for account-to-account payments through the NPP require either securing the sponsorship of a competitor ADI company, or securing ADI status. ADI status has historically required – among other requirements – \$50 million in capital (APRA 2008, p. 6), but 2023 rules changed this to a minimum capital ratio requirement of 8% for new entrants (although some APRA requirements can push capital requirements higher) (APRA 2022, pp. 9–10). These requirements are relatively stringent ADI bank standards which market participants have referred to as overly restrictive and onerous and not proportionate to the risks of handling value transfers as opposed to the lending and deposit taking activities of a bank (FinTech Australia 2021, pp. 10–11; Xinja 2017, pp. 1–3). For comparison, the UK’s equivalent ADI capital requirement is only £1 million.

The result of this high barrier to market entry has been dominance of the retail transaction market by incumbent debit card companies Visa, Mastercard and Eftpos. The credit card payment market is similarly dominated, with Visa and Mastercard facilitating around 80% of Australian credit card transactions in 2023-24 (RBA 2024g).

The resulting merchant fees from the current transaction product market are higher than other comparable countries (RBA 2024c, p. 4). These fees, partly passed along to consumers, offer a tangible example of the growing costs of an underdeveloped retail payment product market. Consumer transaction fees range between 0.5% and 1% for Visa and Mastercard debit cards and between 1% and 1.5% for Visa and Mastercard credit cards (ACCC 2024c). Although these fee percentages have fallen since 2012, the total volume of transaction fees in the Australian economy has grown in the past few years (Gill et al. 2022, p. 21,23). This has been driven by the growing use of cards for payments - Australia has among the highest per capita debit card use among comparable countries (Connolly 2022).

Debit card payment merchant fees are consistently higher than account-to-account payment mechanisms. For comparison, the recent adoption in Brazil of fast and low-cost account-to-account retail payment services through accessible apps has resulted in a decline of merchant fees from 1% and 2.2% (for debit and credit cards respectively), to about 0.22% (Duarte et al. 2022, pp. 6–7). Similar systems exist in Singapore and India, where customers facilitate retail transactions using smartphones which send funds directly from the customer account via a fast payment system, as opposed to using a digital card stored on the phone that still elicits a card payment merchant fee (Connolly 2022).

Allowing greater access to a system like India's fast and free account-to-account Unified Payments Interface in the Australian NPP would enable more firms to enter the account-to-account market with products offering fast and cheap retail transaction services, moving Australia away from its reliance on expensive debit card technology. As has been observed in other countries such as India, which introduced greater fast payment system access, the use of older and more expensive card-based payment systems declines as they are outcompeted by cheaper new account-to-account technology (Dev et al. 2024, pp. 3–4). Modelling greater

non-ADI access into the market for account-to-account payment services therefore involves estimating the effects of reducing the current card merchant fees as cheaper account-to-account payment services surpass debit card payments in retail transactions. It also involves a slight decrease in credit card use as a low surcharge payment alternative is offered.

Improving Australia's cross border payment technology

Cross border payment technology is another payment product market where more market entrants will be required to facilitate development of more efficient and cheaper consumer products. Internationally, the technology in this sector serially lags behind domestic payment products in terms of cost, accessibility and transparency in most countries. For example, the Treasury (Treasury 2023a, p. 29) noted that:

Individuals in Australia experience high charges for sending money home to family and friends in South Pacific nations.

Australia is not completely unique in this respect. The G20 and RBA have highlighted global concerns:

... payments made across borders via the banking system are too expensive, slow and opaque. (Connolly 2022)

Creating greater functionality with global payment systems is a major undertaking which would involve fundamental system change by central banks, payment system operators and participants to connect major payment systems across countries (RBA 2024b, pp. 20–38). Some countries have even progressed to directly integrating their payment systems. Thailand and Singapore connected their Promptpay and Paynow systems in 2021, allowing for real-time and low-cost transfers (average 2% fee) using just a phone number (WEF 2023).

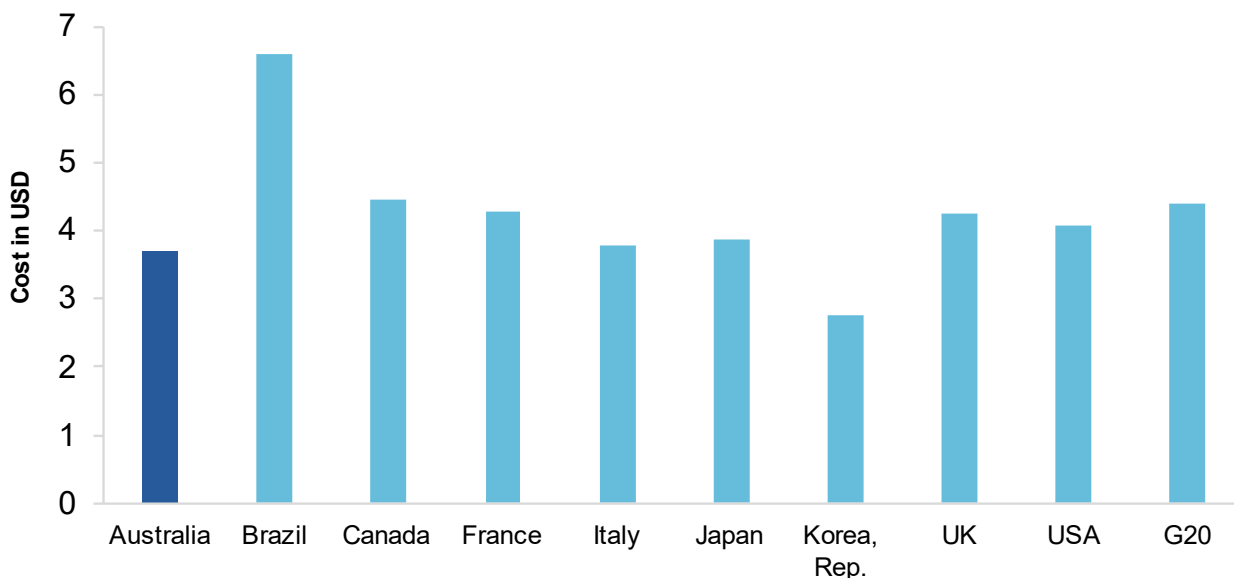
However, once systems are foundationally linked through new digital infrastructure, there will exist a role for market entrants to develop the product offerings which build on this cross-country payment system connectivity. Indeed, improvements and better product offerings to date have occurred in part due the market-driven entrance of digital non-bank operators, which have created products that are both cheaper and more transparent (Treasury 2023a, p. 30). An area for the development of Australia's payment systems is through improving the speed at which cross-border payments can be made. SWIFT data shows that 80% of the time taken to conduct a payment to Australia from abroad is attributable to the final step of Australia's slow overseas payment processing system (Lowe 2022). The RBA has stated that moving overseas payments onto the NPP could address this issue as it offers 24/7 real-time and low-cost payment processing.

Allowing for easier market entry and allowing non-ADIs to better use the NPP via this proposed reform is therefore a vital step in allowing market entrants to develop faster cross border payments using the NPP's high speed technology. Furthermore, the ability of smaller neo-banks to use the NPP and compete in the cross-border payment market would introduce more competition into the cross-border payment market, challenging the incumbent advantage of major ADI's who have NPP access, leading to reduced costs and improved payment products for consumers.

Estimating the total gains to be made from lower cross-border payment fees is complicated. There is an array of flow-on effects caused by any change to these payment systems. Effects could include making Australia a more attractive place for imported labour via reducing remittance costs as well as making Australia an easier place to conduct international business through facilitating faster and cheaper cross-border business transactions. Conversely, making it easier to send remittances would likely increase the outflow of funds from Australian workers. Due to these highly diffuse effects, the Commission did not quantify all the flow-on impacts from lowering the costs of cross-border payments. The direct effects are easier to quantify; according to Worldbank data, Australia's average remittance cost sits at 3.71% of the transaction

value as at 2024 Q1 (World Bank 2024, p. 25). Figure B5.3 shows the cost of sending \$500 across various G20 countries as of 2024.

Figure B5.3 – Cost of remitting \$500 out of country (2024, march quarter)



Source: World bank ((World Bank 2024, p. 27).

The recent introduction of an integrated payment system between Thailand and Singapore offering remittance fees of approximately 2% (of transaction fees) show the possible gains from greater cross border payment integration. More feasible in the near term, South Korea and Italy have achieved remittance sending fees of 2.07% and 4.37% in 2021-22, although these rates have since risen.

Estimating the effect of lowered overseas fee costs would involve measuring the total value of remittances and overseas business funds transfers against the current fees for such transfers, and then lowering these fees to estimate possible gains from cheaper cross border payment products. About \$15 billion in remittances was sent from Australia in 2023 (KNOMAD 2024). Against an average remittance fee of 5.4%, this elicited fees of approximately \$820 million. Reducing Australia's remittance cost to the roughly 2% achieved by South Korea, Singapore and Thailand, would more than halve the remittance fees paid, bringing the total for 2023 down to \$304 million. More than halving the remittances lost to these fees would make Australia a more attractive place to come and work, increasing the availability of imported labour. This benefit is before we account for the added benefits that a better remittance payment system would have on speeding up transaction times for both individuals and businesses, and the improved attractiveness of both work and conducting business in Australia.

Enhancing Australia's business payment and solution products

Greater access and utilisation of the NPP offers a diffuse array of potential business product improvements which facilitate the financial operations of Australian businesses. Improving the efficiency of financial

operations would have wide-ranging benefits, as businesses would be able to lower their costs and increase the speed at which they handle their cash flow. Some of these benefits could include:

- Removing delayed transactions. Delays in receiving payments can affect the cash-flow and operational efficiency of firms. Traditional bank transfers can take several days to process compared to near-instant transfers via the NPP
- Reducing transaction costs. Card processing fees and wire transfer fees are often larger than the low-cost fees possible via NPP enabled payment service providers
- Improved payment options for customers. Businesses that can access NPP payment products can offer their customers instant payment and refund options
- Assist in business reconciliation processes. Real-time payments possible via NPP enabled payment products can assist businesses in conducting end-of-day batching processes and accounting.

Many businesses do have access to the above services; however, the RBA has noted that NPP enabled transaction services have been offered to transaction account customers faster than to businesses. They noted in 2019:

... the slow roll-out of NPP services by some larger banks has been disappointing and overall NPP volumes have grown more slowly than was initially hoped. (RBA 2019, p. 18)

The implementation of these services appears to be lagging in certain key business groups. Currently, non-banks are often able to offer the above services to businesses only via attaining identified institution status through NPP access sponsorship from an ADI or as an NPP connected institution. If firms are not able to achieve these levels of access, or if the capital and compliance requirements render access not economically viable, the market for new entrants offering NPP-enabled business solutions will be relatively deprived of market competition and the development of better business products. Reviewing the current landscape for business solution products suggests greater market entry could improve product offerings for business operations. However, the Commission did not directly quantify the varied and diffuse effects of new business solution products.

Method for estimating the benefits of improved account-to-account payment products

Assessing part of the impact of improved account-to-account payment products involved reducing merchant fees and surcharges from their current level to a lower estimated fee rate under the low-cost transactions feasible with greater NPP use. Currently, fees on debit cards range between 0.27 to 0.52% and credit cards from 0.90 to 1.53%. Comparatively, payment systems similar to the NPP have achieved transaction fees between 0.2 and 0.3% of transaction cost.

The estimated reduction was conducted using current debit and credit card merchant fees, with this reform expected to reduce average debit card merchant fees by 0.3 percentage points for the share of purchases currently done with Mastercard/Visa and 0.1 percentage points for the share of purchases currently done with Eftpos.⁶⁹ For credit cards, we anticipate a flat 0.05 percentage point reduction in average credit card merchant fees.⁷⁰

⁶⁹ Debit card fees: Mastercard and Visa transactions have similar fees of 0.5%. Reducing these by 0.3 percentage points would align fees with those under Brazil's Pix system and EU standards of approximately 0.22%. Similarly, Eftpos fees are currently around 0.3%, requiring modelling of a 0.1 percentage point fall.

⁷⁰ Credit card fees: Although credit card fees are higher at between 0.9 and 1.53%, they serve as an imperfect substitute for direct account-to-account payments, therefore a lower expected fall in fees is expected from introduction of NPP facilitated payments.

These reductions were estimated by taking current merchant fees on Mastercard, Visa, Eftpos, American Express and Diners Club. We then used these against the current market share these companies have in their respective debit and credit card transaction markets as well as the total value of transactions conducted with these services for the year 2023-24⁷¹ to model the removal of a rent on finance input of \$1.372 billion. Sensitivity analysis was conducted, varying the size of the rent to \$528 million and to \$1.759 billion. This range accounts for varying NPP payment product adoption and the degree to which debit cards, cash and other payment methods are supplanted by NPP-style products.

Results and discussion

Outputs from the modelling show that a reduction in transaction fees for payments will result a **0.02%** increase in real GDP (\$445 million), and a reduction in consumer prices of **0.06%**.

A reduction in transaction fees has a broad impact and saving for both retail customers and businesses given the approximately \$580 billion in yearly debit card purchase transactions. Consequently, even a small reduction in transaction fees provides outsized savings for users.

These reductions in costs lead to an estimated increase in net revenue of **\$448 million** for the Australian Government and a decrease of **\$144 million** across state and territory governments.

Sensitivity analysis results show that a lower adoption of NPP payment products would reduce gains in real GDP to 0.01% (\$172 million) and reduce consumer prices by 0.02%. Similarly, net revenue gains are reduced to \$172 million for the Australian Government and net revenue losses reduced to \$55 million across state and territory governments. Conversely, greater adoption increases gains in real GDP to 0.02% (\$566 million) and reduce consumer prices by 0.08%. Likewise, net revenue gains increase to \$574 million for the Australian Government and net revenue losses increase to \$184 million across state and territory governments.

⁷¹ Based on available data at the time of this report, June 2023 to May 2024 data was used, instead of the usual financial year of July to June.

C. About the economy-wide modelling

This appendix provides an overview of the approach to assess the economy-wide and revenue impacts of the reform options, the models used, and the steps and assumptions taken to model the options outlined in appendices B1 to B5.

C.1 Approach to assessing the economy-wide effects

The Productivity Commission was asked to assess competition reform options proposed by the Australian, state and territory governments to understand their economic and other benefits to the Australian community, as well as government revenue impacts.

The Commission used computable general equilibrium (CGE) modelling to assess the possible economy-wide economic and revenue impacts of many of the proposed reforms, including using multiple models for sensitivity analysis. CGE models are designed to account for economy-wide effects (Burfisher 2021). They fit data from the officially published input-output tables for the Australian economy to a system of equations designed to capture the economic behaviour of firms, households and governments. CGE models simulate how agents respond to changes in specific policy settings. A strength of CGE models is that they explicitly account for economy-wide resource constraints (such as constraints on the national supply of labour). A consequence of this is that, in the absence of any improvement in productivity, industries need to draw resources away from other sectors to be able to increase their output.

Given initial uncertainty about the nature of the reforms being considered, the Commission prepared three CGE models for this study – PC National, PC Regional and the Victoria University Regional Model (VURM) – but chose to use only two when the reforms became clearer. PC National represents states and territories as one national economy, while PC Regional and VURM represent states and territories as separate economies linked through interstate trade. The structures of PC Regional and its database are closely based on PC National; the two models provide therefore similar results. Since it was developed independently of PC National, VURM provides a better robustness check on the results from PC National. Given the tight timeframe for this study, the approach adopted for robustness checking prioritised additional testing for reforms with a large economic footprint and material regional differences.

The Commission modelled economy-wide impacts for 19 of the proposed reforms (appendices B1 to B5) using the PC National model. These 19 reforms consisted of 27 separate model runs (simulations) reflecting the fact that numerous reforms consisted of multiple streams. Some of the proposed reform options were more amenable to economy-wide modelling than others – generally those with clearly identified policy actions, quantifiable direct effects, and a greater footprint of economic activity affected.

The Commission tested the sensitivity of the PC National results to the estimates of the direct effects that formed the basis of the model shocks and to alternative modelling assumptions. VURM was used to gauge

the sensitivity of the economy-wide results from PC National to the combination of model structure, data and parameters that characterises it. The Commission also varied the magnitude of the shocks used to represent the changes arising from the proposed reforms to gauge the sensitivity of the results to the assumptions used (appendix D). Since most shocks are characterised as 'outer envelope' estimates, alternative shocks were generally varied downward.

The remainder of this appendix proceeds as follows. Section C.2 describes the models used, and the modifications made to the base models. Section C.3 discusses what the economy-wide modelling can and cannot do, to inform the interpretation of the economy-wide results. Section C.4 details the steps and assumptions taken to translate the direct effect identified for each proposed reform into a CGE model shock.

C.2 The models used to assess the economy-wide effects

The Commission relied on two models to assess the economy-wide effects of the proposed reforms for several reasons.

First, the work could not be discussed openly, making it difficult to referee the modelling. In line with section 8 of the *Productivity Commission Act 1998*, the Commission used two models to validate the results and assess the effects of key assumptions underlying each model. Differences in the assumptions underlying each model's database, equation structure and parameter values affect the magnitude of their results.

Second, using widely accepted data sources makes the estimates more credible. The chosen models privilege the use of the ABS input-output tables, making the least number of assumptions that depart from these official sources. This favours the use of PC National.

Third, although many of the proposed policies are national, some might be implemented differently in different jurisdictions. This favours the use of VURM.

The Commission used the simpler PC National model to model the reform options. Using a simpler model means that results rely on fewer assumptions and are easier to explain. VURM was used where regional shocks add to the value of the modelling and to test the sensitivity of results to the combination of assumptions that underlie the models. None of the changes modelled using PC National involved material differences in their direct impacts across states and territories (which formed the basis of the shock applied). Differences in economic structure, rather than different direct effects, are the main source of difference across states and territories. These differences are accounted for in assessing the impacts on gross state product (GSP) and the implications for government revenues and expenditures (appendix D).

The key characteristics of each model are summarised in table C.1.

PC National is a simple national model based strictly on the ABS input-output tables. As a parsimonious model, it is relatively easy to use and well-adapted to modelling the flow-on effects of changes that are not very different across jurisdictions. It is complemented by:

- a top-down state and territory module that produces effects on state and territory GSP,⁷² and
- a revenue module that calculates the effects of changes on Australian Government and state and territory revenues and expenditures.

⁷² The terms 'state' and 'state government' used in this appendix also includes the Northern Territory and the Australian Capital Territory.

Table C.1 – Model comparison**Key characteristics of the CGE models used for the study**

	PC National	Victoria University Regional Model
Owner	Developed and maintained by the Productivity Commission	Developed and maintained by the Centre of Policy Studies at Victoria University
Regions	Australia-wide	Australia-wide, with state and territory detail
Database	2018-19	2018-19
No. of industries	114	92
No. of commodities	114	92
No. of equations	513	703
No. of variables	325	810

Sources: Adams, Dixon and Horridge (2015) and Productivity Commission.

VURM is a state and territory-based model developed and maintained by the Centre of Policy Studies at Victoria University. It is more detailed than PC National, with more equations and variables. VURM's database is built by integrating information from the ABS national input-output tables and various other statistical sources, including the Census. Constructing the VURM database involves a broader set of data and, as a result, it is less consistent with the official input-output table than the PC National database.⁷³

When designing the study, the Commission thought it important to publish the models in the interests of transparency and reproducibility where possible. PC National can be published. As a proprietary model and as a condition of its use, the Commission cannot publicly release VURM.

PC National model

The PC National model is a CGE model that has been used previously by the Commission to analyse the economic impacts of various policies on the Australian economy, including tariff removal and examining the national effects of a variety of protectionist trade policies (PC 2017d, 2022d). The model has been used in this report because of the detailed insights into the economic impacts of policy changes it provides, including, but not limited to, the effect on output across industries, changes in prices, effects on real wages, and effects on capital utilisation (PC 2022d).

PC National differs fundamentally from regional models like VURM in that Australia is treated as a single economy, rather than an aggregation of several interacting state and territory economies. While state and territory effects can be derived, PC National operates as a model of a single national economy at its core. Despite this key distinction, in other respects PC National does share similarities with VURM. They are both comparative static models, both based on the ABS input-output tables, both have government revenue modules, and both simulate the long-term economic effect of a policy change.

PC National's database is based on the Australian input-output tables for the financial year 2018-19, capturing the structure of the Australian economy for that year. These input-output tables disaggregate and relate connections of production and consumption between 114 industrial categories that comprise Australia's economy. Producers and consumers in this model are households, government and industry itself, and all are assumed to follow profit or utility maximising behaviour.

⁷³ The process for building the VURM database accommodates the construction of the TERM database and includes many other data sources.

PC National has a highly stylised modelling of labour markets. In modelling the long-run effects, wages adjust based on relative demand changes that occur in response to imposed shocks. The model does not include representations of labour supply or the labour-leisure trade-off, which could add complexity and provide more detailed insights (PC 2017e). However, it effectively illustrates the effect of productivity improvements in industries to the Australian economy, such as those introduced by greater competition in sectors or, as has been done in the past, to model the removal of tariffs. The latter was modelled in the Commission's 2017 report on *Rising Protectionism*.

PC National is the primary model used in this report to assess the impacts of the wide variety of reforms, across many industries, on the Australian economy. The robustness of its modelled results to the choice of model is ascertained by remodelling some of the reform scenarios through VURM.

Changes were made to the PC National model (theory) and database to make it better suited to modelling the effects of the proposed reform agenda. These include adding:

- economic rents to the model theory and database, as many of the reforms seek to reduce the existing cost structure by promoting competition
- a module to calculate the implications for GSP
- a module to calculate more detailed implications for the 'cost of living' by identifying the impact of reform on the components of the consumer price index (CPI)
- a module based on the ABS *Government Finance Statistics* to calculate the implications of reform for government revenue and expenditure (discussed later in this appendix)
- additional reporting variables.

Including economic rents

Several of the modelled changes involve eliminating economic rents that can arise from regulation or some other mechanism. Economic rents refer to the excess income earned above the normal return to labour or capital.

Economic rents were added to the PC National theory and database. Once identified, they were split from the returns reported in the input-output table. Provisions were made for rents on the use of labour and capital (primary factors), intermediate inputs (such as the use of finance) and on the use of margins (such as the retail margin) by each of the 114 industries and by categories of final demand. Rents were only added to the model database for the specific activities and industries targeted by the reform options.

Rents associated with labour or domestically-owned capital accrue to domestic households, whereas rents associated with foreign-owned capital accrue to foreign capital owners. All rents are taxed as part of income.

Where rents were added, the existing flows in the model database were reduced by the value of the rents so that the cost and sales continue to align. Adding a rent on capital income, for example, involved reducing capital incomes by an offsetting amount such that total costs remained unchanged.

The simulations involved removing these rents, which, in the first instance, lowers the cost of production in the relevant industries. Table C.2 summarises the economic rents modelled.

Table C.2 – Economic rents added to the PC National database for this study

	Incidence of the rent	Application/scope	Rent
B3 Public procurement	Current and investment public final demand	All goods and services consumed by government (current and investment)	\$4,499 million [2% of government procurement]
NZ1 Right to repair	Primary factor (labour and capital)	Other repairs	\$594 million [10% of factor income]
H2 Labour mobility (pharmacies)	Margin	Retail margin on human pharmaceuticals	\$200 million [direct effect]
H2 Labour mobility (healthcare)	Labour	Health care services	\$823 million [direct effect]
D4 Banking (business loans)	Intermediate input	Use of finance by industry [varies by industry]	\$1,878 million [Derived from direct effects]
D4 Banking (home loans)	Intermediate input	Use of finance by ownership of dwellings	\$3,267 million [Derived from direct effects]
D5 Payment systems	Intermediate input	Use of finance by industry [varies by industry]	\$1,372 million [Derived from direct effects]

Source: Commission estimates.

Including gross state products

PC National reports GSP impacts for each state and territory that are consistent with the national impact on gross domestic product (GDP). It does so by mapping changes in industry value-added in the national input-output tables to each state and territory using state-specific value-added for that industry (based on ANZSIC Division) from the ABS *State Accounts*.

This accounts explicitly for the differences in economic structure across states and the relative importance of different industries (such as the importance of iron ore mining for Western Australia and the concentration of services in Victoria and New South Wales).

The approach is best suited to national reforms or where the impacts are more uniform across Australia. It would be more appropriate to use a regional CGE model such as VURM to assess reforms that are likely to result in highly concentrated impacts on specific regions or where the effects are likely to vary materially across regions. However, few of the initial effects of the modelled changes are likely to vary materially across jurisdictions.

Including additional cost-of-living measures

The base PC National model reports the weighted-average effects on consumer prices that consumers pay for commodity aggregates as defined in the input-output tables. It does so by identifying the effects on the prices that households pay, and the quantity they consume, for each of the 114 products in the model.⁷⁴ This modelling of household consumption reflects the level and composition of household final consumption expenditure in the ABS input-output tables.

⁷⁴ Many of the 114 products are industrial inputs and do not appear in the consumption bundle – for example, iron ore.

A module has been added to PC National to provide cost-of-living impacts on groups of goods that are consistent with the ABS *Consumer Price Index*. The module maps each of the 114 price changes from PC National into the classes and groups that form the ABS consumer price indexes using the CPI weights.⁷⁵

This module is designed to provide information on the distributional effects of the changes modelled. Different types of households consume different baskets of goods. For example, the shares of expenditure on health, food, housing and transport differ across households. The information about prices can be combined with the structure of various households' expenditures to capture some of the different effects of changes in cost of living across various household types.⁷⁶

Including government revenue and expenditure

To meet the requirements set out in the terms of reference, the Commission added a government finance module to report the government revenue and expenditure implications of the proposed reform options.

The government finance module added is based on that used by the Commission to report the revenue implications of the then proposed *National Reform Agenda* (PC 2006a). The Commission developed this module in the context of that project with the Centre of Policy Studies, the Australian Department of the Treasury and the state and territory treasuries.

Structure of the government finance module

The government finance module is based on the ABS *Government Finance Statistics*, which provides a standardised set of revenues and expenses across the nine levels of government in Australia – the Australian Government and the eight state and territory governments.⁷⁷ Tax revenue collected by each jurisdiction is further broken down using data from ABS *Taxation Revenue Australia*. The module also includes four categories of personal benefit payments – JobSeeker, Disability Support Pension, Age Pension and other – drawing on data published by the Australian Government's Parliamentary Budget Office. Figure C.1 provides a summary of government finance module database by tier of government.⁷⁸

The module calculates the change in each revenue and expense item by applying the percentage changes in a set of drivers from the model core to each revenue and expense item in the ABS *Government Finance Statistics* (tables C.3 and C.4). For example, nominal labour and capital incomes drive income tax receipts and wage changes drive employment expenses.

The changes from the PC National model core are applied to the government finance module database for the financial year 2021-22. The resulting changes in revenue and expenditure are scaled to 2023-24 dollars.

⁷⁵ In this module, weights are held fixed.

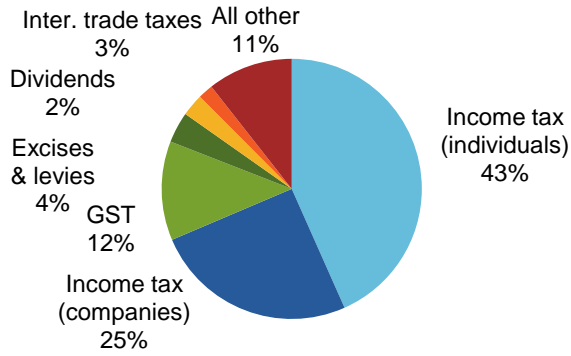
⁷⁶ Due to the tight timeframes of this study, the report does not apply price changes to different household baskets of goods, but the reported changes in prices can be applied to typical baskets of goods.

⁷⁷ The module includes local government accounts in the relevant state or territory's account.

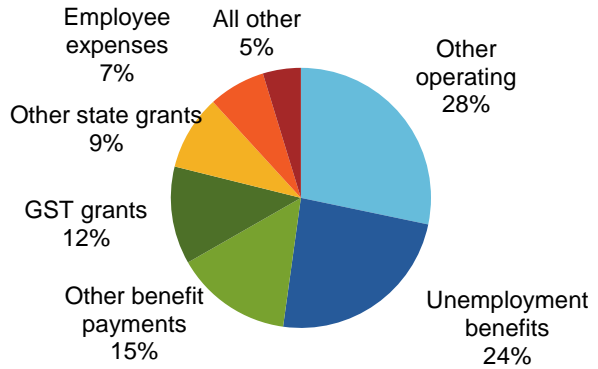
⁷⁸ GST is accounted for in Australian Government revenues and expenditures. This is one of the reasons why employment costs account for a small proportion of Australian Government expenditures relative to their share in state and territory expenditures. Further, in addition to the costs of public servants, state and territory employment costs account for the costs of workers in the public education and health sectors.

Figure C.1 – Summary of government finance module added to PC National

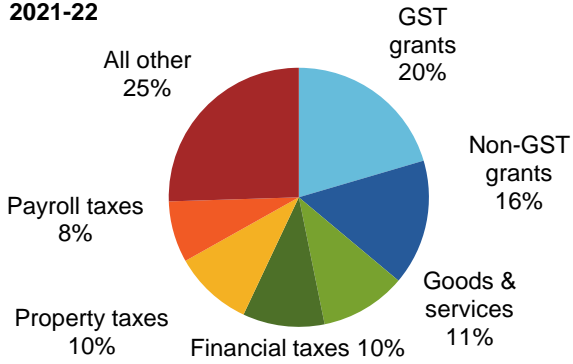
Australian Government revenue, 2021-22



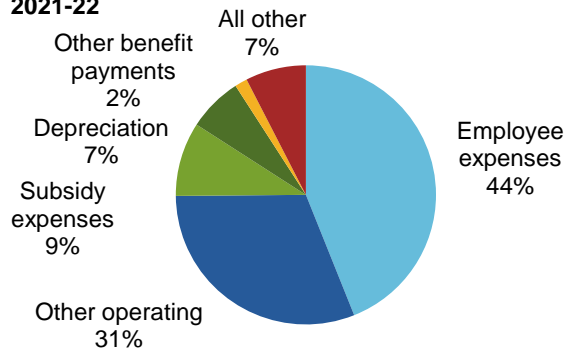
Australian Government expenses, 2021-22



State, territory and local government revenue, 2021-22



State, territory and local government expenses, 2021-22



Source: Productivity Commission estimates based on ABS *Government Finance Statistics*, 2021-22.

Table C.3 – Drivers of government revenue in the government finance module^a**Summary of the revenue sources in the government finance module and their drivers from the model core**

Revenue source	Description	Drivers ^b
Taxes on income		
Individuals	Personal income tax, government health insurance levy and capital gains tax	Nominal household income; household income tax rate; and shift term
Enterprises	Company income tax, income tax paid by superannuation funds and capital gains taxes	Change in the capital stock used in production; rental price of capital; capital income tax rate; and shift term
Non-residents	Dividend and interest withholding tax	Real GDP; GDP price deflator; and shift term
Factor inputs		
Payroll	Payroll taxes, fringe benefits tax and superannuation guarantee charge	Employment; nominal wage; and shift term
Property	Land taxes, local council rates, property owners' contributions to fire brigades, estate, inheritance and gift taxes, financial institutions transactions taxes, stamp duties on conveyances, shares and securities. Excluded are amounts collected by local councils but identified as charges for direct supply of goods and services (e.g. water and sewerage rates, garbage charges)	Change in the capital stock used in production; rental price of capital; and shift term
Taxes on the provision of goods and services		
General taxes	Sales taxes	Taxes on products; and shift term
GST	Goods and services tax (GST)	Real usage of goods and services subject to the GST in production, investment, household consumption and exports; basic price of production, investment, household consumption and exports subject to GST; GST tax rates on production, investment, household consumption and exports; and shift term

Revenue source	Description	Drivers ^b
Excises and levies	Excises and levies on crude oil and LPG, agricultural production, statutory corporations, tobacco, and beer and spirits	Real production of oil and gas, beer, and wine and tobacco products; basic price of oil and gas, beer, and wine and tobacco products; commodity tax rates on oil and gas, beer, and wine and tobacco products; and shift term
International trade	Custom duties on imports and exports, and agricultural produce export taxes	Tariff revenue: Landed price of imports; import volumes; import duty rates; and shift term Excise-duty equivalents: Landed price of imports subject to excise duty equivalent tariffs; import volumes subject to excise duty equivalent tariffs
Gambling taxes	Government lotteries, private lotteries, gambling machines, casino taxes and race betting taxes	Real usage of accommodation and other services; basic price of accommodation and other services; commodity tax rates accommodation and other services; and shift term
Insurance	Insurance companies' contributions to fire brigade, and third party insurance taxes	Real usage of insurance and superannuation; basic price of insurance and superannuation; commodity tax rates on insurance and superannuation; and shift term
Use of motor vehicles	Stamp duty on vehicle registration, road transport and maintenance taxes and heavy vehicle registration fees	Real usage of motor vehicles and parts and road transport; basic price of motor vehicles and parts and road transport; commodity tax rates on motor vehicles and parts and road transport; and shift term
Other	Franchise fees plus other taxation revenue plus the difference in total taxation revenue between Government Finance Statistics and Taxation Revenue (i.e. franchise fees plus other taxation plus balancing item). Other taxation includes broadcasting and television station licenses and departure tax	Real GDP; GDP deflator; and shift term
Commonwealth grants to states		
GST-tied	GST grants to states and territories	Nominal value of GST revenue collections; GST-grant share; and shift term

Revenue source	Description	Drivers ^b
Other current	Grants made for current expenditure and not linked to or conditional on the acquisition of an asset by the recipient	Nominal value of non-GST grants paid; non-GST grant share; and shift term
Sales of goods and services	Direct provision of goods and services by general government and public enterprises	Real GDP; GDP price deflator; and shift term
Interest received	Property income: interest, dividends, withdrawals from income of 'quasi' corporations and reinvested earning on direct foreign investment	Real GDP; GDP price deflator; and shift term
Other revenue	Fines and penalties, and voluntary payments other than grants	Real GDP; GDP price deflator; and shift term

a. The revenue implications are derived by applying the percentage changes in the drivers listed to the level of revenue in the *ABS Government Finance Statistics*.

Table C.4 – Drivers of government expenditure in the government finance module^a**Summary of the expense types in the government finance module and their drivers from the model core**

Expense type	Description	Drivers
Gross operating expenses		
Depreciation	Depreciation	Change in the capital stock used in production; rental price of capital; and shift term
Employee expenses	Wages, superannuation	Employment; price of labour; and shift term
Other operating expenses	Expenditure on goods and services provided directly to households as social transfers in kind (medical and pharmaceutical benefits, telephone rental concessions)	Nominal government expenditure; and shift term
Interest expenses	Nominal interest on unfunded superannuation and other interest payable	Real GDP; GDP price deflator; and shift term
Property expenses	Interest, dividends, reinvested earnings on direct foreign investment and rent on natural assets	Real GDP; GDP price deflator; and shift term
Current grant expenses		
Commonwealth to states:		
GST-tied	GST-tied grants	Value of GST revenue collections; and shift term
Other current grants	Non-GST grants	Population; consumer price index; and shift term
Commonwealth to universities	Transfers to finance current purposes to universities	Real GDP; GDP price deflator; and shift term
Other current grants	All other current grants	Real GDP; GDP price deflator; and shift term
Subsidy expenses	Payments to producers based on their production, the goods or services they produce, sell, export, or import	Real GDP; GDP price deflator; and shift term
Personal benefit payments		
JobSeeker	JobSeeker payments	Unemployment; consumer price index; and JobSeeker payment rate

Expense type	Description	Drivers
Disability Support Pension	Disability Support Pension payments	Population; consumer price index; and disability support pension payment rate
Aged pension	Aged pension payments	Population; consumer price index; and aged pension payment rate
Other personal benefit payments	Other personal benefit payments	Population; consumer price index; and other personal benefits payment rate
Capital transfers	Government grants for capital purposes to private non-profit institutions, foreign governments and organisations (ie. aid projects), and to state governments	Real GDP; GDP price deflator; and shift term

a. The expense implications are derived by applying the percentage changes in the drivers listed to the level of expenses in the ABS *Government Finance Statistics*. **b.** Population is held constant and the shift terms are not used.

Victoria University Regional Model

VURM has been widely used by the PC and others to analyse the regional implications of public policy in Australia.⁷⁹ The structure of the base model and its components has been well-documented (Adams et al. 2015).

VURM represents each state and territory as a separate economy, linked through trade between states and internationally and through population movements. The model derives national results by aggregating regional results. Aside from this key distinction, VURM shares many features with PC National – both models have similar structures (industries, households, government) and employ a broadly similar microeconomic theory (such as firms adopting profit maximising behaviour and households adopting utility maximising behaviour). Both are based on the ABS input-output tables, though VURM integrates additional data sources. VURM also has additional technical change terms (which are naturally fixed) and additional reporting variables than PC National.

The version of VURM used has a number of non-standard features compared to other versions of VURM. It has a detailed government finance module that enables it to provide detailed financial implications for the eight state and territory governments and the Australian Government. The model also has a number of greenhouse gas emissions-related adaptations, such as the creation of private transport and household durables (Liu and Nassios 2024).

VURM's additional details, including those that relate to modelling the states and territories as separate economies, have advantages and disadvantages in the context of this study. The main advantages include more explicit modelling of state-based processes (such as labour mobility patterns that affect regional labour markets), and better accounting of certain activities. The main disadvantages are that as a result, the model is more complex, harder to modify and its results are more difficult to interpret.⁸⁰

VURM has been used to ascertain the robustness of the results from PC National and to fulfill the requirement in the *Productivity Commission Act 1998* to, if practicable, use two different economic models.

C.3 What economy-wide modelling can and cannot do

CGE models are designed to assess the economy-wide effects of policies. They start from input-output tables that account for the detailed intersectoral linkages between sectors in the economy and the effects on private and public expenditures and on investment. Most often, they are used to answer the question: 'How different would the economy be if the policy settings that are implied in the initial database were different?'.

The models used for this study are designed to account for the long-run effects of the proposed policies. This is meant as: the impact once all adjustments have occurred, that is once all prices have reached their new equilibrium and all firms, consumers, importers, exporters have adjusted their purchases, employment and investment plans to the new prices. This is not meant in a dynamic sense; rather how the structure of the

⁷⁹ The PC has previously used VURM (or its predecessors) to assess: the potential benefits of the then proposed national reform agenda in 2006; the economy-wide effects of future automotive assistance in 2008; the distributional effects of changes in Australian infrastructure in 2008; the economy-wide effects of assistance to the textile, clothing and footwear industries in 2008; the economy-wide impacts of COAG reform in 2012; the impacts of ageing in 2013; and the economic impacts of the migrant intake in 2016 (PC 2006a, 2008a, 2008b, 2012, 2013, 2016d; Verikios and Zhang 2008).

⁸⁰ Importantly for this study, it is much harder to add economic rents in the VURM theory and database. This means that it is not possible to use VURM to model some of the reforms examined using PC National.

economy under each scenario is different, once everyone has made different allocative decisions and display different supplies and demands in view of the different sets of prices that they face.

The input-output tables for this project are for the financial year 2018-19. They are a synthetic representation of the structure of the Australian economy in that year.⁸¹

The sectoral analyses provide estimates of the direct effects of policies on the targeted sectors. These effects carry over into the rest of the economy. The size of economy-wide effects depend on the following.

1. Scale: the magnitude of the direct impacts of the modelled change and the size of the economic footprint affected: larger direct effects and economic footprint lead to larger economy-wide impacts.
2. Linkages: the extent to which the targeted sector has many upstream and downstream connections with the rest of the economy: the more linkages, the more pervasive the effects and more multiplier effects.⁸²
3. Constraints: the sectoral effects are transmitted to the rest of the economy through economy-wide resource constraints.⁸³

The scale of the targeted sector is crucial in determining the magnitude of the economy-wide effects. If a change impacts on a large sector of the economy, the effects will naturally be more significant, as this sector accounts for a larger proportion of national output, employment or investment. For instance, a policy reform that affects a major industry such as transport or healthcare will generally have wider implications, influencing prices, wages and production across other sectors. A shock to a major sector alters the allocation of labour and capital across the economy, creating effects that CGE models are designed to capture. Conversely, minor policy changes, or policy changes that affect small sectors have little flow-on effects.

The linkages between sectors in a CGE model reflect the interconnected nature of the economy. Sectors that have significant upstream and downstream relationships transmit changes caused by a policy intervention throughout the economy. For example, a policy impacting the agricultural sector affects not only agriculture itself, but also industries that supply inputs (like machinery and fertilisers) and those that use its outputs (like food processing and retail). These linkages ensure that changes in one sector cascade through others. CGE models are particularly well-suited to capture these interdependencies where they exist.

Additionally, constraints play a pivotal role in how the scale and linkages of sectoral effects are transmitted throughout the broader economy. These constraints can include limits on the supply of labour and capital, or budget limitations. For instance, if there is a fixed supply of labour, an output expansion in one sector that increases the demand for labour drive wages up, causing a contraction in the output of other sectors.

The results from CGE models are not future predictions. Instead, they represent the impact of the scenarios being modelled, given the model theory, parametrisation and database. All models are stylised representations of the economy and employ simplifying assumptions. The modelling presented here does not, for example, capture dynamic adjustments that would otherwise result in impacts that vary over time. Likewise, the economic agents in the modelling adjust to the changes in the economy as they occur rather than responding to announced policies *before* they occur (so called 'forward looking expectations').

⁸¹ It is synthetic in the sense that the ABS builds it from a wide variety of data sources, many of which predate the database. Many data sources are also incompatible, requiring the ABS to confront the various sources to produce a consistent representation.

⁸² For example, reducing the costs of transport affects the entire economy by reducing the cost of intermediate inputs and of consumer goods. Conversely, reducing the cost of health services, which are mainly consumed by households and government (final consumption) do not have such large interindustry effects.

⁸³ For example, increasing the demand for labour in one sector increases wages across the economy. With employment assumed to be fixed (see closure section), increased demand in one sector requires it to bid wage up to attract labour from other sectors.

Simplifying assumptions and the use of other, possibly inconsistent, data sources are used to fill gaps in official economic data in constructing model databases and model parameter values (such as the ease in substituting between labour and capital in production and between domestic and imported goods).

These caveats are particularly pertinent to the modelling of government revenues and expenditures. The data used needs to be consistent across jurisdictions. Different budget and accounting practices across the nine jurisdictions mean that data from the detailed budget papers may not be consistent with each other and may not net out transfers between levels of government within and between jurisdictions. This means that the revenue and expenditure estimates rely on the ABS *Government Finance Statistics* data which make these adjustments to ensure that the data is consistent. A drawback with the *Government Finance Statistics* data is that it is highly aggregated, especially on the expenditure side. This reduces the accuracy of modelled revenue and expenditure implications of the proposed reforms.

Furthermore, there is legitimate uncertainty about the modelling of the expenditure implications that flow from any change in policy. At one level, all non-legislated expenditure decisions can be considered discretionary and, as such, it can be argued that they should not be included in reporting the revenue implications. On another level, economy-wide changes that are outside the control of government will affect government expenditures and, as such, arguably should be included. Some expenditures lie in-between, such as whether economy-wide wage changes should be passed through to employee expenses. The choice of what expenditures should be included will affect the net revenue figures reported, potentially in a material way. The choice of revenue and expenditure drivers may also have a material effect on the net revenue reported.

The modelling impacts reported, and the way they have been modelled, depend on direct impacts reported in appendices B1 to B5. Uncertainty surrounds many of the direct estimates that form the basis of the shocks applied to PC National and VURM. The Commission has undertaken testing to gauge the sensitivity of the economy-wide and revenue results to the magnitude of the direct impacts (appendix D). While the sensitivity testing focuses on the magnitude of the direct effects, it does not test the effect of differences in the activities directly affected and the size of their economic footprints.

These caveats should be borne in mind when interpreting the economy-wide and revenue results.

C.4 Modelling the economy-wide effects of the reforms

Modelling environment

The modelling environment determines how a CGE model responds to the policy changes being modelled.

CGE models include more variables than equations, so they tend to be under-identified. The equations do not provide sufficient information for all variables to be solved for.

To overcome this, the model closure specifies which variables are determined outside of the model. These variables are referred to as exogenous variables. They can be held fixed (implying no change) or change by the amount specified by a shock to that variable. Such shocks have to be calculated outside of the model to bring about the desired response.

A valid model closure requires, among other things, the number of variables that the model solves for (referred to as endogenous variables) to equal the number of equations.

The choice of which variables are endogenous and which are exogenous determine the economic environment assumed in the modelling, and the nature and interpretation of the results produced. For example, wages are typically held fixed (exogenous) in a short-run modelling environment, with aggregate

employment (and hence unemployment) allowed to vary. A longer-run closure reverses this closure choice, such that aggregate employment (and hence unemployment) is held fixed, with wages allowed to vary.

A short-run closure is typically taken to represent the effects of the policy one to two years after policy implementation, while a long-run closure represents the economy after it has had time to adjust (typically taken as around ten years). In the case of the labour market, quantities are generally assumed to adjust in the short run, but prices adjust in the long run. In the case of capital, the converse is assumed to occur, with the rental price of capital adjusting in the short run and capital stocks (quantities) adjusting in the long run. The key distinction is that there are more rigidities in the economy in a short-run simulation that prevent the economy from fully adjusting to the policy shocks compared to a long-run simulation.

All prices in PC National and VURM (and most other CGE models) are set relative to a model price, which has to be specified and set exogenously (referred to as the model numeraire). The consumer price index is frequently used as the model numeraire in CGE modelling, but this prevents the modelling from reporting the cost-of-living implications (as the CPI would not change, because it would be held fixed). The CPI can be allowed to vary by specifying another price as the model numeraire (such as the nominal exchange rate or investment price index). The choice of model numeraire affects the interpretation of the price changes that the model produces.

The closure used in this study

The Commission has used a long-run closure for this study with several key decisions defining the overall modelling environment. This is consistent with assuming that the economy has adapted fully to the changes modelled. That is, all quantities and prices have adjusted to the new policy settings following the changes modelled.

The key features of the modelling environment include the following.

1. **Fixed aggregate employment.** In this closure aggregate employment is held fixed, consistent with assuming that aggregate employment is not affected by the changes under consideration.⁸⁴ For example, when productivity improves across several industries, they seek to increase their outputs by bidding labour away from other industries. With fixed aggregate employment, wages rise across the economy.
2. **Fixed rate of return to capital.** The rate of return to capital is held fixed. To accommodate this, foreign capital is allowed to adjust. For example, when productivity improves across several industries, they seek to increase their outputs by bidding capital away from other industries and increasing demand for foreign capital. The rental price of capital adjusts to maintain the rate of return to capital.
3. **Fixed rate of tax.** Tax rates are held fixed, unless shocked as part of the proposed changes.
4. **Fixed fiscal balance.** Fiscal balances in the model core (but not in the government finance module) are generally held fixed, consistent with assuming that budget deficits are a policy choice. The model maintains fiscal balance by assuming that nominal expenditures move with revenue. In some scenarios (identified below), a non-distortionary transfer between the household and the government sector maintains this balance. This is nearly equivalent to a change in income tax, but does prevent some of the distortions associated with changing the tax rate.
5. **Fixed savings rate.** The savings rate is assumed to be fixed.
6. **Nominal exchange rate as numeraire.** To report on cost-of-living implications, the nominal exchange rate is used as the model numeraire rather than the CPI as is often the case in CGE models. This

⁸⁴ Shocks such as changes in education might change employment, or changes in macroeconomic settings. None of the proposed changes are of this nature.

enables changes in prices to be reported. Changes in the CPI are effectively measured relative to the world price of imports.

Model shocks

The economy-wide modelling of each reform involved the application of one or sometimes more exogenously-specified changes to exogenous variables (referred to as shocks) that reflect the direct effects associated with the reform (appendices B1 to B5).

The magnitude of the shock applied frequently needed to be adjusted to align with the corresponding footprint in PC National (which reflects the level of economic detail in the ABS input-output tables). This typically involved scaling the direct effect reported in appendices B1 to B5 down to align with the more aggregated industry structure in PC National (detailed in the annex to this appendix).

Some reforms encompass more than one policy response. Where this was the case, each policy response (stream) was modelled separately and the economy-wide results reported accordingly. Reform NZ3 Heavy EVs, for example, consists of three streams:

- the removal of tariffs on heavy EV imports
- the relaxation of restrictions on steer-axle mass limit (modelled as an improvement in the capital productivity of road transport)
- the removal of restrictions on the parallel importation of heavy EVs (modelled as an increase in second-hand imports).

Step 1: Identify the direct effects of each reform

The first step in modelling the economy-wide impact of each reform involved identifying the likely initial effects on the economy (direct effects) and quantifying the magnitude of the potential impact. This includes the types of economic activities likely to be affected (the economic footprint of the reform).

Appendices B1 to B5 canvass each of the reforms modelled and formulate an assessment of the likely direct effects. The estimates of the direct effects from these appendices form the starting point for the shocks applied in the economy-wide modelling.⁸⁵

The reforms fall into four broad groupings depending on whether the scope of the reform is clearly identified and whether the associated policy actions are clear (figure C.2).

⁸⁵ Some reforms lead to improvements in the efficiency with which labour, capital or other inputs are used in production. These improvements are referred to as improvements in 'productivity'. These effects are modelled as 'input-augmenting technical change', which has the opposed sign to the change in productivity. A one per cent improvement in labour productivity, for example, is modelled as a shock of -1% to the corresponding labour-augmenting technical change term in PC National. While they are strictly input-augmenting technical changes, these types of direct effects and shocks are referred to as productivity changes throughout.

Figure C.2 – Approaches to modelling proposed reforms

	Intended scope is well defined	Scope to be determined after this study
Specific reform actions identified	The reform was modelled directly – that is, a direct assessment of the estimated costs and benefits of implementing the specified reform in the intended market, sector or industry.	The reform was modelled through a case study approach, focusing on sectors or markets that are clearly intended to be in scope. This approach illustrates the types of costs and benefits that can be expected from certain types of reforms.
No specific reform actions identified	For some reforms, a scenario- or outcomes-based approach was used. This is about estimating the size of the available benefits, leaving aside the question of how those benefits can be realised. For some reforms, we used an elasticity approach to estimate how responsive the overall economy is to the direct effects of the reform.	A combined case study and outcomes-based approach was used for some reforms. Where the scope and reform actions were very unclear, first principles were used to assess the issues and the case for government intervention.

In some cases, there is legitimate uncertainty about the likely magnitude of the direct effects. Where this is the case, an 'elasticity approach' is used to model the effects of the reform. The interpretation of such reforms is that if the reform increased say, labour productivity in the affected activity by 1%, the economy-wide impacts would be in the order of those reported. If the direct effects are half the value used, the economy-wide impacts might be half those reported. While the value used is arbitrary, different reforms use different shocks (0.1% or 1%) to provide an indication of the order of magnitude of the modelled effect. Given this, the results associated with such scenarios should be treated with additional caution.

Where the direct effects of the reform involved removing an economic rent, the economic rent was added to the model database.

Tables C.5 to C.9 outline the direct effects for each reform by theme that formed the starting point of the economy-wide modelling. These direct effects are drawn from appendices B1 to B5.

Step 2: Identify the impacts to be modelled

The relevant economic footprint of each reform was translated into the corresponding industries and activities in PC National. The initial assessment of the direct effects often need to be adjusted to align with the relevant activities in PC National, which reflect those in the ABS input-output tables on which the model database is based.

This adjustment involved scaling the direct effects to align with the broader industry and products in PC National, consistent with only part of the broader industry being affected.

For example, removing tariffs on imports of heavy EVS that forms part of NZ3 requires scaling the direct effects to fit the broader industry 'motor vehicle and parts', which includes trucks, passenger motor vehicles, light commercial vehicles, caravans, trailers, buses and related parts. Scaling implies that tariffs on the rest of motor vehicles and parts are assumed not to be affected in the simulation.

Tables C.5 to C.9 outline the steps involved in converting the direct effects reported in appendices B1 to B5 into the shocks applied to PC National for each reform by theme, including any assumptions or relevant data used.

Step 3: Specify any reform-specific closure changes required

The economy-wide modelling of some reforms required closure changes that were specific to that reform. The public procurement scenario, for example, involved holding the real level of government expenditure fixed to prevent the model from increasing the volume of government services supplied that would ordinarily occur in response to increased demand when production costs fall. The closure changes used are also specified in tables C.5 to C.9.

Table C.5 – Estimation of model shocks: Dynamic business environment

Steps from reform direct effects to estimated model shocks (based on appendix B1)

No.	Short name	Shock estimation from direct effects
B2^a	Commercial planning and zoning	<p>Direct effect: Reform to commercial planning and zoning leads to increased competition in the retail sector.</p> <p>Shock estimation: The economy-wide modelling adopts an elasticity approach: 'if reform leads to a 0.1% increase in capital productivity in the retail sector as a whole, it has the following effects on the rest of the economy'.</p> <p>Modelled shock: Capital productivity is assumed to increase by 0.1% in the retail sector.</p>
B3	Public procurement	<p>Direct effect: Reform leads to a 2% decrease in the cost of public procurement. Public procurement is estimated to be \$225 billion (\$75 billion for the Australian Government and \$150 billion for state, territory and local governments).</p> <p>Shock estimation: Scenario-based approach guided by literature review.</p> <p>Modelling approach: The economy-wide modelling assumes that the higher procurement costs currently incurred reflect economic rents on all goods and services consumed by governments (including those used for investment). The cost imposts that give rise to the rents are distributed proportionally across levels of government and across all goods and services consumed, except for defence, where it is assumed that only the Australian Government incurs the cost impost. The cost imposts on the procurement on all other goods and services allocated to state, territory and local governments are increased proportionately to ensure that their share of procurement is two-thirds of the total (= \$150 billion / \$225 billion). The modelling assumes that the rents accrue to households.</p> <p>Modelled shock: Removal of rents on all goods and services consumed by government.</p>
B7ice	Distribution networks (internal combustion engines)	<p>Direct effect: Reform reduces the cost of imported second-hand cars with internal combustion engines.</p> <p>Shock estimation: Price of imported second-hand cars with internal combustion engines assumed to be 11% lower.</p> <p>The share of second-hand internal combustion engine cars is assumed to be 20% of internal combustion engine car imports.</p> <p>Internal combustion engine car imports are assumed to make up 10% of car imports.</p>

No.	Short name	Shock estimation from direct effects
		<p>Cars make up 45% of the Motor Vehicles and Parts industry imports.</p> <p>Modelled shock:</p> <p>Price of imported Motor Vehicle and Parts decreases by 0.098% (= 11% × 20% × 10% × 45%).</p>
B7tar	Distribution networks (tariffs and compliance costs)	<p>Direct effect:</p> <p>Reform leads to the removal of all tariffs, and compliance costs associated with the tariff system, which are estimated to be between \$1.29 billion and \$3.87 billion savings annually.</p> <p>Shock estimation:</p> <p>The economy-wide modelling uses the mid-point compliance costs of \$2.58 billion, which represents 0.06% of industry costs.</p> <p>Modelled shocks:</p> <p>Removal of all tariffs and increase multifactor productivity (labour and capital) across all industries by 0.06% (representing the removal of the associated compliance costs).</p>
B8^a	Efficient user charging (Case study: road transport)	<p>Direct effect:</p> <p>Reform leads to a more efficient use of capital and labour in the road transport industry.</p> <p>Shock estimation</p> <p>The economy-wide modelling adopts an elasticity approach: 'if reform increases capital and labour productivity in road transport by 1%, it has the following effects on the rest of the economy'.</p> <p>Modelled shock:</p> <p>Primary factor productivity is 1% higher in road transport sector (elasticity approach).</p>
B9rc	Modern methods of construction (residential construction)	<p>Direct effect:</p> <p>Reform increases the use of prefabricated or modular building in residential construction, which reduces construction times and costs leading to faster residential construction and a 2% output increase in the long run.</p> <p>Modelled shock:</p> <p>Output in Residential Building Construction industry is 2% higher. Labour productivity in the Residential Building Construction industry is 5% higher.</p>
B9nrc	Modern methods of construction (non-residential construction)	<p>Direct effect:</p> <p>Reform increases the use of prefabricated or modular building in non-residential building construction which reduces construction times and costs leading to faster non-residential construction and a 2% output increase in the long run.</p> <p>Modelled shock:</p> <p>Output in Non-residential Building Construction industry is 2% higher. Labour productivity in the Non-residential Building Construction industry is 5% higher.</p>

a. Modelled using an elasticity approach, estimating how responsive the overall economy is to a 1% or 0.1% shock to the relevant variable.

Table C.6 – Estimation of model shocks: Net zero**Steps from reform direct effects to estimated model shocks (based on appendix B2)**

No.	Short name	Shock estimation from direct effects
NZ1rep	Right to repair (repair rents)	<p>Direct effect: Reform leads to an increase in competition and reduces economic rents in repair services.</p> <p>Shock estimation: Economic rents are assumed to constitute 10% of primary factor income in the Other repair and maintenance industry (implying a rent of \$386 million – \$594 million to labour and \$208 million to capital).</p> <p>Modelled shock: Removal of the rent in the Other Repairs and Maintenance industry.</p>
NZ1agr	Right to repair (grains)	<p>Direct effect: Reform leads to a reduction in downtime during grain production enabling increased output.</p> <p>Shock estimation: Reform is assumed to increase grain output by 3%. Grains make up 24% of the Sheep, Grains and Cattle industry.</p> <p>Modelled shock: Output of the Sheep, Grains and Cattle industry increases by 0.72% (= 3% × 24%).</p>
NZ3aml	Heavy EVs (steering axle mass limit)	<p>Direct effect: Reform leads to an increase in the use of heavy electric vehicles that can carry additional freight per trip. The increased use of heavy electric vehicles leads to higher road maintenance costs.</p> <p>Shock estimation: Scenario-based approach guided by literature review. Reform assumed to increase the productivity of heavy EVs by 4%. Heavy EVs are assumed to account for 70% of the road freight task. Road freight transport accounts for 50% of road transport output. This implies a 1.4% improvement in the productivity of capital used in the road transport industry (= 4% × 70% × 50%). Road maintenance costs estimated to increase by 2.5%.</p> <p>Modelled shock: Capital productivity in the Road Transport industry increases by 1.4%. Decrease in the productivity of heavy and civil engineering construction used by the Road Transport industry by 2.5%.</p>
NZ3pir	Heavy EVs (parallel import restrictions)	<p>Direct effect: Reform leads to cheaper imported second-hand heavy electric vehicles in the long run.</p> <p>Shock estimation: Reform assumed to reduce the cost of second-hand heavy EVs by 10%. Second-hand heavy EVs assumed to account for 20% of EV imports, heavy EVs account for 80% of heavy vehicles, and heavy vehicles account for 23% of motor vehicle and parts.</p> <p>Modelled shock: Import price of Motor Vehicles and Parts decreases 0.37% (= 10% × 20% × 80% × 23%).</p>

No.	Short name	Shock estimation from direct effects
NZ3tar	Heavy EVs (tariffs)	<p>Direct effect: Reforms remove remaining tariffs on heavy electric vehicles.</p> <p>Shock estimation: Remove 100% of tariffs on heavy EV truck imports. Heavy EV share of truck imports is 80%. Trucks share of motor vehicles and parts imports is 23.14%.</p> <p>Modelled shock: The tariff on imported Motor Vehicles and Parts is 18.5% lower (= $100\% \times 80\% \times 23.14\%$).</p>
NZ5	EV imports	<p>Direct effect: Reform reduces the cost of importing second-hand electric non-heavy vehicles.</p> <p>Shock estimation: Reform is assumed to reduce the cost of imported second-hand electric non-heavy vehicles by 15%. Second-hand electric non-heavy vehicles are assumed to be 20% of electric non-heavy vehicles imports. Electric non-heavy vehicles are assumed to make up 90% of car imports in the long-run. Non-heavy vehicles account for 45% of Motor Vehicles and Parts imports.</p> <p>Modelled shock: The price of imported Motor Vehicles and Parts is 1.2% lower (= $15\% \times 20\% \times 90\% \times 45\%$).</p>

Table C.7 – Estimation of model shocks: Labour mobility**Steps from reform direct effects to estimated model shocks (based on appendix B3)**

No.	Short name	Shock estimation from direct effects
L1	Restraint of trade clauses	<p>Direct effect: Reform leads to a better allocation of labour across affected industries.</p> <p>Shock estimation: Scenario-based approach guided by literature review.</p> <p>Modelled shock: Labour productivity is 0.24% higher in 24 service industries and 0.14% higher in all other industries except agricultural industries (in which labour productivity is unchanged).</p>
L2	Occupational licensing	<p>Direct effect: Reform leads to higher labour productivity for industries with the highest incidence of occupational licensing (construction, transport and wholesale, professional, scientific and technical services, school education, and health and social services).</p> <p>Shock estimation: Scenario-based approach guided by literature review.</p> <p>Modelled shock: Labour productivity is 0.8% higher in the 15 industries affected.</p>

Table C.8 – Estimation of model shocks: Human services**Steps from reform direct effects to estimated model shocks (based on appendix B4)**

No.	Short name	Shock estimation from direct effects
H1 ^a	Matching	<p>Direct effect:</p> <p>Reform leads to improved matching between service users and providers, leading to improved health outcomes and improved labour productivity across the workforce.</p> <p>Shock estimation:</p> <p>The economy-wide modelling adopts an elasticity approach: ‘if reform leads to a 0.1% increase in labour productivity across all sectors, it has the following effects on the rest of the economy’.</p> <p>Modelled shock:</p> <p>Labour productivity is 0.1% higher for all sectors.</p>
H2nur	Labour mobility (Case study: nurse practitioners)	<p>Direct effect:</p> <p>Reform leads to delivering existing services at a lower cost.</p> <p>Shock estimation:</p> <p>The employment of an additional 4,448 nurse practitioners to undertake tasks currently performed by GPs is estimated to save \$185,000 per nurse practitioner leading to an overall saving of \$823 million. This cost reduction is assumed to be a decreased rent in the Healthcare industry.</p> <p>Modelled shock:</p> <p>Removal of rents in the Healthcare industry.</p>
H2pha	Labour mobility (Case study: pharmacists)	<p>Direct effect:</p> <p>Reform leads to delivering existing pharmacy services at a lower cost.</p> <p>Shock estimation:</p> <p>Increasing the share of pharmacy technicians from none to 30% of employment in community pharmacies would reduce cost of providing existing services by 12.8%. Given existing remuneration of \$1.5 billion, this implies that current costs are \$200 million higher than could be the case. This additional cost is assumed to be a rent that forms part of the retail margin applied by pharmacists on the sale of human pharmaceuticals to households.</p> <p>Modelled shock:</p> <p>Removal of the rent on the retail margin on the sale of human pharmaceuticals to households.</p>
H3reg	Access arrangements (regional health)	<p>Direct effect:</p> <p>Reform improves access to healthcare and health outcomes in regional and remote areas, and assumed to reduce sick leave, increasing labour productivity.</p> <p>Shock estimation:</p> <p>A shock applied to each industry based off a 0.5% increase in labour productivity, attenuated by the proportion of regional and remote employees per industry.</p> <p>Modelled shock:</p> <p>Labour productivity increases by 0.5% in regional and remote Australia.</p>
H3hlt	Access arrangements (health sector productivity)	<p>Direct effect:</p> <p>Improved access reduces severity of illnesses and reduces healthcare costs in regional and remote areas, which translates into an improvement in healthcare productivity.</p> <p>Shock estimation:</p>

No.	Short name	Shock estimation from direct effects
		<p>Assume that the reform increases labour and capital productivity by 1% in healthcare services for people living in regional and remote areas.</p> <p>Assume that 29% of the healthcare is impacted based on the population living outside major city areas.</p> <p>Modelled shock:</p> <p>Labour and capital productivity in health care are 0.29% higher.</p>
H4	Medicine pricing	<p>Direct effect:</p> <p>Reform leads to a decrease in the price of generic medicines, most of which are imported.</p> <p>Shock estimation:</p> <p>Reform assumed to reduce the cost of generic medicines by \$128 million (appendix B4). Imports of human pharmaceuticals total \$18.3 billion.</p> <p>Modelled shock:</p> <p>Price of imported human pharmaceuticals is 0.699% lower (= \$128 million / \$18.3 billion).</p>
H5	Telehealth	<p>Direct effect:</p> <p>Increasing the use of telehealth consultations is assumed to reduce absenteeism from work by reducing time to attend consultations. Reduced leave translates into increased labour productivity.</p> <p>Shock estimation:</p> <p>Reforms is assumed to lead to 16.3 million new telehealth appointments, 13 million of which replace in-person appointments. This saves 14.1 million hours for consumers. However as only 64.3% of the population are employed, and 25% of time saved is spent on personal leisure, the increase in hours worked across the economy total to 6.8 million (= 14.1 x 0.643 x (1-0.25)).</p> <p>Total hours annual hours worked across the economy of 23.5 billion. Decrease in leave increases labour supply 0.03% (= 6.8 / 23,500).</p> <p>Modelled shock:</p> <p>Labour productivity is 0.03% higher.</p>

a. Modelled using an elasticity approach, estimating how responsive the overall economy is to a 1% or 0.1% shock to the relevant variable.

Table C.9 – Estimation of model shocks: Data and digital
Steps from reform direct effects to estimated model shocks (based on appendix B5)

No.	Short name	Shock estimation from direct effects
D2	Data sharing	<p>Direct effect: Reform increases primary factor productivity in the health care industry.</p> <p>Shock estimation: Scenario-based approach guided by a literature review (appendix B5).</p> <p>Modelled shock: Capital and labour productivity assumed to be 1% higher in health care with real government consumption held fixed.</p>
D3	Emerging technology (Case study: drones)	<p>Direct effect: Reform leads to higher primary factor productivity in agriculture and mining industries.</p> <p>Shock estimation: Scenario-based approach guided by a literature review (appendix B5).</p> <p>Modelled shock: Capital and labour productivity are 0.1% higher in all agriculture and mining industries.</p>
D4hl	Banking (home loans)	<p>Direct effect: Reform leads to more entrants in the home loan market and facilitates switching between home loan providers resulting in lower mortgage rates.</p> <p>Shock estimation: The average annual mortgage repayment is \$43,795. An assumed 0.5 percentage point reduction in loan rates reduces this repayment by \$1,748 (-3.99%). This implies that the cost of home loans is \$3.267 billion higher than they could be. This is added to the model database as a rent on the use of finance by the ownership of dwellings industry.</p> <p>Modelled shock: Removal of the rent on the use of finance by the ownership of dwellings industry.</p>
D4bl	Banking (business loans)	<p>Direct effect: Reform leads to more entrants in the SME business loan market, improved risk estimation and expanded use of assets as collateral that reduces business loan rates by 0.5 percentage points for 45% of SMEs and 2.5 percentage points for 5% of SMEs.</p> <p>Shock estimation: The gap between residential secured loans, other asset secured loans, and unsecured loans is reduced. Currently:</p> <ul style="list-style-type: none"> • 50% of SME loans: <i>Residential secured loans</i>. 0.5 percentage point lower rates than other asset secured loans • 45% of SME loans: <i>Other asset secured loans</i>. 2.5 percentage point lower rates than unsecured loans • 5% of SME loans: <i>Unsecured loans</i>. Highest rates. <p>The 5% of unsecured SME loans acquire loan rates akin to other asset secured loans. The 45% of other asset secured loans acquire loan rates akin to residentially secured loans. These reductions reduce debt servicing costs across all industries against the share of SMEs within each respective industry resulting in an average reduction in debt servicing costs of \$1.878 billion.</p>

No.	Short name	Shock estimation from direct effects
		<p>Modelled shock:</p> <p>Removal of the rent on capital income across industries (considering the share of SMEs and large businesses per industry).</p>
D5	Payment systems	<p>Direct effect:</p> <p>Reform leads to new retail transaction products that reduce debit card transaction costs to 0.2% and credit card transaction costs by 0.05 percentage points.</p> <p>Shock estimation:</p> <p>New transaction products can achieve transactions fees of around 0.2%.</p> <p>Debit card transactions fees are between 0.27–0.52% and credit cards transaction fees are between 0.90– 1.53% (depending on the product: Eftpos, Mastercard, Visa, American Express, Diners Club)</p> <p>The annual value of debit and credit card transaction fees is reduced in proportion to companies' market shares.</p> <p>This reduces annual debit and credit card transaction fees by \$1.372 billion.</p> <p>Modelled shock:</p> <p>Removal of a rent on the use of finance inputs.</p>

Relationship between shock size and CGE results

Given the uncertainty surrounding many of the direct effects, it is important to test how sensitive the economy-wide and revenue results are to the estimates of the direct effects.

Although CGE models are highly non-linear, the changes modelled are relatively small, and the responses are likely to be approximately linear in the neighbourhood of the changes modelled. If there is a linear relationship between the modelled changes and the results, then the published results can be scaled to gauge the effect of varying assumptions about the direct effects on model results without having to rerun PC National.

The direct effects in four scenario were varied to ascertain whether their impact on results are in linear proportion to the size of the shock (i.e. does halving the size of the shock, halve the size of the result?). Since the direct effects are assumed to be outer-envelope, the tests were conducted by reducing the assumed size of the shocks. This involved rerunning each simulation using 25%, 50% and 75% of the shock initially modelled.

The results indicate that the effect on GDP and CPI of varying the initial shocks is nearly linear (tables C.10 and C.11). This illustration for GDP and CPI holds for other results. This means the economy-wide impacts of alternative values for direct effects can be estimated by scaling the impacts without the need to rerun PC National.

This result holds for most simulations, but not necessarily for all. For example, in B7, the amount of tariff to be eliminated is well known, but there is more uncertainty around the compliance costs that relate to the tariff system. Varying the compliance costs changes only that part of the simulation, the gains from the tariff reduction are the same across any assumed values for the compliance costs.

Table C.10 – Testing the effect of shock size on real GDP
Changes in GDP (%) and ratios relative to 100% shock

No.	Short name	Results				Ratios relative to 100% shock			
		100% shock	75% shock	50% shock	25% shock	100% shock	75% shock	50% shock	25% shock
L2	Occupational licensing	0.3869	0.2898	0.1930	0.0964	1	0.7490	0.4988	0.2492
B9nrc	Modern methods of construction (non-residential construction)	0.0629	0.0471	0.0313	0.0156	1	0.7488	0.4976	0.2480
B9rc	Modern methods of construction (residential construction)	0.1516	0.1136	0.0757	0.0378	1	0.7493	0.4993	0.2493
D4hl	Banking - (home loans)	0.1623	0.1214	0.0808	0.0403	1	0.7480	0.4978	0.2483

Table C.11 – Testing the effect of shock size on changes in CPI
Changes in CPI (%) and ratios relative to 100% shock

No.	Short name	Results				Ratios relative to 100% shock			
		100% shock	75% shock	50% shock	25% shock	100% shock	75% shock	50% shock	25% shock
L2	Occupational licensing	-0.1946	-0.1461	-0.0975	-0.0488	1	0.7508	0.5010	0.2508
B9nrc	Modern methods of construction (non-residential construction)	-0.0390	-0.0292	-0.0194	-0.0097	1	0.7487	0.4974	0.2487
B9rc	Modern methods of construction (residential construction)	-0.0698	-0.0524	-0.0349	-0.0174	1	0.7507	0.5000	0.2493
D4hl	Banking (home loans)	-0.4221	-0.3160	-0.2103	-0.1050	1	0.7486	0.4982	0.2488

Sensitivity of results to the choice of model

Economic models embody a large number of assumptions, the combination of which can affect results significantly. The Commission used the VURM CGE model to gauge the sensitivity of the economy-wide results to the choice of CGE model. Differences in equation structure, database, and parameter values in between the two models are likely to affect results – the question is: ‘by how much?’

The Commission ran a sample of simulations using both models and compared the results to ascertain their sensitivity to the choice of model. The scenarios selected were based on the ease of their application to the VURM model without needing to modify the model theory or database. This precluded the running of scenarios that involved the removal of economic rents.⁸⁶

The testing shows that the overall economic impact of each of the scenarios tested is not overly sensitive to the choice of CGE model (table C.12). The main determinant of the impact on real GDP is the size of the direct estimates that underpin the shocks, rather than the different sets of assumptions that underlie the models.

The GDP results are very consistent across models because they depend most closely on the modelled changes and are applied similarly across all jurisdictions. The CPI results are more sensitive to the combination of assumptions that underlie the different models, but they retain the same sign and similar orders of magnitude.

An additional test with higher shocks applied just to New South Wales in the restraint of trade clauses simulation (L1nsw) shows consistent results (see appendix B3 for details). Increasing the productivity effects in one state relative to the original L1 simulation increases GDP marginally and does not change the CPI result at this level of precision. This test illustrates that for the magnitude of changes in shocks considered, the aggregate results are robust.⁸⁷

Table C.12 – Testing the effect of model choice
Changes in GDP and CPI (%)

Scenario		GDP		CPI	
Code	Name	PC National	VURM	PC National	VURM
L1	Restraint of trade clauses	0.19	0.19	-0.10	-0.06
L1nsw	Restraint of trade clauses ^a	na	0.20	na	-0.06
L2	Occupational licencing	0.39	0.36	-0.19	-0.14
D2	Data sharing	0.06	0.07	-0.05	-0.07
D3	Emerging technology	0.03	0.03	0.02	0.03

a. The restraint of trade clauses scenario but with the higher shock applied to all NSW industries. Not run using PC National, as the shocks applied vary by state (appendix B3).

⁸⁶ Adding economic rents into VURM is not a straightforward task, as a variety of different rents would have to be added to the model database at the state rather than national level and these rents would have to be integrated throughout the model theory. The resulting model would also need thorough testing to ensure that the changes achieve their objective without causing any unintended consequences. The timeframe for this project precluded this.

⁸⁷ Although some differences appear at the jurisdictional levels, they are not significant given the difference in the shocks considered between L1 and L1nsw.

The revenue and expenditure estimates are likely to be more sensitive to the choice of model than the economic aggregates.⁸⁸ In part, this reflects different choices about the drivers that are used to estimate the changes in revenue and expenditure in each model. Depreciation expenses, for example, may be linked to depreciation where a model explicitly includes depreciation, but may be linked to changes in the use of capital where it does not. Even where the same drivers are used across models, small differences in the magnitude of the changes in specific drivers can have a material impact on the resulting estimate. Small differences in wages growth, for example, may result in significantly different estimates of the change in income tax collections and employee expenses.

The sensitivity tests confirm that the economy-wide results presented should be interpreted as being broadly indicative of the potential impacts rather than as precise estimates.

⁸⁸ The revenue and expenditure results were not compared as their databases reflect government finances in different fiscal years (2018-19 in the case of VURM and 2021-22 in the case of PC National). This means that the resulting difference may reflect changes in the sizes of the individual revenue and expenditure items over time rather than the effect of different drivers or other differences between the models.

Annex Products and industries in PC National

No.	Short name	Product/industry full name
1	ShpGranCattl	Sheep, grains, beef and dairy cattle
2	OthLivestock	Poultry and other livestock
3	OthAgricul	Other agriculture
4	Aquaculture	Aquaculture
5	Forestry	Forestry and logging
6	Fishing	Fishing, hunting and trapping
7	AgriServs	Agriculture, forestry and fishing support services
8	Coal	Coal mining
9	OilGas	Oil and gas extraction
10	IronOre	Iron ore mining
11	NFerMetOre	Non-ferrous metal ore mining
12	NMetMinerl	Non-metallic mineral mining
13	MingServs	Exploration and mining support services
14	MeatProds	Meat and meat product manufacturing
15	ProcSeafood	Processed seafood manufacturing
16	DairyProds	Dairy product manufacturing
17	FruitVege	Fruit and vegetable product manufacturing
18	OilsFats	Oils and fats manufacturing
19	Cereal	Grain mill and cereal product manufacturing
20	Bakery	Bakery product manufacturing
21	Sugar	Sugar and confectionery manufacturing
22	OthFood	Other food product manufacturing
23	SoftDrinks	Soft drinks, cordials and syrup manufacturing
24	Beer	Beer manufacturing
25	WineTobacco	Wine, spirits and tobacco
26	Textile	Textile manufacturing
27	Leather	Tanned leather, dressed fur and leather product manufacturing
28	TextileProds	Textile product manufacturing
29	KnittedPrds	Knitted product manufacturing
30	Clothing	Clothing manufacturing
31	Footwear	Footwear manufacturing
32	Sawmill	Sawmill product manufacturing
33	OthWood	Other wood product manufacturing
34	PulpPaper	Pulp, paper and paperboard manufacturing
35	OthPaperPrds	Paper stationery and other converted paper product manufacturing
36	Printing	Printing (including the reproduction of recorded media)
37	PetrolCoalPr	Petroleum and coal product manufacturing
38	HumPharma	Human pharmaceutical and medicinal product manufacturing
39	VetPharma	Veterinary pharmaceutical and medicinal product manufacturing
40	BasicChem	Basic chemical manufacturing
41	CleangComp	Cleaning compounds and toiletry preparation manufacturing
42	PolyProds	Polymer product manufacturing
43	NatRubber	Natural rubber product manufacturing
44	Glass	Glass and glass product manufacturing
45	CeramicPrds	Ceramic product manufacturing
46	Cement	Cement, lime and ready-mixed concrete manufacturing
47	Plaster	Plaster and concrete product manufacturing

No.	Short name	Product/industry full name
48	OthNMetPrds	Other non-metallic mineral product manufacturing
49	IronSteel	Iron and steel manufacturing
50	NFerMetal	Basic non-ferrous metal manufacturing
51	ForgIronStee	Forged iron and steel product manufacturing
52	StrucMetal	Structural metal product manufacturing
53	MetContainrs	Metal containers and other sheet metal product manufacturing
54	OthFabMetal	Other fabricated metal product manufacturing
55	MotorVParts	Motor vehicles and parts; other transport equipment manufacturing
56	ShipsBoat	Ships and boat manufacturing
57	RailwayRStk	Railway rolling stock manufacturing
58	Aircraft	Aircraft manufacturing
59	ElectronEqp	Professional, scientific, computer and electronic equipment manufacturing
60	ElectricEqp	Electrical equipment manufacturing
61	DomApplns	Domestic appliance manufacturing
62	OthMachine	Specialised and other machinery and equipment manufacturing
63	Furniture	Furniture manufacturing
64	OthManufs	Other manufactured products
65	ElecGenern	Electricity generation
66	ElecTrans	Electricity transmission, distribution, on selling and electricity market operation
67	GasSup	Gas supply
68	WaterSup	Water supply, sewerage and drainage services
69	WasteSrvs	Waste collection, treatment and disposal services
70	ResidCons	Residential building construction
71	NResidCons	Non-residential building construction
72	CivilEngCons	Heavy and civil engineering construction
73	ConsSrvs	Construction services
74	Wholesale	Wholesale trade
75	Retail	Retail trade
76	Accommodn	Accommodation
77	FoodSrvs	Food and beverage services
78	RoadTrans	Road transport
79	RailTrans	Rail transport
80	WaterTrans	Water, pipeline and other transport
81	AirTrans	Air and space transport
82	PostServ	Postal and courier pick-up and delivery service
83	TransSrvs	Transport support services and storage
84	Publishing	Publishing (except internet and music publishing)
85	MPicSouRec	Motion picture and sound recording
86	Broadcasting	Broadcasting (except internet)
87	InternetServ	Internet service providers, internet publishing and broadcasting, websearch portals and data processing
88	Telecom	Telecommunication services
89	Library	Library and other information services
90	Finance	Finance
91	InsurSuper	Insurance and superannuation funds
92	AuxFinSrvs	Auxiliary finance and insurance services
93	HiringSrvs	Rental and hiring services (except real estate)
94	OwnerDwelgs	Ownership of dwellings
95	NResiPtyREst	Non-residential property operators and real estate services
96	SciTechSrvs	Professional, scientific and technical services

No.	Short name	Product/industry full name
97	ComputerSer	Computer systems design and related services
98	EmpTravServs	Employment, travel agency and other administrative services
99	BldgCleanSrv	Building cleaning, pest control and other support services
100	PublicAdmin	Public administration and regulatory services
101	Defence	Defence
102	PublicSafety	Public order and safety
103	PrimSecEdu	Primary and secondary education services (including pre-schools and special schools)
104	TechTerEdu	Technical, vocational and tertiary education services (including undergraduate and postgraduate)
105	ArtSprtEdu	Arts, sports, adult and other education services (including community education)
106	HealthCare	Health care services
107	ResidCare	Residential care and social assistance services
108	PerformArts	Heritage, creative and performing arts
109	SportsRecre	Sports and recreation
110	Gambling	Gambling
111	AutoRepair	Automotive repair and maintenance
112	OthRepair	Other repair and maintenance
113	PersonalSer	Personal services
114	OthServices	Other services

D. Economy-wide and revenue results

This appendix provides a summary of the modelling results for key economic variables: output, the cost of living and government revenue. It is complemented by a workbook with additional results for each reform.

The economy-wide results reflect the outputs from PC National (table D.1). Although estimated from the input-output tables for the 2018-19 financial year, economic variables are reported in 2023-24 dollars using the change in the value of GDP to scale values up. Government revenue calculations are based on data for 2021-22, and scaled up to 2023-24 dollars using the growth in GDP.

The CGE results are entirely determined by the combination of assumptions that underlie the model structure, its database, the model parameterisation, the modelling environment used and the modelled shocks (appendix C). The fiscal results reflect actual revenues and expenditures in each jurisdiction in the fiscal database, and the choice of drivers sourced from the core of PC National (appendix C).

The results do not account for dynamic effects or implementation costs. They are not forecasts; rather, they are estimates of the impacts on the broader economy from the direct effects modelled, in isolation from any other influences. In particular, the results abstract from any underlying growth, developments in Australia's trade environment or any other influences that might affect the reported variables. They are best interpreted as how different the economy is relative to that represented in the model database, under the different operating or policy environments that result from the modelled shocks.

Table D.1 – Summary of macroeconomic impacts from NCP reform package
Changes in real GDP, CPI, wages, productivity and net revenue

No.	Short name	GDP (\$m)	CPI (%)	Wages ^a (%)	Labour productivity ^b (%)	Net revenue (\$m)
B2^c	Commercial planning and zoning	23	-0.003	0.003	0.001	4
B3	Public procurement	34	-0.001	-0.001	0.001	189
B7ice	Distribution networks (internal combustion engines)	89	-0.003	0.006	0.003	3
B7tar	Distribution networks (tariffs and compliance costs)	6,691	-0.250	0.267	0.251	702
B8^c	Efficient user charging	693	-0.007	0.025	0.026	9
B9rc	Modern methods of construction (residential construction)	4,050	-0.070	0.118	0.152	261
B9nrc	Modern methods of construction (non-residential construction)	1,680	-0.039	0.038	0.001	154

No.	Short name	GDP (\$m)	CPI (%)	Wages ^a (%)	Labour productivity ^b (%)	Net revenue (\$m)
NZ1rep	Right to repair (repair rents)	311	0.014	0.061	0.001	-12
NZ1agr	Right to repair (grains)	97	0.010	0.061	0.003	-37
NZ3aml	Heavy EVs (steering axle mass limit)	134	0.003	0.015	0.251	-38
NZ3pir	Heavy EVs (parallel import restrictions)	337	-0.012	0.022	0.026	12
NZ3tar	Heavy EVs (tariffs)	276	-0.016	0.009	0.152	19
NZ5	EV imports	1,095	-0.038	0.072	0.063	39
L1	Restraint of trade clauses	5,137	-0.101	0.128	0.012	611
L2	Occupational licensing	10,332	-0.195	0.243	0.004	1,081
H1 ^c	Matching	2,646	-0.051	0.069	0.005	311
H2nur	Labour mobility (nurse practitioners)	1,172	-0.090	-0.006	0.013	378
H2pha	Labour mobility (pharmacists)	33	-0.030	0.013	0.010	83
H3reg	Access arrangements (regional health)	2,875	-0.047	0.072	0.041	336
H3hit	Access arrangements (health sector productivity)	352	-0.010	0.006	0.192	42
H4	Medicine pricing	2	-0.002	0.003	0.387	35
H5	Telehealth	793	-0.015	-0.009	0.099	93
D2	Data sharing	1,642	-0.050	0.013	0.044	59
D3	Emerging technology	711	0.022	0.020	0.001	53
D4hl	Banking (home loans)	4,335	-0.422	0.262	0.108	2,038
D4bl	Banking (business loans)	2,239	-0.046	0.213	0.013	398
D5	Payment systems	445	-0.065	0.136	0.000	305

a. Real wage deflated by the consumer price index. Aggregate employment is held fixed in the CGE modelling environment (appendix C). **b.** Percentage changes in labour productivity are calculated as the difference between the percentage changes in GDP and employment. Since employment is fixed, the percentage changes in labour productivity and GDP are the same. **c.** Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative 0.1% or 1% shock to the affected sectors.

D.1 Some principles and mechanisms driving the results

All proposed changes involve decreasing production costs in one or several industries, whether by increasing productivity or by decreasing a rent. This involves shifting the corresponding supply curves out, reflecting incentives to increase output. Through inter-industry linkages, initial decreases in costs flow through to other industries, by making their inputs into production cheaper, and eventually to consumer prices. Where costs decrease in consumer products, they decrease consumer prices directly.

The cumulative effect of decreasing costs across the economy is an increase in output (real GDP). If the industries involved deliver most of their outputs to households or government final demand (for example in health), this expansion is muted, because cost reductions are not spread widely across the economy. If the modelled changes decrease costs in industries with a high export share (mainly parts of mining and agriculture), the expansion effect on output can be large.

In most cases, the cumulative effects of decreasing costs is to decrease prices to households, industries and to other parts of final demand. When the modelled changes primarily decrease costs in industries with a high export share (parts of mining and agriculture), consumer prices increase because these industries need to attract resources away from other industries to be able to increase their output.

The following is a summary of the effects of the initial shocks (the modelled changes) on economic aggregates.

Determinants of economic activity

GDP is a measure of economic activity. It reflects, among other things, the amount of labour and capital employed, measured as their returns – the wage bill and returns to domestic and foreign capital.⁸⁹

When an industry's costs decrease, demand for its output increases and, with it, its production, drawing in labour and capital from other industries or, in the case of capital, overseas. With employment assumed to be fixed economy-wide (appendix C), wages increase as industries bid for a limited supply of labour.

Conversely, capital is assumed to be mobile internationally. Initially returns to capital increase, increasing the rate of return. Foreign capital flows in until the rate of return returns to its initial level.⁹⁰

Since wages and capital use increase, nominal GDP increases.

A real change in GDP is calculated as the change in nominal GDP deflated by an index of wages and returns to capital (GDP deflator). It measures the change in the amounts of labour and capital used. In some scenarios, changes in rents may also affect changes in GDP.

⁸⁹ GDP also includes other taxes on production and taxes on products (goods and services).

⁹⁰ This is a stylised description of the model's logic. In practice, all adjustments are instantaneous in a comparative-static simulation.

Determinants of household disposable income

Disposable income is the income that Australians can spend on private consumption or saved. It is obtained from gross income – the sum of returns to labour, capital and rents – less income paid to foreign capital owners and income taxes.

When an industry's costs decrease, output increases, and wage and capital income generally increase. Part of the increase in capital income is paid to foreigners as foreign investment increases – this part of capital income does not contribute to Australian disposable income. Therefore, when GDP increases, only part of the additional income is available for domestic spending.

Several simulations consist of reducing a rent (table C.2). Reducing such rents decreases household gross income, with downstream effects on disposable income and private consumption.

Income tax decreases the amount of income available for spending on private consumption, while it increases the amount of income available for public consumption.

How output is used

There are different types of final demands for output.

- domestic absorption:
 - household and government consumption (C and G)
 - household and government investment (I)
- exports (X).⁹¹

Different final demands make different demands on industries, which affects economy-wide effects. For example, increasing household consumption increases demands for food products and residential housing. Increasing government consumption increases demand for public administration, health and education, and defence. Investment demand is particularly important for construction industries. Exports are important for many mining industries, either directly or after some processing.

Whether an industry supplies largely exports or domestic absorption plays a big part in the degree to which a cost decrease has a large or a small expansionary effect on output (GDP). It also determines whether consumer prices decrease or increase. This is because different categories of final demands have different price elasticities.

- Demands for exports are assumed to be very elastic, meaning that Australian exporters can expand their supply without having to reduce their prices strongly. The price elasticities for these goods is set at -5. For this reason, a relatively small decrease in costs result in a large output expansion. This expansion is facilitated by a large inflow of foreign capital, which results in relatively large increases in real GDP. The increase in output also attracts labour away from other industries, increasing wages across the economy. In turn, this increases production costs in other industries, and therefore the prices that households face.
- Household and government demands are relatively inelastic – the implied price elasticities for these goods and services are typically between -1 and -0.1. When productivity in the industries that supply these services improves, the corresponding supplies shift down, reflecting a reduction in the unit cost of production, and an opportunity for these industries to expand. The low price elasticity of demand limits the expansion in output. With a limited expansion, these industries shed labour. Since the model assumes full employment, wages decline until all labour is re-employed in other industries. With cheaper labour, other

⁹¹ Investment in PC National also includes changes in stocks.

industries expand, attracting capital from abroad – this expansion increases GDP. The economy-wide decline in wages reduces costs across the economy, reducing the prices that households face.

The determinants of Gross State Product (GSP)

In the modelling, changes in state and territory GSP are determined by the industry structure in each jurisdiction and the changes in the national activity in each industry. For example, in simulations in which mining industries expand, GSP increases most in jurisdictions in which mining accounts for a larger part of their activity (mainly Western Australia and Queensland). Where a modelled change reduces costs in healthcare or in transport, increasing demand for outputs from those sectors, GSP tends to increase more evenly across states.

Government revenue and expenditure

A small number of economic results drive the changes in Australian Government and state and territory revenue and expenditure. This section provides a simple overview of what determines the fiscal results (table C.4).

As outlined in appendix C, the nominal change in each item of government revenue and expenditure in the fiscal module added to PC National is determined by the initial level of that revenue or expenditure and the percentage changes in the relevant driver (or drivers).

Thus, both the volume and the price component of the drivers matter. For example, changes in the nominal value of household consumption of the goods and services on which the GST is levied drive changes in GST revenue collected. Therefore, GST revenue collections depend on the relative changes in the consumer prices of those goods and services and the volume of these goods and services consumed. In most simulations, the net effect on GST revenue collected generally depends on the relative contributions of:

- lower consumer prices (which are correlated with the CPI), which reduce GST revenue collections
- higher real household consumption, which increases GST revenue collections.

The main drivers for the Australian Government fiscal results are:

- changes in income tax collections, which reflects changes in value added drive changes in personal and corporate income taxes, which account for 68% of Australian Government revenue
- changes in the CPI drive changes in personal benefits, which account for 39% of expenditure
- changes in wages drive changes in employment costs, which account for 7% of expenditure
- changes in other revenues and expenses, which are driven by a few other economic variables – for example, changes in the volume of excisable products drive excise revenues, changes in tariff rates and the value of imports drive changes in tariff revenues, and changes in the nominal value of GDP drive changes in most other expenses.

The main drivers of state and territory revenues and expenses are:

- changes GST collections by the Australian Government determine GST grants paid to the state and territory governments and changes in the CPI drive changes in non-GST tied grants, which collectively account for 36% of revenues
- changes in wages drive employment costs, which account for 44% of expenses
- changes in GSP and their relevant deflators drive many other sources of state and territory revenues and expenditures.

Determinants of changes in net revenues

The combination of the effects of the modelled changes on the drivers and of the shares mentioned above mean that the main effects on net revenues are determined by a relatively small number of factors. In most simulations, large parts of the effects on net revenues can be explained by:

- increases in GDP increasing Australian Government revenues through increases in income taxes
- decreases in the CPI decreasing Australian Government expenditure on personal benefits
- decreases consumer prices decreasing state and territory revenue from GST and non-GST grants
- increases in wages increasing employment costs.

D.2 GDP and GSP

GDP

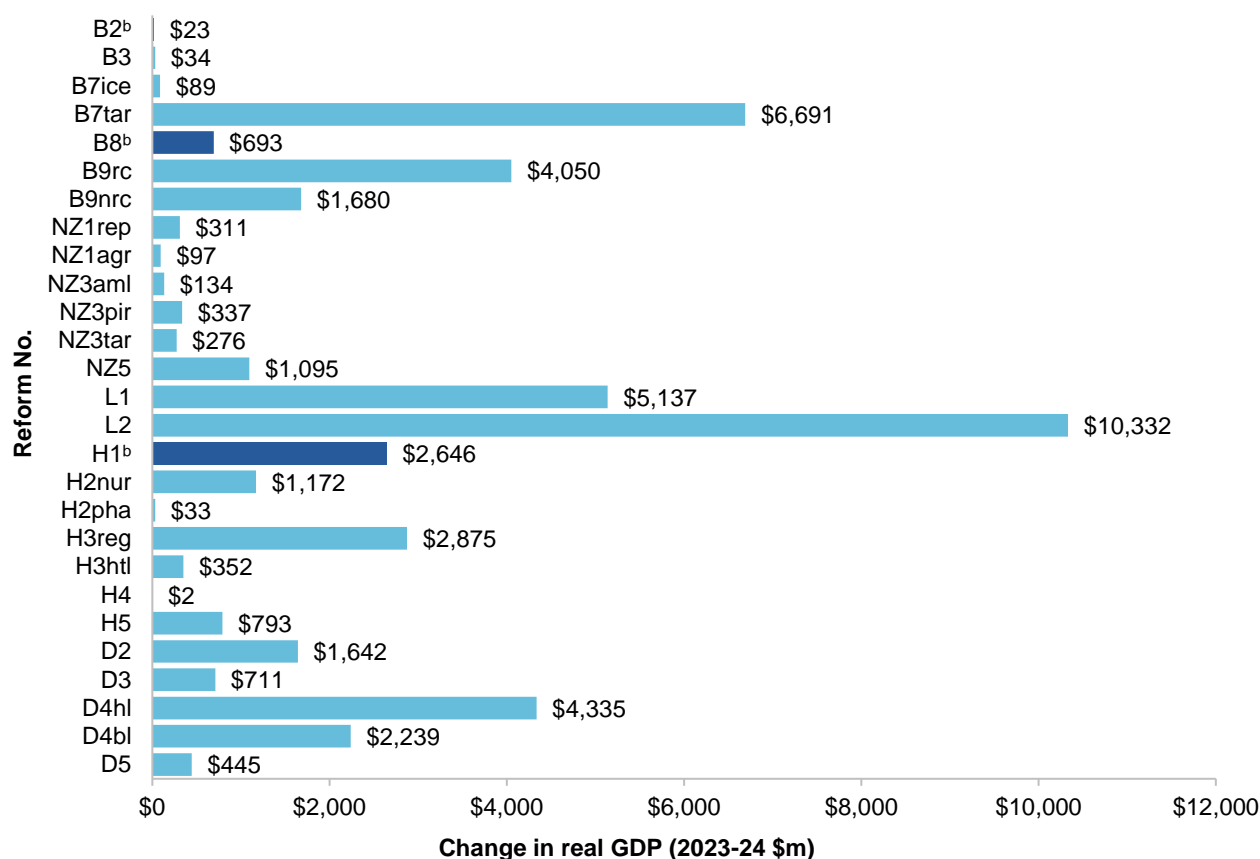
Real GDP increases across all of the modelled changes, although the increases vary in size (figure D.1). Five modelled changes are responsible for larger increases in output (B7tar, B9rc, L1, L2, D4hl), while the other changes result in smaller increases.

Reforms that lead to productivity improvements tend to have larger GDP impacts than those associated with removing rents, particularly if the productivity improvements benefit export-orientated industries. This is because productivity improvements increase the effective supply of primary factors available for use within the economy, whereas the removal of rents primarily involves transfers between different parts of the economy (such as between government and households in the case of B3). Although removing rents reduces costs, and therefore increases output, it also decreases income to households, which decreases demand and ultimately the GDP impacts of the reform. In both cases, the impacts on GDP are larger when:

1. the direct effects of the reforms are larger, and/or
2. when the reform affects more economic activity (that is, when the footprint affected is larger).

For example, L2 (occupational licensing) alone accounts for around a fifth of the GDP impacts associated with the overall reform package. L2 involves streamlining licensing and registration requirements, which is simulated as an improvement in labour productivity due to better job matching. The productivity improvement was applied to the 15 industries most affected by current licensing requirements; these industries are large and labour-intensive, leading to relatively large GDP impacts.

Similarly, B7tar (distribution networks: tariffs and compliance costs) involves removing import tariffs across all imports, which contributes to reducing costs in most industries. D4bl (banking: business loans) involves removing economic rents on finance inputs used by all industries. The cumulative effect of these changes across the economy are large and drive larger increases in real GDP.

Figure D.1 – Changes in output vary greatly across the modelled changes^a**Impacts on real GDP, 2023-24 million dollars**

a. Refer to table D.1 for the short names of each modelled change. b. Darker bars indicate 'modelled using an elasticity approach', estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

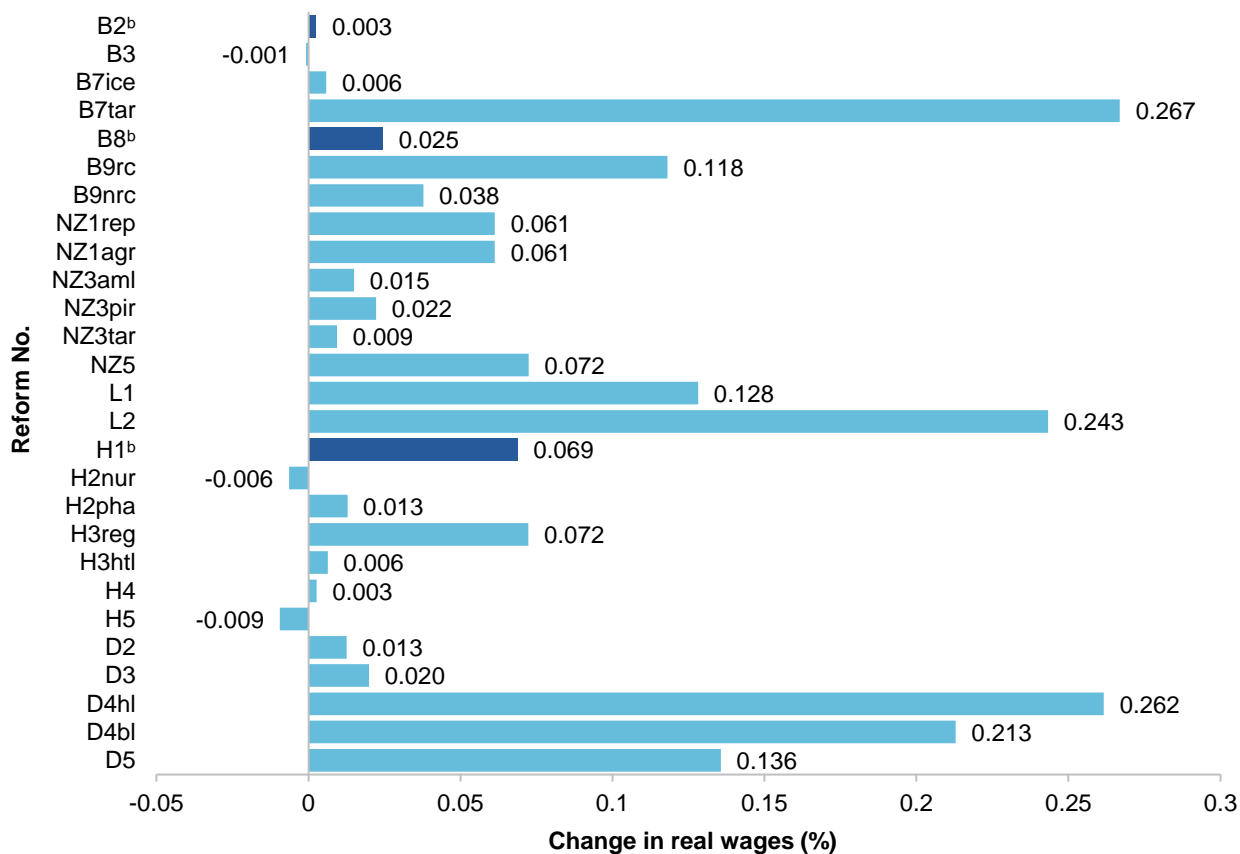
Source: Commission estimates.

A few of the modelled changes result in relatively large real wage gains, while most of the others have small increases (figure D.2). Three modelled changes result in marginally lower real wages.

Reforms that reduce tariffs and improve capital and/or labour productivity tend to be particularly beneficial in terms of increasing real wages. This is because they both lead to lower production costs and result in increased demand for the output of the sectors directly affected. To increase production to meet the additional demand, these sectors need to attract additional labour away from other industries. Given that the aggregate supply of labour in the model is held fixed in the long run, this increase in the demand for labour drives real wages up.

The banking and financial system reforms (D4hl, D4bl, D5) produce many of the wage gains. Combined with L2 (occupational licensing) and B7tar (distribution networks: tariffs and compliance costs), they account for a majority of the real wage increases across the modelled changes.

For example, D4bl (banking: business loans) involves removing a rent that accrues to the finance industry that all other industries use as an input. This reduces costs across all industries. With reduced costs, industries seek to increase output, demanding more labour and capital and putting upward pressure on real wages and on returns to capital. Foreign investment increases, returning rates of return to their long-term level. With employment fixed, the capital/labour ratio increases, increasing labour productivity and therefore real wages.

Figure D.2 – Changes in real wages also vary greatly across modelled changes^a**Impacts on real wages, percentage changes from base**

a. Refer to table D.1 for the short names of each reform. b. Darker bars indicate 'modelled using an elasticity approach', estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

GSP

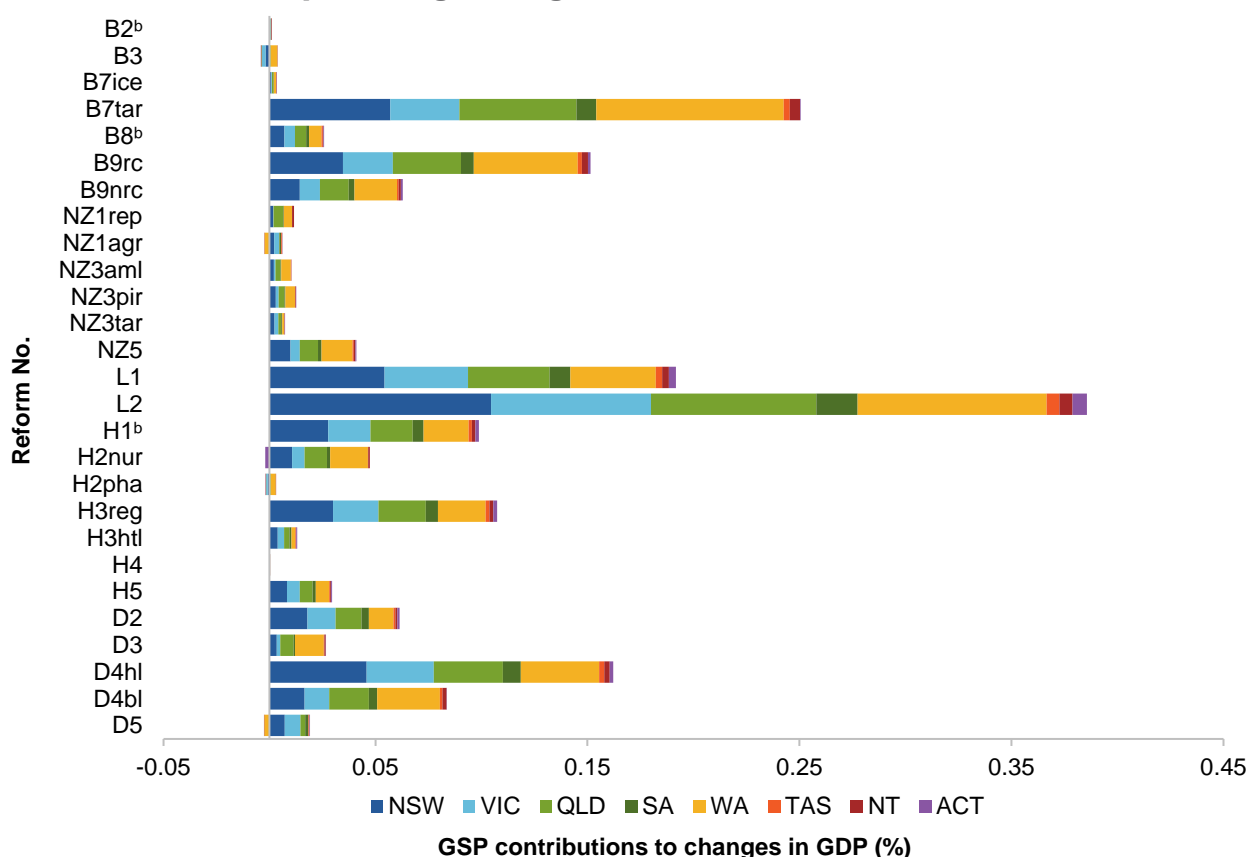
Real GSP increases across all states and territories (figure D.3). Unsurprisingly, given that they account for the bulk of Australian production, the changes are largest in the four biggest economies – New South Wales, Victoria, Queensland and Western Australia. However, the relative changes in GSP are driven by the industrial composition of each state.

For example, the mining industry accounts for over a third of Western Australia's economy. In many scenarios, reducing costs in the mining sector drives a large expansion in its output. This is particularly the case for the iron ore and coal industries. This means that Western Australia especially, but also Queensland and New South Wales (where mining is concentrated), see relatively greater increases in GSP.

For example, D3 (emerging technology) models an increase in productivity in mining and agricultural industries. Due to the size of its mining and agricultural industries and exports, Western Australia sees a greater percentage increase in real GSP than New South Wales, Victoria and Queensland combined.

Figure D.3 – Changes in real GSPs relate to the size of the state economies and their industry structure^a

GSP contributions to percentage changes in GDP



a. Refer to table D.1 for the short names of each reform. b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

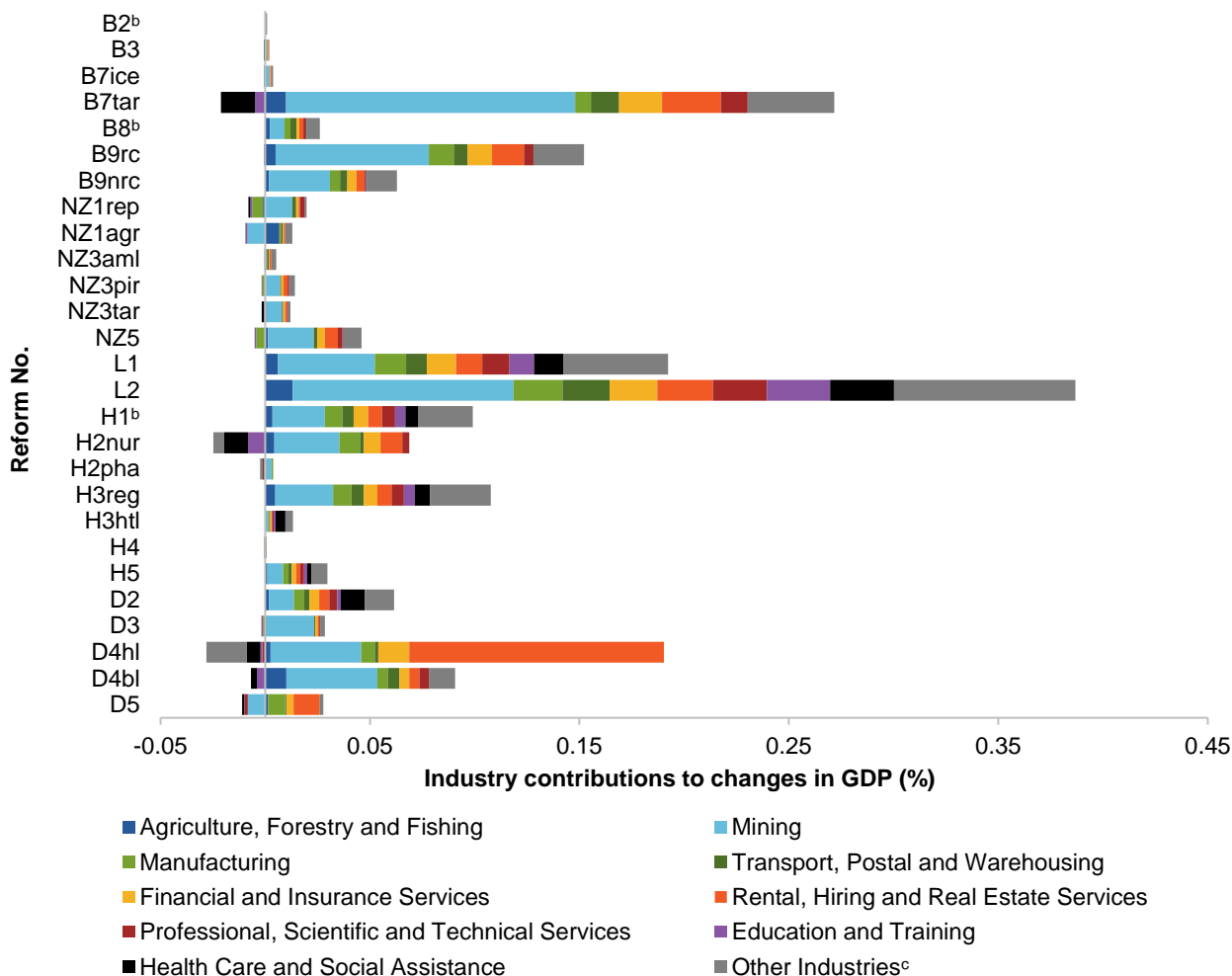
Source: Commission estimates.

Industry output

The largest changes in industry output are in the mining sector (figure D.4). Mining is export intensive and faces a relatively elastic export demand. When labour and capital are released from any part of the economy, the sectors with the most elastic demands expand their output the most. In addition, since mining is relatively capital intensive and foreign investment adjusts to bring the rate of return on capital to its long-run level, mining is the sector that expands the most across the modelled changes.

For example, in D3 (emerging technologies) and B7tar (tariffs and compliance costs), most of the increase in output occurs in the mining sector. In these simulations, the costs of the mining sector (among others) are assumed to decrease (i.e. their supply curves shifts out). The export intensity of mining exceeds that of other sectors and so does its capital intensity, explaining why mining experiences the strongest expansion. In addition, the expansion in mining requires bidding labour away from the rest of the economy, which adversely impacts labour-intensive sectors such as education and health.

Figure D.4 – Changes in mining output account for a large part of the modelled changes^a
Industry contributions to percentage changes in GDP



a. Refer to table D.1 for the short names of each reform. b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors. c. Other industries includes electricity, gas, water and waste services, construction, wholesale trade, retail trade, accommodation and food services, information media and telecommunications, administrative and support services, public administration and safety, arts and recreation services, and other services.

Source: Commission estimates.

D.3 Cost of living

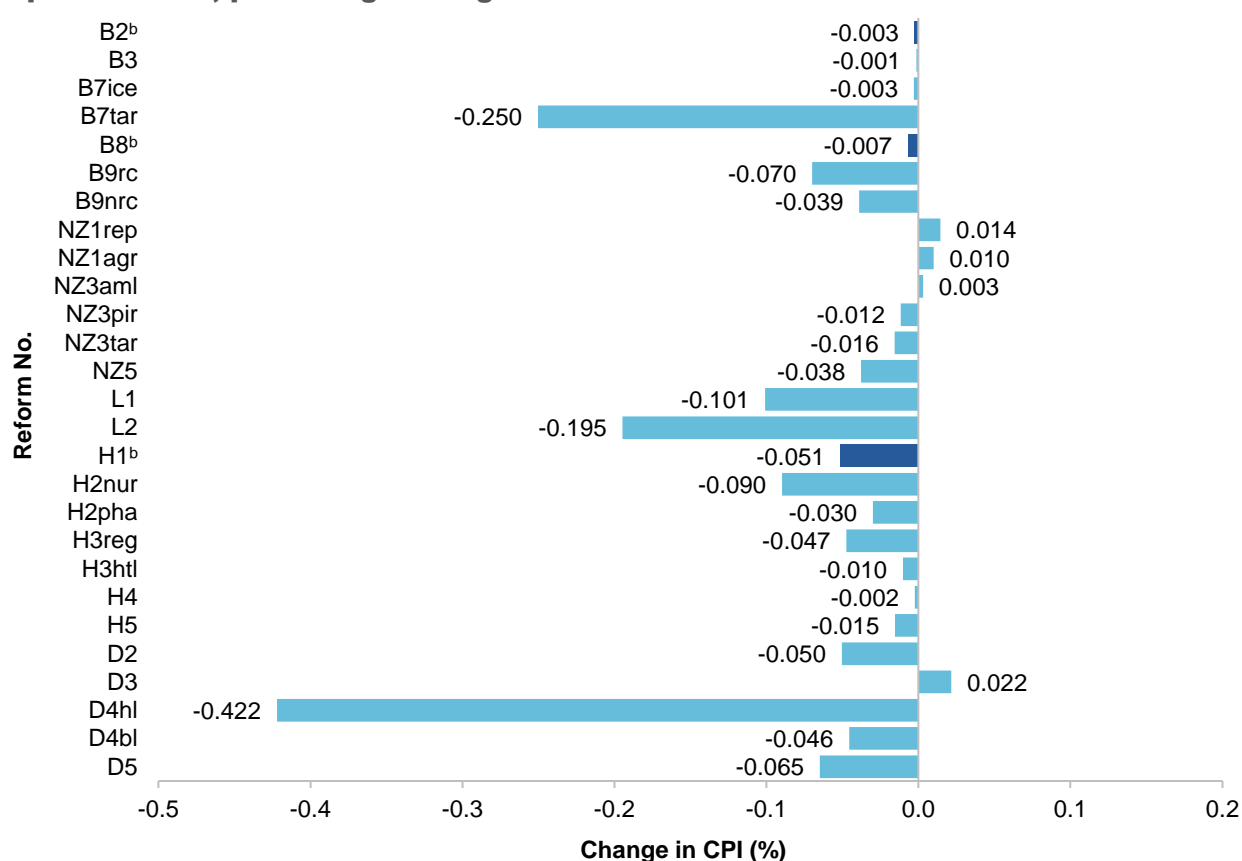
Consumer prices decrease across most of the modelled changes, with three simulations resulting in larger falls in the cost of living (figure D.5). The reforms with the largest impact on consumer prices are those that entail cost reductions across large parts of the economy, leading to large or cumulative reductions in production costs and prices.

For example, D4hl, involves reducing interest rates on home loans and is modelled as removing an economic rent from the use of finance by the ownership of dwellings sector. Given the value of the average mortgage, the high share of dwellings with a mortgage and the high weight attached to housing in the CPI, a reduction in mortgage repayments contributes to a large decrease in the CPI.

Likewise, B7tar eliminates all tariffs and related compliance costs. This decreases production costs, leading to price falls throughout the economy. Similarly, L2 (Occupational licensing) involves a labour productivity improvement that decreases labour costs in 15 labour-intensive industries. This decreases the cost of goods and services provided by these industries. It also decreases costs and prices in other industries, as surplus labour relocates outside of the 15 industries.

Figure D.5 – A few changes account for larger decreases in living costs^a

Impacts on CPI, percentage changes from base



a. Refer to table D.1 for the short names of each reform. **b.** Darker bars indicate 'modelled using an elasticity approach', estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

Cost of living in more detail

The main distributional effects of the modelled changes occur through changes in consumer prices. This section breaks changes in the CPI reported in PC National into price changes for different types of consumer goods and services. This can then be used to inform how prices change for different baskets of goods.

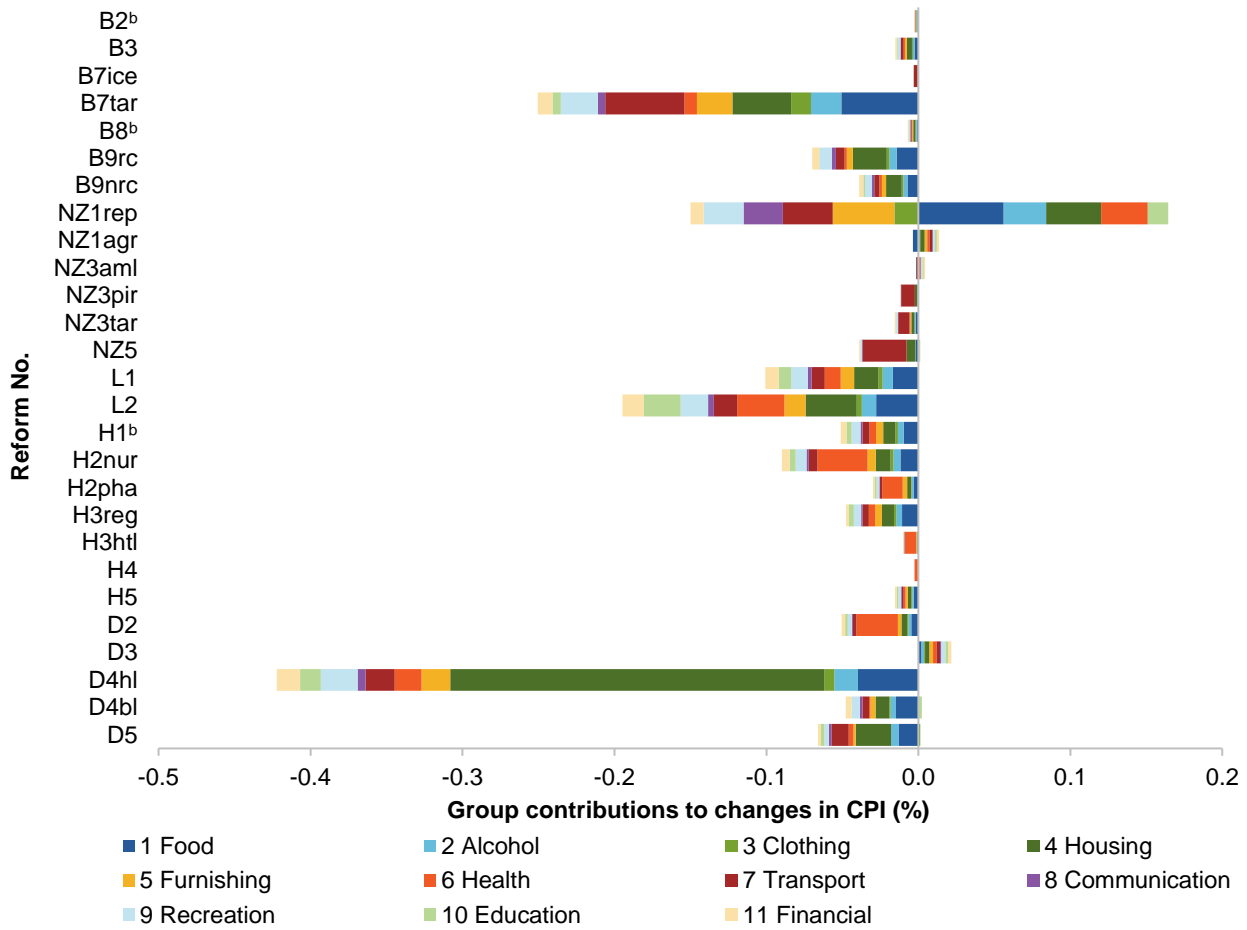
The ABS identifies 11 groups of goods and services in the CPI. In the CPI module attached to PC National, the goods and services identified in the input-output tables are allocated to the 11 groups along with their value shares in the group. In this section, the shares and the changes in prices from PC National are used to calculate the change in the price of each CPI group.

Consumer prices decrease for most CPI groups across the modelled changes (figure D.6); however, the effects vary across scenarios. For example, B7tar reduces prices across all groups, whereas the reduction in housing costs is the main contributor to decreasing the cost of living in D4hl.

The cumulative effect of all the modelled changes is greatest on the price of health services to households. Many of the changes target costs in the healthcare sector directly, including all changes under the human services theme. Moreover, other changes, though not targeting the healthcare sector (for example, L2) also affect the cost of health care.

Figure D.6 – Prices decrease across almost all CPI groups^a

Group contributions to percentage changes in CPI



a. Refer to table D.1 for the short names of each reform. b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

Box D.1 – Using changes in CPI groups to estimate impacts on household budgets

Changes in prices affect households differently according to the pattern of their expenditures (see table below). Applying the changes in prices from the simulations to different budget shares gives a sense of how changes in prices affect different household types.

To illustrate this, the Commission applied the changes in CPI groups from B7tar (distribution networks: tariffs and compliance costs) to three sample budgets. The results show that changes differ across household types. They also show that, in isolation, decreasing tariffs has a small effect on weekly budgets. Other simulations are likely to have greater effects, and so is the cumulative effect of several changes.

Box D.1 – Using changes in CPI groups to estimate impacts on household budgets**The effects of B7tar on sample budgets^a****Weekly budget for full-time workers, Australian dollars**

	Single male		Single mother, one child		Dual-earner couple, two children	
	Base	B7tar	Base	B7tar	Base	B7tar
Food	89.90	89.65	112.33	112.02	255.69	254.98
Clothing & Footwear	11.38	11.35	23.13	23.07	44.47	44.35
Housing	12.60	12.57	32.35	32.27	49.71	49.58
Personal Care	426.00	424.71	461.05	459.65	494.67	493.17
Household Goods & Services	103.94	103.68	122.73	122.42	154.17	153.78
Health	10.44	10.41	22.69	22.63	43.79	43.67
Transport	109.96	109.81	140.24	140.05	218.30	218.01
Recreation	37.00	36.93	66.51	66.38	95.27	95.08
Education	0.00	0.00	60.97	60.83	136.66	136.35
Discretionary	85.98	85.76	98.75	98.50	106.17	105.90
Total	887.20	884.87	1,140.75	1,137.82	1,598.90	1,594.88
Savings		2.33		2.93		4.02

a. Sample budgets from research produced for Fair Work Commission's Annual Wage Review 2022-23.

Source: Bradbury et al. (2023) and Commission estimates.

D.4 Government revenues

Fiscal effects are complex and vary across the modelled changes (figure D.7). Changes in net revenues are driven by changes in revenues and expenditures. Differences across Australian Government and state and territory results are in turn driven by the differences across jurisdictions in (i) the structures and (ii) the assumed drivers of revenues and expenditures. Overall, modelled changes that affect large parts of the economy account for the largest changes in net revenues for all jurisdictions. Changes in Australian Government net revenue is typically larger than changes in state and territory net revenue.

Australian Government net revenue increases for most of the modelled changes. Increases in revenues are driven mainly by increases in personal and corporate income taxes, which are driven by increased nominal factor incomes. Changes in expenditures are driven mainly by:

- increases in employee expenses, which increase with wages, and

- personal benefit payments, which decrease with decreases in the CPI.⁹²

Changes in state and territory revenue are driven mainly by changes in GST and non-GST grants. Employment costs drive changes in expenditures, because they account for a large part of state and territory expenses. Changes in net revenue varies in size and direction across the modelled changes, though most changes are small. The largest increase in net revenue is from H2nur (nurse practitioners), which is driven by reduced expenditures on hospitals and other state-funded health costs.⁹³ As changes in revenue and expenditure for state and territory governments are small and not materially different across jurisdictions, they are reported in aggregate.

The effects of D4bl (banking: business loans) on Australian Government net revenue and states and territory net revenue are opposite. Reducing business costs stimulates GDP growth, which increases income taxes that accrue to Australian Government. Stimulating output growth increases the demand for labour, increasing wages. Since employment costs are a large part of state and territory expenditure, the increase in expenditure outweighs any increase in revenue, and results in decreases in net revenue.

The direct effects of some reforms, such as B3 (public procurement) and H2nur (nurse practitioners), imply significant reductions in government expenditure, which arise from removing rents that increase existing expenditure. This implies a corresponding increase in net revenue for all governments. However, the reduction in expenditure means that governments no longer need to raise as much tax revenue to pay for the additional rent costs. That said, the results in figure D.7 imply an offsetting reduction in revenue collections, such that the net revenue effect is effectively zero.⁹⁴ Therefore, the net revenue results in figure D.7 abstract from the initial direct effects of the shock, reflecting the induced effects attributable to the subsequent changes in economic activity.

The revenue and expenditure results for some simulations are particularly sensitive to the modelling assumptions (box D.2). The results should be considered with regard to the modelling environment (appendix C) and specific changes modelled (tables C.5 to C.9).

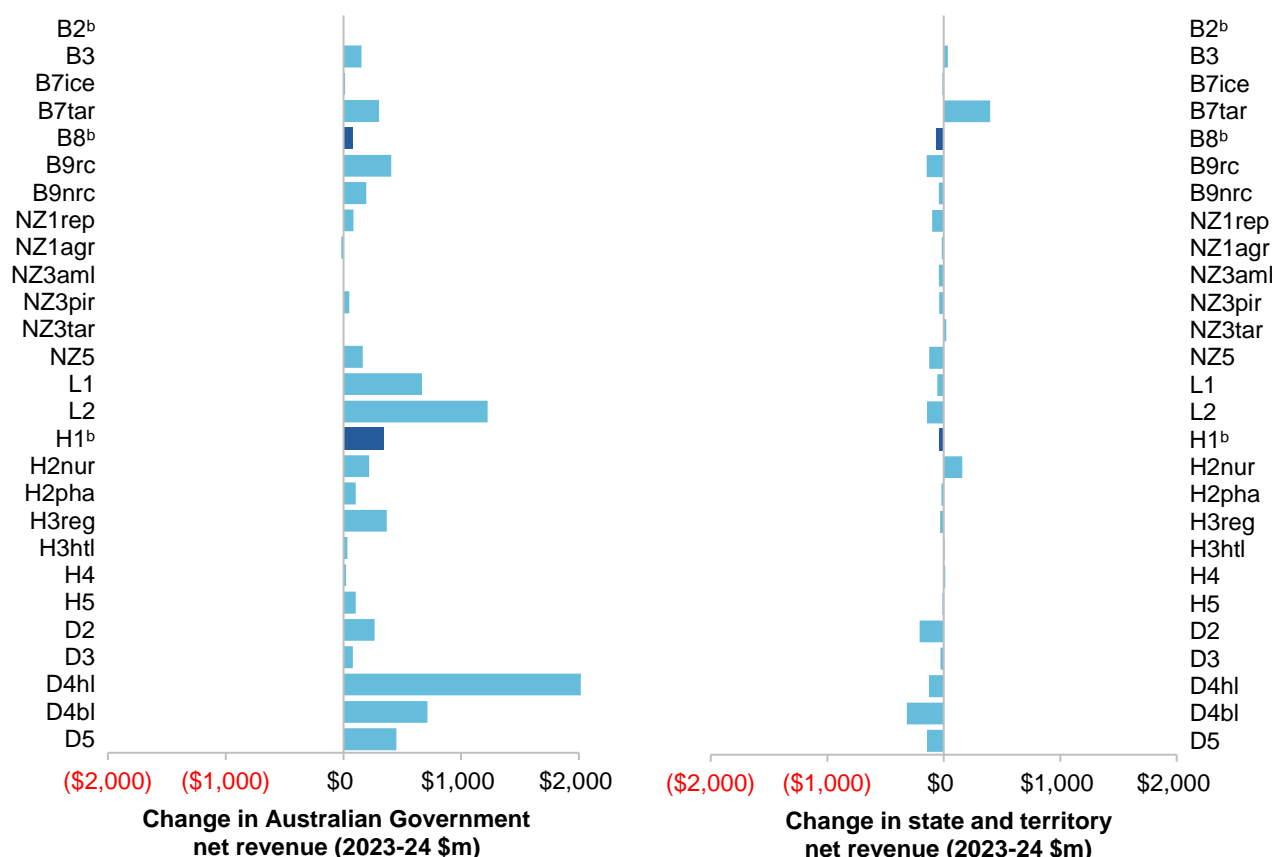
⁹² Benefits decrease in a comparative-static sense. This does not mean that benefits decrease in the economy. Rather, because the CPI is lower than it would otherwise be, benefits are lower than they otherwise would be. This is consistent with a slower increase in the CPI, which translates into a slower increase in benefit payments at the time of indexation.

⁹³ The cost savings arise because nurse practitioners form part of the broader health care services sector in the PC National database (which reflects the categories in the ABS input-output tables). Consequently, as modelled, lower economic rents reduces costs by the amount of the economic rent across the broader health care services sector including parts of the sector where nurse practitioners may not be employed. This may mean that some health care services might experience bigger price declines than indicated by the modelled results, and others smaller (or no) price decreases.

⁹⁴ The economic and revenue effects depend on how governments respond to the reduction in their expenditures. They may, for example, use the savings to fund other expenditure, retire debt or reduce a myriad of different taxes, levies and charges. Reducing tax rates may produce an overall increase in economic activity by reducing the loss in activity that occurred when the tax was initially imposed and any associated 'deadweight loss'. Given the wide range of options available to government, and given that the Commission has been asked to report on the revenue implications, the modelling assumes that the initial cost savings are returned to households via non-distortionary lump-sum transfers (appendix C).

Figure D.7 – Net revenues increase for the Australian Government but vary across modelled changes for the states and territories^a

Impacts on government net revenues, 2023-24 million dollars



a. Refer to table D.1 for the short names of each reform. b. Darker bars indicate 'modelled using an elasticity approach', estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

Box D.2 – Simulation-specific factors may influence the net revenue story

The revenue and expenditure results in some simulations are more sensitive to specific modelling assumptions than in others. In these scenarios, particular sources of revenue and/or expenditure may make more of a contribution to the overall outcome than is generally the case.

This can occur for various reasons. It could be that the simulation results in larger changes in the relevant revenue and/or expenditure drivers in the model core (such as the change in wages, rental price of capital and primary factor incomes that are assumed to drive income tax collections). It could be that the scenario involves relatively larger shocks (such as the size of the productivity improvement). It could be that the change arises from a modification made to the closure used (such as holding real government expenditure fixed). These changes are more noticeable when other revenue and expenditure items (such as the changes in income tax) make relatively smaller contributions.

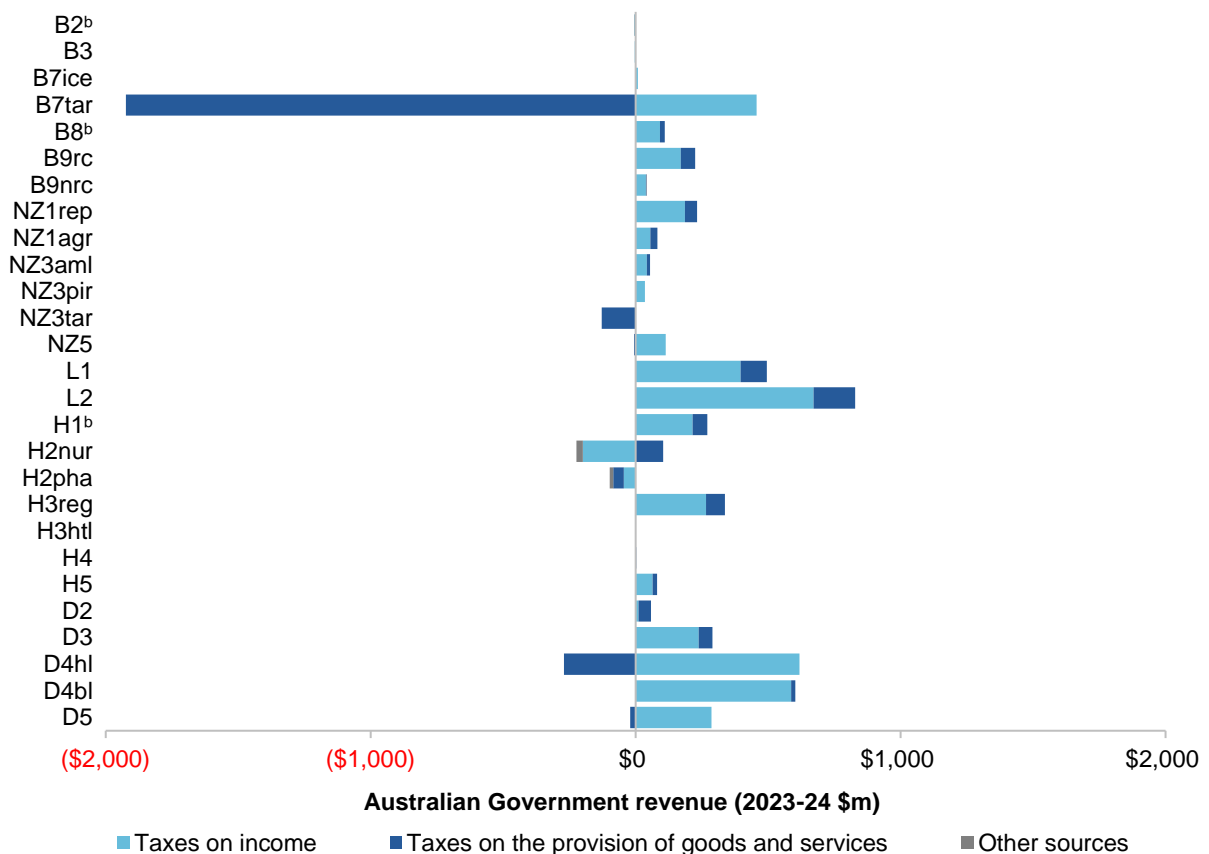
Box D.2 – Simulation-specific factors may influence the net revenue story

An example is scenario B7tar (distribution networks: tariffs and compliance costs), where the relatively larger changes in gross operating expenses, a key expenditure item for state and territory governments, is driven by the changes in government expenditure sourced from the model core. Another example is scenario D4hl (banking: home loans), where the relatively larger changes in consumer prices flow through into lower non-GST tied grants and personal benefit payments made by the Australian Government.

Revenue

Increased personal and corporate income taxes account for most of the increases in Australian Government revenue (figure D.8). All other contributions are relatively small, except for the loss in tariffs in B7tar. Counteracting this tariff effect is the productivity effect associated with eliminating the compliance costs of the tariff system, which accounts for part of the increase in income tax revenue.

Figure D.8 – Australian Government revenue increases mostly through taxes on income^a
Changes in Australian Government revenue by source, 2023-24 million dollars

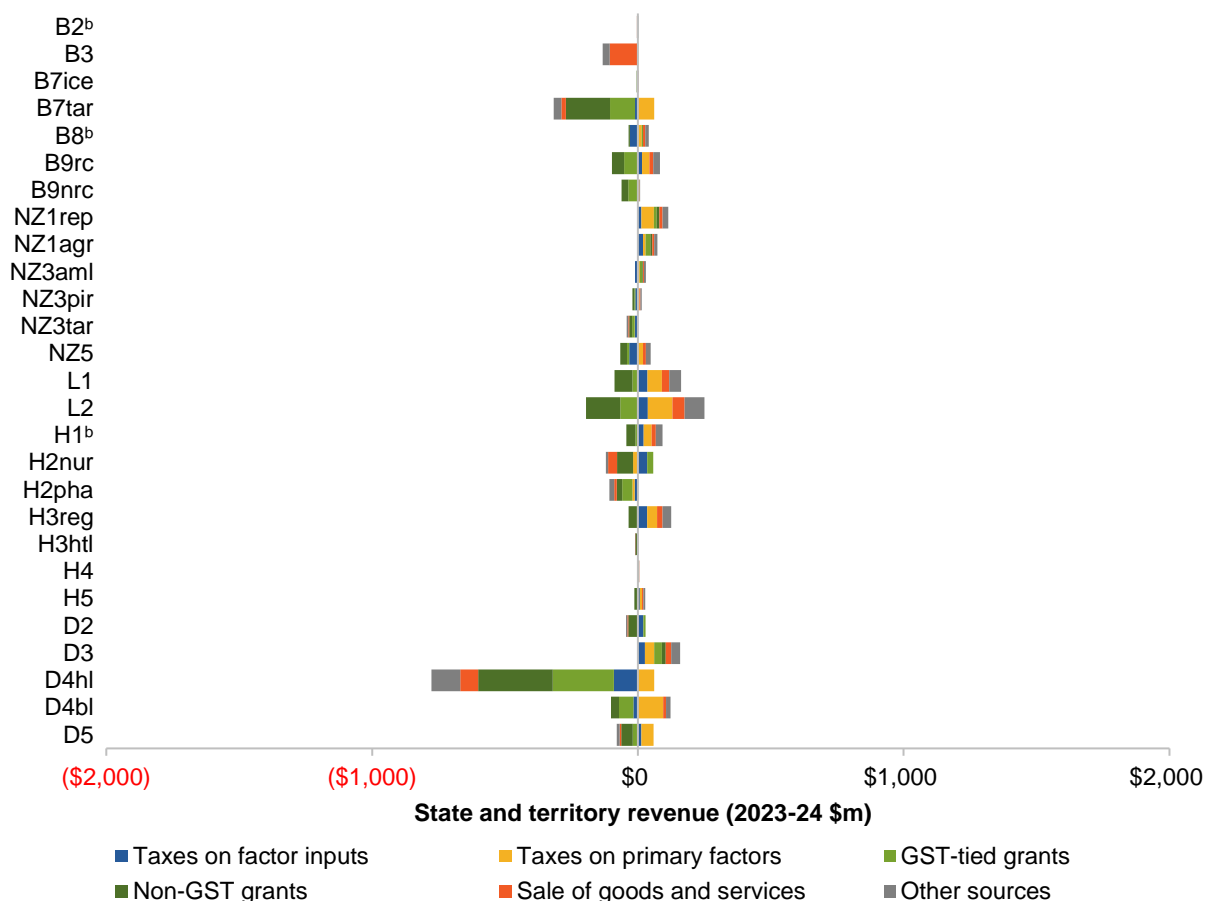


a. Refer to table D.1 for the short names of each reform. Refer to table C.3 for a description of taxes and expenditures.
 b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

Revenue changes are more complicated for state and territory governments (figure D.9). Across the modelled changes, revenues from GST-tied and other grants tend to decrease, following decreases in the CPI. Revenues from taxes on primary factors (payroll taxes) tend to increase as wage bills and capital incomes increase.

Figure D.9 – Revenue changes and their sources are mixed for states and territories^a
Changes in state and territory revenue by source, 2023-24 million dollars



a. Refer to table D.1 for the short names of each reform. Refer to table C.3 for a description of taxes and expenditures.
 b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

Expenditure

The modelled changes tend to decrease Australian Government expenditure (figure D.10). Decreases in personal benefit payments are driven by decreases in the CPI in almost all scenarios.

Although not Australian Government expenses in the strict sense, the GST affects the expenditure results in figure D.10. GST revenue collections, and hence GST-tied grants paid by the Australian Government, is driven by changes in nominal consumption. In most cases, decreases in consumer prices dominate, reducing GST revenues and the amounts in the figure. Decreases in the CPI also account for the decrease in non-GST grants paid by the Australian Government. In a few instances, increasing activity in the export sector increases the CPI, increasing GST and non-grant transfers.

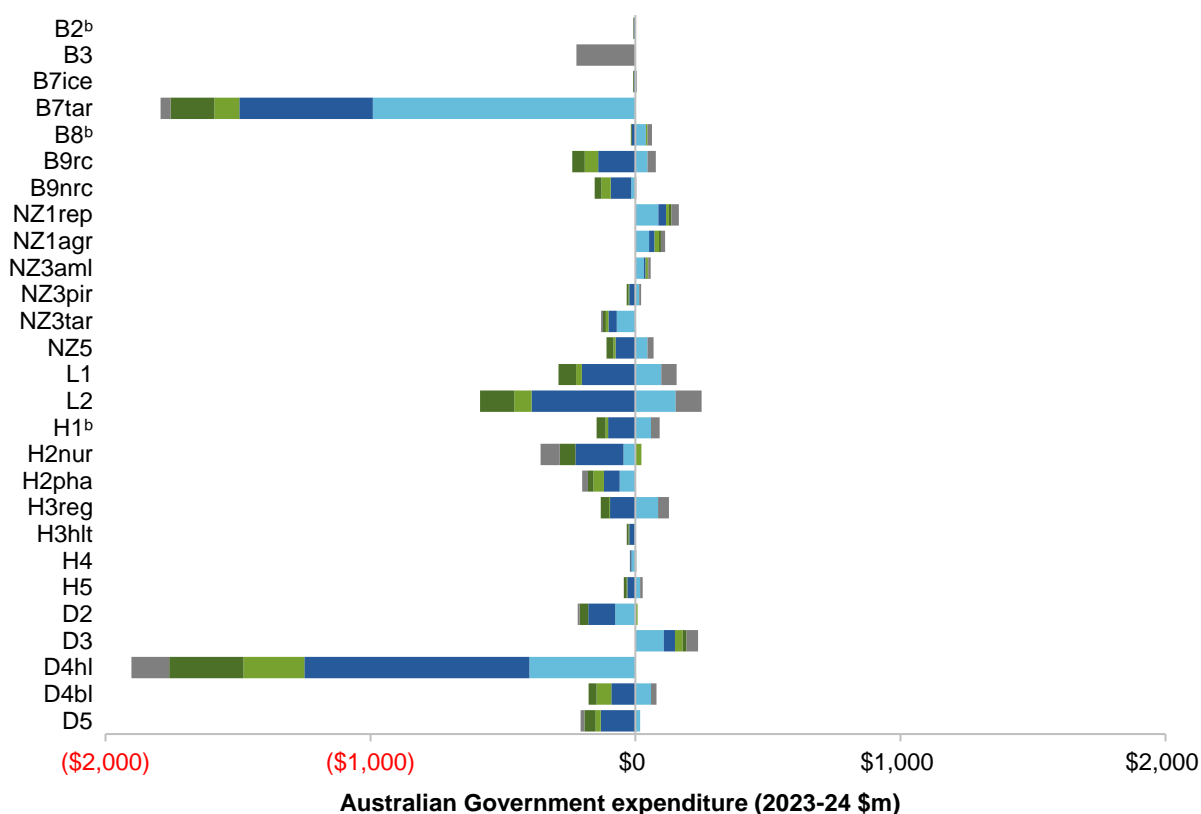
Gross operating expenses dominate a few scenarios. These expenses are composed of:

- employee expenses, which are driven by wages
- depreciation expenses, which are driven by changes in capital used, and
- other gross operating expenses, such as medical benefits, which are driven by changes in government consumption.

For example, H2nur and D2 decrease health expenditures, contributing to the decrease in gross operating expenses.

Figure D.10 – Australian Government expenditure decreases mainly through gross operating expenses and personal benefit payments^a

Changes in Australian Government revenue by source, 2023-24 million dollars



■ Gross operating expenses ■ Personal benefit payments ■ GST-tied grants ■ Non-GST grants ■ Other sources

a. Refer to table D.1 for the short names of each reform. Refer to table C.3 for a description of taxes and expenditures.
 b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

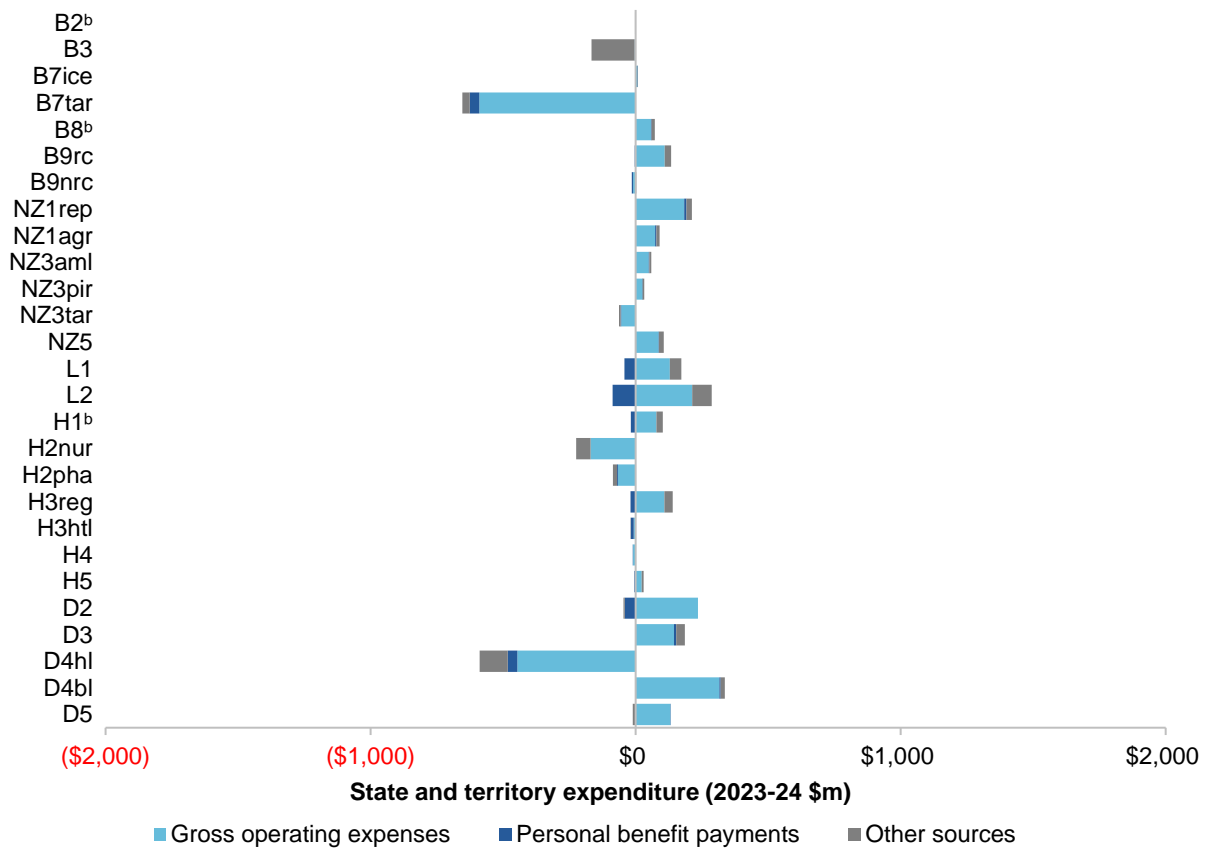
Source: Commission estimates.

Changes in gross operating expenses are responsible for almost all of the changes in state and territory expenditures (figure D.10).

B7tar and H2nur result in large decreases to gross operating expenses, for the same reasons as they do for Australian Government expenditures. Increases in gross operating expenses across other modelled changes are driven by increases in wages and in economic activity. Personal benefit payments account for a small share of states and territory expenses and contribute small decreases in expenditure because of decreases in the CPI.

Figure D.11 – State and territory expenditures also change through gross operating expenses but changes vary across the modelled changes^a

Changes in state and territory expenditure by source, 2023-24 million dollars



a. Refer to table D.1 for the short names of each reform. Refer to table C.3 for a description of taxes and expenditures.
 b. Modelled using an elasticity approach, estimating how responsive the overall economy is to an illustrative shock to the affected sectors.

Source: Commission estimates.

Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACL	Australian Consumer Law
ADI	Authorised deposit-taking institution
ADRs	Australian Design Rules
AEMO	Australian Energy Market Operator
Ahpra	Australian Health Practitioner Regulation Agency
AI	Artificial intelligence
AIHW	Australian Institute of Health and Welfare
ANZSIC	Australia and New Zealand Standard Industrial Classification
APRA	Australian Prudential Regulation Authority
ARENA	Australian Renewable Energy Agency
BECS	Bulk Electronic Clearing System
BITRE	Bureau of Infrastructure and Transport Research Economics
CCA	Competition and Consumer Act 2010 (Cth)
CCS	Combined Charging System
CEDA	Committee for Economic Development of Australia
CFFR	Council on Federal Financial Relations
CGE	Computable General Equilibrium
COVID-19	Coronavirus disease 2019
CPI	Consumer price index
DTC	Direct to consumer
DVA	Department of Veterans Affairs
ED	Emergency Department
EMR	Electronic medical records
EV	Electric vehicle
EVCI	Electric vehicle charging infrastructure
FTA	Free Trade Agreement
FTC	Federal Trade Commission (United States)
FTE	Full Time Equivalent
GDI	Gross domestic income

GDP	Gross domestic product
GFC	Global financial crisis
GNI	Gross national income
GP	General Practice / General Practitioner
GST	Goods and services tax
GVA	Gross value added
HVNL	Heavy Vehicle National Law
ICT	Information and communications technology
ITA	International Trade Administration (US)
MFP	Multifactor productivity
MHR	My Health Record
NACS	North American Charging Standard
NDIS	National Disability Insurance Scheme
NEM	National Electricity Market
NPP	New Payments Platform
NSW	New South Wales
OECD	Organisation for Economic Co-operation and Development
PC	Productivity Commission
PSP	Payment system provider
RAV	Register of approved vehicles
RBA	Reserve Bank of Australia
RPM	Remote Patient monitoring
SEVs	Specialist and enthusiast vehicles
SME	Small and medium enterprise
TAFE	Technical and further education
TCT	Tech-check-tech
UK	United Kingdom
US	United States
UTI	Urinary tract infection
V2G	Vehicle-to-grid
V2H	Vehicle-to-home
VURM	Victoria University Regional Model
WTO	World Trade Organization

References

- ABC (Australian Broadcasting Corporation) 2016, 'These are the states and territories where Uber is (and isn't) legal', 11 August, www.abc.net.au/news/2016-08-11/where-is-uber-legal-in-australia/7719822 (accessed 13 July 2024).
- 2018, 'Uber approved in the Northern Territory, but it might not be coming to a town near you', 4 July, www.abc.net.au/news/2018-07-04/uber-enters-the-northern-territory-market-for-first-time/9938640 (accessed 13 July 2024).
- 2020, *Survey of motor vehicle use, Australia, 12 months ended 30 June 2020*, 21 December, www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release (accessed 17 September 2024).
- 2023, 'Dubbo's 3D-printed toilet block could open door to housing crisis solutions', 13 July, www.abc.net.au/news/2023-07-13/construction-3d-printing-technology-dubbo/102587594 (accessed 30 September 2024).
- ABS (Australian Bureau of Statistics) 2021, *Census*.
- 2022, *Unit group 6214 pharmacy sales assistants*, 22 November, www.abs.gov.au/statistics/classifications/anzsco-australian-and-new-zealand-standard-classification-occupations/2022/browse-classification/6/62/621/6214#:~:text=Tasks%20Include%3A&text=advising%20customers%20n%20the%20correct,methods%20and%20preparing%20sales%20invoices (accessed 18 September 2024).
- 2023a, *Australian Industry, 2022-23 financial year*, www.abs.gov.au/statistics/industry/industry-overview/australian-industry/latest-release#methodology (accessed 22 July 2024).
- 2023b, *Patient experiences*, www.abs.gov.au/statistics/health/health-services/patient-experiences/latest-release (accessed 5 August 2024).
- 2023c, *Single touch payroll*.
- 2024a, *Australian national accounts: finance and wealth*, www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-finance-and-wealth/mar-2024#households (accessed 29 July 2024).
- 2024b, *Australian national accounts: input-output tables, 2021-22 financial year*, www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables/latest-release (accessed 15 July 2024).
- 2024c, *Consumer Price Index, Australia, March Quarter 2024*, www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release (accessed 15 July 2024).
- 2024d, *Disability, ageing and carers, Australia: summary of findings*, www.abs.gov.au/statistics/health/disability/disability-ageing-and-carers-australia-summary-findings/latest-release (accessed 19 August 2024).
- 2024e, *Labour force, Australia*, www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release (accessed 19 July 2024).
- 2024f, *Lending indicators*, www.abs.gov.au/statistics/economy/finance/lending-indicators/latest-release (accessed 29 July 2024).
- 2024g, *Restraint Clauses, Australia, 2023*, www.abs.gov.au/articles/restraint-clauses-australia-2023 (accessed 4 July 2024).
- ACCC 2008, *Report of the ACCC inquiry into the competitiveness of retail prices for standard groceries*, Canberra.
- 2014, *The comparator website industry in Australia*.
- 2016a, *Review of the mandatory safety standard for bunk beds: Draft Regulation Impact Statement*.
- 2016b, *Review of the safety standard for bicycle helmets: Consultation paper*.
- 2017, *Submission to Productivity Commission inquiry into competition in the Australian financial system*.
- 2018a, *Product safety: A guide to testing*.
- 2018b, *Residential mortgage price inquiry - Final report*.
- 2019a, *ACCC report on e-conveyancing market reform*.
- 2019b, *Ocean liner shipping class exemption*, www.accc.gov.au/public-registers/class-exemptions-register/ocean-liner-shiping-class-exemption (accessed 25 July 2024).
- 2020, *Home loan price inquiry final report*.
- 2022a, *Authorisation request for proposed settlement between pharmaceutical companies withdrawn*, 29 July, www.accc.gov.au/media-release/authorisation-request-for-proposed-settlement-between-pharmaceutical-companies-withdrawn (accessed 18 September 2024).
- 2022b, *Motor Vehicle Service and Repair Information Sharing Scheme: Guidance for data providers*, www.accc.gov.au/about-us/publications/motor-vehicle-service-and-repair-information-sharing-scheme-guidance-for-data-providers (accessed 12 April 2024).
- 2023a, *Annual Report 2022-23*.
- 2023b, *Container stevedoring monitoring report: 2022-23*.
- 2023c, *Mandatory standards*, www.productsafety.gov.au/product-safety-laws/safety-standards-bans/mandatory-standards (accessed 1 July 2024).
- 2023d, *Retail deposits inquiry*, www.accc.gov.au/about-us/publications/retail-deposits-inquiry-final-report (accessed 4 April 2024).
- 2024a, *Baby bath aids mandatory standard*, www.productsafety.gov.au/business/search-mandatory-standards/baby-bath-aids-mandatory-standard (accessed 9 October 2024).
- 2024b, *Bicycle helmets*, www.productsafety.gov.au/product-safety-laws/safety-standards-bans/mandatory-standards/bicycle-helmets (accessed 9 June 2024).
- 2024c, *Card surcharges*, [www.accc.gov.au/business/pricing/card-surcharges#:~:text=As%20a%20guide%2C%](http://www.accc.gov.au/business/pricing/card-surcharges#:~:text=As%20a%20guide%2C%20)

20the%20Reserve,between%201%25%20and%201.5%25.
(accessed 30 July 2024).

— 2024d, *Class exemptions*, www.accc.gov.au/business/competition-and-exemptions/exemptions-from-competition-law/class-exemptions (accessed 16 July 2024).

— 2024e, *Disposable cigarette lighters*, www.productsafety.gov.au/product-safety-laws/safety-standards-bans/mandatory-standards/disposable-cigarette-lighters (accessed 8 July 2024).

— 2024f, *Improving mandatory product safety standards*, www.productsafety.gov.au/product-safety-laws/safety-standards-bans/improving-mandatory-product-safety-standards (accessed 2 July 2024).

— 2024g, *Supermarkets inquiry 2024-25*.

— 2024h, *Supermarkets inquiry: Interim report*.

ACEA 2023, *Vehicles in use Europe 2023*, European Automobile Manufacturers' Association.

Acemoglu, D 2024, 'The simple macroeconomics of AI'.

ACSQHC (Australian Commission on Safety and Quality in Health Care) 2014, *Using hospital mortality indicators to improve patient care: A guide for boards and chief executives*.

ACT Government 2023, *ACT pharmacies join UTI treatment trial*.

— 2024, *Territory Plan 2023*, ACT Legislation Register, www.legislation.act.gov.au/ni/2023-540/ (accessed 20 June 2024).

Adams, P, Dixon, J and Horridge, M 2015, *The Victoria Regional Model (VURM): technical documentation, 1.0*, Working Paper, G-254, Centre of Policy Studies, Victoria University, Melbourne.

AEMC (Australian Energy Market Commission) 2020, *Annual market performance review 2019*, www.aemc.gov.au/market-reviews-advice/annual-market-performance-review-2019 (accessed 10 October 2024).

AEMO (Australia Energy Market Operator) 2023, *2023 Inputs, Assumptions and Scenarios Report (IASR) Workbook*, <https://aemo.com.au/consultations/current-and-closed-consultations/2023-inputs-assumptions-and-scenarios-consultation> (accessed 18 September 2024).

— 2024, *2024 Integrated System Plan*.

AER (Australian Energy Regulator) 2022, *2022 VCR Annual Adjustment*.

— 2023a, *Data - State of the energy market 2023 - Chapter 7 - Retail energy markets.xlsx*, <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.aer.gov.au%2Fsystem%2Ffiles%2F2023-11%2FData%2520-%2520State%2520of%2520the%2520energy%2520market%25202023%2520-%2520Chapter%25207%2520-%2520Retail%2520energy%2520markets.xlsx&wdOrigin=BROWSELINK> (accessed 10 October 2024).

— 2023b, *State of the energy market 2023*.

Agency for Healthcare Research and Quality 2018, *The distribution of the U.S. primary care workforce*, www.ahrq.gov/research/findings/factsheets/primary/pcwork3/index.html (accessed 18 September 2024).

Ahpra (Australian Health Practitioner Regulation Agency) 2020, *A unique and substantial achievement: Ten years of national health practitioner regulation in Australia*.

— 2023, *Ahpra statement in response to the Kruk Review final report*.

— 2024, *Who is registered?*, www.ahpra.gov.au/Registration/Practitioner-Search-Quicktips.aspx?QuicktipsListId=%7B4E9EBC93-541A-4917-A90A-C41F518E48A3%7D (accessed 18 July 2024).

AHURI 2024, *What are the real costs of Australia's housing crisis for women?*, www.ahuri.edu.au/analysis/brief/what-are-real-costs-australias-housing-crisis-women#:~:text=For%20example%2C%20to%20buy%20a,need%20to%20save%20or%20368 (accessed 30 July 2024).

AIHW (Australian Institute of Health and Welfare) 2022, *Use of chronic disease management and allied health Medicare Services*, www.aihw.gov.au/reports/chronic-disease/medicare-chronic-disease-allied-health-items/contents/about (accessed 18 September 2024).

— 2023, *Informal carers*, www.aihw.gov.au/reports/australias-welfare/informal-carers (accessed 19 August 2024).

— 2024a, *Data on request*, www.aihw.gov.au/about-our-data/accessing-data-through-the-aihw/data-on-request (accessed 27 June 2024).

— 2024b, *Health workforce*, Web article, www.aihw.gov.au/reports/workforce/health-workforce (accessed 10 October 2024).

— 2024c, *Medicines in the health system*.

— 2024d, *Rural and remote health*, www.aihw.gov.au/reports/rural-remote-australians/rural-and-remote-health (accessed 8 July 2024).

Albæk, S, Møllgaard, P and Overgaard, PB 1997, 'Government-Assisted Oligopoly Coordination? A Concrete Case', *The Journal of Industrial Economics*, vol. 45, no. 4, pp. 429–443.

Allen, K 2021, *Parliamentary debates*, Transcript of proceedings, 29 November, Canberra.

AMA (Australian Medical Association) 2022, *The general practitioner workforce: why the neglect must end*.

Ambrose, PJ, Saya, FG, Lovett, LT, Tan, S, Adams, DW and Shane, R 2002, 'Evaluating the accuracy of technicians and pharmacists in checking unit dose medication cassettes', *American Journal of Health-System Pharmacy*, vol. 59, no. 12, pp. 1183–1188.

ANAO (Australian National Audit Office) 2023a, *Australian Government Procurement Contract Reporting - 2022 Update*, Information Report, 11, Canberra.

— 2023b, *Procurement and contract management*, Insights: Audit Lessons.

Andersen, SR, St Peter, JV, Macres, MG and St Peter, WL 1997, 'Accuracy of technicians versus pharmacists in checking syringes prepared for a dialysis program', *American journal of health-system pharmacy: AJHP: official journal of the American Society of Health-System Pharmacists*, vol. 54, no. 14, pp. 1611–1613.

Anderson, D 2005, *Trading places: the impact and outcomes of market reform in vocational education and training*, National Centre for Vocational Education Research.

ANL 2020, *Ocean liner shipping class exemption - submission by ANL Container Line Pty Ltd*, ANL Container Line Pty Ltd, Melbourne.

Antonio, J 2023, *Electric car charging plug types available in Australia*, EV PowerHouse, <https://evpowerhouse.com.au/blog/electric-car-charging-plug-types-available-in-australia/> (accessed 23 July 2024).

ANZ 2024, *Housing affordability report*.

- APA (Australian Patients Association) 2023, *Australian healthcare index*, <https://australianhealthcareindex.com.au/australian-healthcare-index-june-2023-report/> (accessed 18 September 2024).
- APG 2024, *Dutch mortgages – grass roots investing in the Netherlands*, <https://assetmanagement.apg.nl/publications/dutch-mortgages-grass-roots-investing-in-the-netherlands/> (accessed 29 July 2024).
- APRA (Australian Prudential Regulation Authority) 2008, *ADI authorisation guidelines*.
- 2016, *A prudential approach to mortgage lending*, www.apra.gov.au/news-and-publications/a-prudential-approach-to-mortgage-lending (accessed 29 July 2024).
- 2022, *APG 110 capital adequacy*.
- 2024, *APRA releases quarterly authorised deposit-taking institution statistics for December 2023*, www.apra.gov.au/news-and-publications/apra-releases-quarterly-authorised-deposit-taking-institution-statistics-18 (accessed 29 July 2024).
- APVMA (Australian Pesticides and Veterinary Medicines Authority) 2021, *Agvet chemical regulation*, www.apvma.gov.au/about/agvet-chemical-regulation (accessed 10 September 2024).
- ARENA (Australian Renewable Energy Agency) 2023, *V2X.au summary report – opportunities and challenges for bidirectional charging in Australia*.
- ARNECC (Australian Registrars National Electronic Conveyancing Council) 2023, *Ministerial Forum: National Electronic Conveyancing - Towards a sustainable, competitive national electronic conveyancing market*.
- ASBFEO (Australian Small Business and Family Enterprise Ombudsman) 2023, *Small business matters*.
- Asher, N 2023, 'Apartment and townhouse owners report strata fees rising by up to 45 per cent over past year', *ABC News*, 2 July, www.abc.net.au/news/2023-07-03/strata-fee-rise-apartment-townhouse-owners/102547868 (accessed 23 July 2024).
- Asian Development Bank 2024, *Leveraging lessons learned from India's unified payments interface for digital transformation in Asia and the Pacific*.
- Ater, I and Rigbi, O 2023, 'Price transparency, media, and informative advertising', *American Economic Journal: Microeconomics*, vol. 15, no. 1, pp. 1–29.
- ATO (Australian Taxation Office) 2023, *Illegal phoenix activity*, www.ato.gov.au/about-ato/tax-avoidance/the-fight-against-tax-crime/our-focus/illegal-phoenix-activity (accessed 2 April 2024).
- 2024, *Phoenix taskforce*.
- Audit Office of New South Wales 2023, *NSW Government Agencies' use of consultants*.
- Auerbach, DI, Buerhaus, PI and Staiger, DO 2020, 'Implications of the rapid growth of the nurse practitioner workforce in the US', *Health Affairs*, *Health Affairs*, vol. 39, no. 2, pp. 273–279.
- Australia Energy Market Operator 2023, *2023 Inputs, Assumptions and Scenarios Report (IASR) Electric Vehicle Workbook*.
- Australian Building Codes Board 2021, *Mandatory inspections: Model guidance on BCR recommendation 18*, Canberra.
- 2022, *National construction code*, Canberra, <https://ncc.abcb.gov.au/editions/ncc-2022> (accessed 11 June 2024).
- 2024, *Principles and scope of a Building Product Registration Scheme (Scheme) discussion paper*, https://consultation.abcb.gov.au/engagement/proposed-building-product-registration-scheme/supporting_documents/DISCUSSION%20PAPER%20%20Proposed%20riskbased%20Building%20Product%20Registration%20Scheme.pdf (accessed 9 October 2024).
- Australian Government 2023a, *Intergenerational Report 2023: Australia's future to 2063*, Canberra.
- 2023b, *National electric vehicle strategy*.
- 2024a, *Final Report of the Aged Care Taskforce*.
- 2024b, *What is CDR?*, Australian Government, www.cdr.gov.au/what-is-cdr (accessed 2 April 2024).
- Australian Government Depart of Health and Aged Care 2021, *Medical doctors and specialists in Australia*.
- Australian Government Department of Health 2021, *National medical workforce strategy 2021 - 2031*.
- Australian Government Department of Health and Aged Care 2021, *Background paper aligning regulation across Australia's care and support sectors*.
- 2023a, *Ex-manufacturer price*, www.pbs.gov.au/info/industry/pricing/ex-manufacturer-price (accessed 19 September 2024).
- 2023b, *National Health Workforce dataset (NHWDS)*.
- 2023c, *Nurse practitioner workforce plan*.
- 2024a, *General practice workforce providing primary care services in Australia*.
- 2024b, *Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Benefits Scheme section 85 supply data*.
- Australian National Character Check nd, *Working with Children Checks in Australia*, www.australiannationalcharactercheck.com.au/working-with-children-checks.html#:~:text=Due%20to%20the%20peculiar%20requirements,in%20a%20different%20state%2FTerritory (accessed 15 August 2024).
- Australian Transport Assessment and Planning Steering Committee 2016, *PV2 Road Parameter Values*, www.atap.gov.au/sites/default/files/pv2_road_parameter_value_s.pdf (accessed 30 June 2024).
- Austroroads 2016, *National Steer Axle Mass Limits*.
- Autofile 2023, *Autofile - News / Used imports in decline*, Auto24, <https://autofile.co.nz/used-imports-in-decline-> (accessed 3 October 2024).
- Baggs, D 2023, *Guide to electric vehicle charging plug types*, www.racv.com.au/royalauto/transport/electric-vehicles/electric-car-charging-plug-types.html (accessed 24 July 2024).
- Bahati, S and Aziakpono, M 2023, 'FinTech and SMEs financing: A systematic literature review and bibliometric analysis', *Digital Business*, vol. 3, no. 2.
- Bakhtiar, S, Breunig, R, Magnani, L and Zhang, J 2020, 'Financial constraints and small and medium enterprises: a review', *The Economic Record*, vol. 96, no. 315, pp. 506–523.
- Balasubramanian, N, Chang, JW, Sakakibara, M, Sivadasan, J and Starr, E 2020, 'Locked In? The Enforceability of Covenants Not to Compete and the Careers of High-Tech Workers', *Journal of Human Resources*, vol. 59, no. 3.
- Bambalaite, I, Nicoletti, G and von Rueden, C 2020, *Occupational entry regulations and their effects on productivity in services: Firm-level evidence*, OECD Economics

- Department Working Papers, Organisation for Economic Co-operation and Development.
- Bank of England nd, *Official Bank Rate history*.
- Banks, G 2000, *Competition: the Best Price Regulator*, Productivity Commission Chairman's Speech, Canberra.
- 2001, *Competition and the Public Interest*, Productivity Commission Chairman's Speech, Canberra.
- Barros, PP, Brouwer, WBF, Thomson, S and Varkevisser, M 2016, 'Competition among health care providers: helpful or harmful?', *The European journal of health economics: HEPAC: health economics in prevention and care*, vol. 17, no. 3, pp. 229–233.
- Beaulieu, ND 2002, 'Quality information and consumer health plan choices', *Journal of Health Economics*, vol. 21, no. 1, pp. 43–63.
- Becker, MD, Johnson, MH and Longe, RL 1978, 'Errors remaining in unit dose carts after checking by pharmacists versus pharmacy technicians', *American Journal of Hospital Pharmacy*, vol. 35, no. 4, pp. 432–434.
- Beckert, W, Christensen, M and Collyer, K 2012, 'Choice of NHS-funded hospital services in England', *The Economic Journal*, vol. 122, no. 560, pp. 400–417.
- Beckford, A 2024, *The Great NACS Migration: Here's Who Switches to Tesla's Charging Port*, MotorTrend, www.motortrend.com/features/tesla-nacs-charging-port-automaker-compatibility/ (accessed 18 September 2024).
- Bertram, N, Fuchs, S, Mischke, J, Palter, R, Strube, G and Woetzel, J 2019, *Modular construction: From projects to products*, McKinsey & Company, www.mckinsey.com/capabilities/operations/our-insights/modular-construction-from-projects-to-products (accessed 7 October 2024).
- Bicycle Retailer 2022, *Oakley helmets will integrate smart technology to store emergency information*.
- 2023, *Hedkayse helmets will add smart technology to aid first responders*.
- Biscoe, D, Finlayson, R and Christopher, A 2023, "Pay-for-delay" Arrangements in the pharmaceutical industry: How will they be treated under Australian competition law?, *Australian Journal of Competition and Consumer Law*, vol. 31, no. 2.
- BITRE (Bureau of Infrastructure and Transport Research Economics) 2015, *Traffic and Congestion Cost Trends for Australian Capital Cities*.
- 2024a, *Road vehicle entry and recall statistics*, Bureau of Infrastructure and Transport Research Economics, www.bitre.gov.au/publications/2024/road-vehicle-entry-and-recall-statistics (accessed 25 October 2024).
- 2024b, *Road Vehicles, Australia, January 2024*, Bureau of Infrastructure and Transport Research Economics, www.bitre.gov.au/publications/2024/road-vehicles-australia-january-2024 (accessed 16 September 2024).
- Bogaards, R 2019, *Competition policy—further progress required*, www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/BriefingBook46p/C_ompetitionPolicy (accessed 20 March 2024).
- Bonyhady, B and Paul, L 2023, *Working Together to Deliver the NDIS: Independent Review into the National Disability Insurance Scheme*.
- Botha, M, Tayal, A and Bismark, M 2024, 'A global shortage of health practitioners: the role of regulation and accreditation in supporting safe care', Panel Forum, Melbourne Law School.
- Botta, A, Digiacomio, N, Holl, R and Oakes, L 2018, *PSD2: Taking advantage of open-banking disruption*, McKinsey & Company, www.mckinsey.com/industries/financial-services/our-insights/psd2-taking-advantage-of-open-banking-disruption (accessed 30 July 2024).
- Bradbury, B, Bedford, M and Naidoo, Y 2023, *Budget standards for low-paid families*, March, UNSW, www.unsw.edu.au/research/sprc/our-projects/budget-standards-for-low-paid-families (accessed 24 October 2024).
- Brown, Z, Hansman, C, Keener, J and Veiga, A 2023, *Information and disparities in health care quality: evidence from GP choice in England*, Working Paper, National Bureau of Economic Research.
- Bubonya, M, Cobb-Clark, DA and Wooden, M 2017, 'Mental health and productivity at work: Does what you do matter?', *Labour Economics*, vol. 46, pp. 150–165.
- Buckley, J, Rankin, E and Andrews, D 2024, *Non-compete clauses, job mobility and wages in Australia*, e61 institute.
- BUPA nd, *Get more back on extras health insurance*, www.bupa.com.au/health-insurance/why-choose-bupa/get-more-back-on-extras (accessed 27 August 2024).
- Burack, JH, Impellizzeri, P, Homel, P and Cunningham, JN 1999, 'Public reporting of surgical mortality: A survey of New York State cardiothoracic surgeons', Elsevier, *The Annals of Thoracic Surgery*, vol. 68, no. 4, pp. 1195–1200.
- Burfisher, ME 2021, *Introduction to Computable General Equilibrium Models*, 3rd edn, Cambridge University Press, Cambridge, www.cambridge.org/core/books/introduction-to-computable-general-equilibrium-models/C61E0F4D9C015EB43A5A1843C8C39A58 (accessed 8 October 2024).
- Burnham, T, Frels, J and Mahajan, V 2003, 'Consumer switching costs: a typology, antecedents, and consequences', *Journal of the Academy of Marketing Science*, vol. 31, no. 2, pp. 109–126.
- Burton, WN, Schultz, AB, Chen, C and Edington, DW 2008, 'The association of worker productivity and mental health: a review of the literature', *International Journal of Workplace Health Management*, vol. 1, no. 2, pp. 78–94.
- Buying for Victoria 2024, *Introducing the Social Procurement Framework Annual Report 2022-23*, www.buyingfor.vic.gov.au/social-procurement-annual-report-2022-23/introducing-social-procurement-framework-annual-report-2022-23 (accessed 30 September 2024).
- Byrne, D and De Roos, N 2019, 'Learning to coordinate: a study in retail gasoline', *American Economic Review*, vol. 109, no. 2, pp. 591–619.
- and — 2022, 'Start-up search costs', *American Economic Journal: Microeconomics*, vol. 14, no. 2, pp. 81–112.
- Byrne, S, Devine, K and McCarthy, Y 2020, *Room to improve: A review of switching activity in the Irish mortgage market*, Central Bank of Ireland.
- Cabinet Office (UK) 2022, *Impact Assessment - Procurement Reform Bill*.
- Cai, L 2010, 'The relationship between health and labour force participation: Evidence from a panel data simultaneous equation model', *Labour Economics*, vol. 17, no. 1, pp. 77–90.
- , Mavromaras, K and Oguzoglu, U 2014, 'The effects of health status and health shocks on hours worked', *Health Economics*, vol. 23, no. 5, pp. 516–528.
- Campanella, P, Vukovic, V, Parente, P, Sulejmani, A, Ricciardi, W and Specchia, M 2016, 'The impact of public

- reporting on clinical outcomes: a systematic review and meta-analysis', *BMC Health Services Research*, vol. 16, no. 1, p. 296.
- Canada Health Infoway 2021, *Canadian digital health survey: what Canadians think*, www.infoway-inforoute.ca/en/component/edocman/4011-canadian-digital-health-survey-2021-what-canadians-think/view-document?Itemid=101 (accessed 19 September 2024).
- 2022, *Canadians' health care experiences during COVID-19: Uptake of virtual care*, www.infoway-inforoute.ca/en/component/edocman/3828-canadians-health-care-experiences-during-covid-19/view-document?Itemid=0 (accessed 19 September 2024).
- CareQualityCommission 2017, *Review of the CQC's impact on quality and improvement in health and social care*.
- Carey, G, Malbon, ER, Weier, M, Dickinson, H and Duff, G 2019, 'Making markets work for disability services: the question of price setting', *Health & Social Care in the Community*, vol. 27, no. 5, pp. 716–723.
- Carr, C, Gilman, C, Krywko, D, Moore, H, Walker, B and Saef, S 2014, 'Observational study and estimate of cost savings from use of a health information exchange in an academic emergency department', *The Journal of Emergency Medicine*, vol. 46, no. 2, pp. 250–256.
- Carr, P 2005, 'Investigation of bid price competition measured through prebid project estimates, actual bid prices, and number of bidders', *Journal of Construction Engineering and Management*, vol. 131, no. 11, pp. 1165–1172.
- Carsales 2024, *Pint-size Mitsubishi EV snuffed out by ADR compliance costs*, www.carsales.com.au/editorial/details/pint-size-mitsubishi-ev-snuffed-out-by-adr-compliance-costs-146750/ (accessed 29 August 2024).
- CASA (Civil Aviation Safety Authority) 2021a, *Apply for flight authorisations*, DCMIType, Civil Aviation Safety Authority, www.casa.gov.au/drones/registration-and-flight-authorisations/apply-flight-authorisations (accessed 9 July 2024).
- 2021b, *Drone safety rules*, DCMIType, Civil Aviation Safety Authority, www.casa.gov.au/drones/drone-rules/drone-safety-rules (accessed 9 July 2024).
- 2022, *The RPAS and AAM Strategic Regulatory Roadmap*, DCMIType, Civil Aviation Safety Authority, www.casa.gov.au/resources-and-education/publications-and-resources/corporate-publications/rpas-and-aam-strategic-regulatory-roadmap (accessed 4 April 2024).
- 2024, *BVLOS drone operations in regional Australia*, https://consultation.casa.gov.au/stakeholder-engagement-group/consultation.2023-10-05.5578154857/consult_view/ (accessed 23 July 2024).
- Cass-Gottlieb, G 2024, 'National Consumer Congress 2024 introduction and ACCC keynote address', www.accc.gov.au/about-us/news/speeches/national-consumer-congress-2024-introduction-and-accc-keynote-address (accessed 15 July 2024).
- Cawsey, M 2022, *Most Common ISO Standards in the Manufacturing Industry*, www.stibosystems.com/blog/iso-standards-in-the-manufacturing-industry (accessed 30 August 2024).
- CEDA (Committee for Economic Development Australia) 2022, *Skills recognition*.
- Chalmers, J 2024, 'Relief and reform', Address to the McKell Institute, Brisbane.
- and Leigh, A 2023, *A more dynamic and competitive economy*, Media release, Canberra, 23 August, <https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/media-releases/more-dynamic-and-competitive-economy> (accessed 20 March 2024).
- Chan, P, Chinnery, A and Wallis, P 2023, *Recent developments in small business finance and economic conditions*, Reserve Bank of Australia.
- Chen, J 2010, *Public reporting of health system performance: a rapid review of evidence on impact on patients, providers and healthcare organisations*, The Sax Institute.
- Chen, J and Miraldo, M 2022, 'The impact of hospital price and quality transparency tools on healthcare spending: A systematic review', *Health Economics Review*, vol. 12, no. 1, p. 62.
- Chernew, M, Gowrisankaran, G and Scanlon, DP 2008, 'Learning and the value of information: evidence from health plan report cards', *Journal of Econometrics*, vol. 144, no. 1, pp. 156–174.
- CIE (The Centre for International Economics) 2013, *Reform of the NSW planning system: Better Regulation Statement*.
- 2020, *Addressing market power in electronic lodgment services*.
- 2021, *Potential gains from relaxing regulation of drones in the agricultural sector*, www.productivity.nsw.gov.au/regulating-emerging-technologies (accessed 3 July 2024).
- Cody, R, Gysin, S, Merlo, C, Gemperli, A and Essig, S 2020, 'Complexity as a factor for task allocation among general practitioners and nurse practitioners: a narrative review', *BMC Family Practice*, vol. 21, p. 38.
- Cole 2003, *Final report of the Royal Commission into the Building and Construction Industry; vol 8*.
- Connolly, E 2022, *Real-time payments in Australia*, Reserve Bank of Australia, www.rba.gov.au/speeches/2022/sp-so-2022-05-03.html (accessed 30 July 2024).
- Contour3D 2023, *First 3D Printed Home with Full Occupation Certificate*, <https://contour3d.com.au/australias-first-3d-printed-home-with-full-occupation-certificate/> (accessed 30 September 2024).
- Cormack, M 2024a, *Scope of practice review update – 18 April 2024*.
- 2024b, *Unleashing the potential of our health workforce – Scope of practice review – Issues paper 1*.
- 2024c, *Unleashing the potential of our health workforce – Scope of practice review – Issues paper 2*, Department of Health and Aged Care.
- Craig, B 2022, *Fintech SME lending in Australia*, www.montinvest.com/investor-insights/insights/fintech-sme-lending-in-australia (accessed 29 July 2024).
- DAE (Deloitte Access Economics) 2012, *The Costs and Benefits of Preventing Parallel Imports into New Zealand*.
- 2020, *Economic benefit analysis of drones in Australia*, www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/emerging-aviation-technologies (accessed 3 April 2024).
- 2023, *Electric Vehicle Uptake*, www.aer.gov.au/system/files/2023-12/Ausgrid%20-%20Revised%20proposal%20-%20Deloitte%20Access%20Economics%20-%20Att.%205.7.7%20-%20Electric%20Vehicle%20Uptake%20-%2030%20Nov%202023%20-%20Public.pdf (accessed 9 February 2024).

- Daele, ATD, Steuten, LM, Metsemakers, JF, Derckx, EW, Spreeuwenberg, C and Vrijhoef, HJ 2010, 'Economic evaluation of nurse practitioners versus GPs in treating common conditions', *British Journal of General Practice*, vol. 60, no. 570, pp. e28–e35.
- Day, G and South, L 2016, 'Improving the health system with performance reporting – Real gains or unnecessary work?', vol. 11, no. 1, pp. 8–13.
- DCCEEW (Department of Climate Change, Energy, the Environment and Water) nd, *International climate action*, www.dcceew.gov.au/climate-change/international-climate-action (accessed 14 August 2024a).
- nd, *Reducing transport emissions*, www.dcceew.gov.au/energy/transport (accessed 30 August 2024b).
- DCGI (Deloitte Centre for Government Insights) 2018, *The future of regulation: principles for regulating emerging technologies*.
- Department of Agriculture, Fisheries and Forestry 2023, *Biosecurity Cost Recovery Arrangement Cost Recovery Implementation Statement: 2023–24*, Canberra.
- Department of Finance 2023, *Statistics on Australian Government Procurement Contracts*, www.finance.gov.au/government/procurement/statistics-australian-government-procurement-contracts- (accessed 30 September 2024).
- 2024a, *Commonwealth Procurement Rules*.
- 2024b, *User Guide for Mutual Recognition, Automatic Mutual Recognition and Trans-Tasman Mutual Recognition of Occupational Registrations*.
- Department of Health and Aged Care 2024, *Pharmacy Location Rules applicant's handbook*.
- Department of Industry, Innovation and Science 2017, *Australian Government response to the Productivity Commission inquiry into intellectual property arrangements*.
- Department of Industry, Science and Resources 2024, *Building Ministers' Meeting: Communiqué June 2024 | Department of Industry Science and Resources*, Communiqué, www.industry.gov.au/news/building-ministers-meeting-communication-june-2024 (accessed 23 July 2024).
- Department of Transport and Planning 2024a, *Practitioner's Guide to Victoria's Planning Schemes*.
- 2024b, *Revaluation 2023 outcomes*, www.land.vic.gov.au/valuations/resources-and-reports/revaluation-2023-outcomes (accessed 20 June 2024).
- Deutscher, N 2019, *Job-to-job transitions and the wages of Australian workers*, Treasury working paper, Canberra.
- Dev, H, Gupta, R and Kumar 2024, *From Cash to Cashless: UPI's Impact on Spending Behavior among Indian Users*.
- DFAT (Department of Foreign Affairs and Trade) nd, *Australia's free trade agreements (FTAs)*, www.dfat.gov.au/trade/agreements/trade-agreements (accessed 24 July 2024).
- DHLGPPW (Department of Housing, Local Government, Planning and Public Works) 2024a, *Modern Methods of Construction Program*, www.housing.qld.gov.au/about/department/business-areas/public-works/qbuild/modern-methods-construction-program (accessed 8 July 2024).
- 2024b, 'Queensland zoning information', <https://planning.statedevelopment.qld.gov.au/planning-framework/plan-making/local-planning/zoning-information> (accessed 18 June 2024).
- DIRD (Department of Infrastructure and Regional Development) 2018, *Regulation impact statement: review of the motor vehicle standards act 1989*.
- DIT (Department of Infrastructure and Transport) 2011, *Regulation impact statement for the harmonisation of the Australian design rules (adr-harmonisation)*.
- DITRDC (Department of Infrastructure, Transport, Regional Development and Communications) 2020, *Proposed Class Exemption for Ocean Liner Shipping: Submission to the ACCC Discussion Paper*, Canberra.
- DITRDC (Department of Infrastructure, Transport, Regional Development, Communications and the Arts) 2022, *Veterans' affairs: Supporting regional recovery and growth*, www.infrastructure.gov.au/about-us/corporate-reporting/budgets/budget-2021-22/regional-ministerial-statement-2021-22/veterans-affairs-supporting-regional-recovery-and-growth (accessed 19 August 2024).
- 2024a, *Australian design rules*, www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/vehicle-design-regulation/australian-design-rules (accessed 29 August 2024).
- 2024b, *Concessional RAV entry approvals*, Department of Infrastructure, Transport, Regional Development, Communications and the Arts, www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/importing-vehicle/concessional-rav-entry-approvals (accessed 14 July 2024).
- 2024c, *Provisional Registration*, www.infrastructure.gov.au/infrastructure-transport-vehicles/maritime/maritime-business/international-liner-shipping/str-conference-agreements/provisional (accessed 8 June 2022).
- 2024d, *Road Vehicle Standards: importing a vehicle as personal effects*, www.infrastructure.gov.au/sites/default/files/documents/importing-a-vehicle-as-personal-effects-overview-april2024.pdf (accessed 14 July 2024).
- 2024e, *Specialist and enthusiast vehicles*, Department of Infrastructure, Transport, Regional Development, Communications and the Arts, www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/rvs/specialist-enthusiast-vehicles (accessed 14 July 2024).
- 2024f, *Vehicle type approval*, www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/rvs/vehicle-type-approvals (accessed 15 October 2024).
- DPLH (Department of Planning, Lands and Heritage) 2024, *Local Planning Strategies, Schemes and Structure Plans*, www.wa.gov.au/organisation/department-of-planning-lands-and-heritage/local-planning-strategies-schemes-and-structure-plans (accessed 10 October 2024).
- Dranove, D, Kessler, D, McClellan, M and Satterthwaite, M 2003, 'Is more information better? The effects of "report cards" on health care providers', *Journal of Political Economy*, vol. 111, no. 3, pp. 555–588.
- Drive Electric 2023, *State of the nation report - e-mobility in New Zealand 2023*.
- Drive.com.au 2024, *Australia's best-selling used cars in 2023*, www.drive.com.au/news/best-selling-used-cars-australia-2023/ (accessed 2 September 2024).
- Duarte, A, Frost, J, Gambacorta, L, Wilkens, P and Shin, H 2022, *Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix*, BIS.
- Duckett, S 2013, *Australia's bad drug deal: high pharmaceutical prices*, March, Grattan Institute.
- and Banerjee, P 2017, *Cutting a better drug deal*, Grattan Institute.

- Dwyer, T, Craswell, A and Browne, M 2021, 'Predictive factors of the general public's willingness to be seen and seek treatment from a nurse practitioner in Australia: a cross-sectional national survey', *Human Resources for Health*, vol. 19, no. 1, p. 21.
- EAFO (European Alternative Fuels Observatory) 2024, *Available electric vehicle models*, <https://alternative-fuels-observatory.ec.europa.eu/consumer-portal/available-electric-vehicle-models> (accessed 24 October 2024).
- EC (European Commission) 2016, *Antitrust: Commission welcomes general court judgments upholding its Lundbeck decision in first pharma pay-for-delay case*.
- 2021, *A study on the application and impact of Directive (EU) 2015/2366 on Payment Services (PSD2)*.
- 2023, *Impact assessment report*, Accompanying the document proposal for a directive of the European Parliament and of the council on common rules promoting the repair of goods and amending regulation (EU) 2017/2394, directives (EU) 2019/771 and (EU) 2020/1828, Staff working document 59.
- 2024, *The Digital Markets Act: ensuring fair and open digital markets*, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en (accessed 9 September 2024).
- Eden, T 2023, *Victoria paves way for heavy duty electric trucks with permanent axle weight concessions*, *The Driven*.
- Education and Employment References Committee 2014, *Technical and further education in Australia*, Senate, Canberra.
- Electric Vehicle Council 2022, *Electric trucks: Keeping shelves stocked in a net zero world*.
- 2023a, *Australian Electric Vehicle Industry Recap 2022*.
- 2023b, *State of Electric Vehicles*.
- Elliston, B 2023, *Is this the death of CHAdeMO?*, Australian Electric Vehicle Association, <https://aeva.asn.au/articles/is-this-the-death-of-chademo/> (accessed 23 July 2024).
- Elmelin 2023, *Are EV batteries getting lighter?*, <https://elmelin.com/are-ev-batteries-getting-lighter/> (accessed 24 July 2024).
- Energy Innovation 2024, *Fast-Falling Battery Prices Boost Economic Benefits Expected from Heavy-Duty Vehicle Electrification*, February, <https://energyinnovation.org/publication/fast-falling-battery-prices-boost-economic-benefits-expected-from-heavy-duty-vehicle-electrification/> (accessed 24 October 2024).
- Enphase Energy 2024, *The emerging future of EV charging: Widespread adoption of NACS technology in the United States*.
- EVSE Australia 2019, *What Type of Electric Car Charging Plug Does my EV need?*, <https://evse.com.au/blog/rightevconnector/> (accessed 16 September 2024).
- Expert Panel for the Planning System Implementation Review 2023, 'Final report and recommendations 2023'.
- EY 2020, *Consultation report: National Disability Insurance Scheme thin markets project*, Department of Social Services.
- Fels 2024, *Inquiry Into Price Gouging and Unfair Pricing Practices*, Final report, https://pricegouginginquiry.actu.org.au/wp-content/uploads/2024/02/InquiryIntoPriceGouging_Report_web.pdf (accessed 4 April 2024).
- FinTech Australia 2021, *Payments system review*.
- FlyAbility 2024, *6 key benefits of indoor drones for mining operations*, www.flyability.com/articles-and-media/drones-mining-benefits#:~:text=Since%20the%20mine%20doesn't, to%20%24150%2C000%20in%20production%20costs.%E2%80%9D&text=As%20we%20just%20covered%2C%20indoor,n eeded%20for%20inspecting%20their%20equipment. (accessed 4 July 2024).
- Fonarow, G, Abraham, W, Albert, N, Gattis Stough, W, Gheorghide, M, Greenberg, B, O'Connor, C, Pieper, K, Sun, JL, Yancy, C and Young, J 2007, 'Influence of a performance-improvement initiative on quality of care for patients hospitalized with heart failure: Results of the organized program to initiate lifesaving treatment in hospitalized patients with heart failure (OPTIMIZE-HF)', *Archives of Internal Medicine*, vol. 167, no. 14, pp. 1493–1502.
- FRED 2024, *Household debt to GDP for Australia*, Federal Reserve bank of St. Louis, <https://fred.stlouisfed.org/series/HDTGPAUQ163N> (accessed 29 July 2024).
- Frontier Economics nd, *The Development of the USB Standard: An Interoperability Case Study*, www.frontier-economics.com/media/uful43pg/case-study-the-development-of-the-usb-standard-final.pdf (accessed 30 August 2024).
- Frost, TP and Adams, AJ 2017, 'Tech-Check-Tech in community pharmacy practice settings', *The Journal of pharmacy technology*, vol. 33, no. 2, pp. 47–52.
- FTC (Federal Trade Commission) 2023, *FTC Proposes Rule to Ban Noncompete Clauses, Which Hurt Workers and Harm Competition*, 5 January, www.ftc.gov/news-events/news/press-releases/2023/01/ftc-proposes-rule-ban-noncompete-clauses-which-hurt-workers-harm-competition (accessed 3 April 2024).
- 2024, *Non-Compete Clause Rule*.
- nd, *Pay-for-Delay: When drug companies agree not to compete*, www.ftc.gov/news-events/topics/competition-enforcement/pay-delay (accessed 19 September 2024).
- GAO (U.S. Government Accountability Office) 2024, *Federal regulation: Selected emerging technologies highlight the need for legislative analysis and enhanced coordination*, www.gao.gov/products/gao-24-106122 (accessed 9 July 2024).
- Gaynor, M, Propper, C and Seiler, S 2012, *Free to choose? Reform and demand response in the English National Health Service*, Working Paper, November, 18574, National Bureau of Economic Research.
- Gill, T, Holland, C and Wiley, G 2022, *The cost of card payments for merchants*, Reserve Bank of Australia.
- Global Commercial Vehicle 2024, *Zero-Emission Technology Inventory (ZETI)*, <https://globaldrivetozero.org/tools/zeti/> (accessed 4 September 2024).
- Graf, M and Fisher, R 2023, *SBD Explores: NACS expansion and new standard*.
- Griffith University 2021, *Final Assessment of the Queensland fuel price reporting trial*.
- GSMA nd, *Our history: Why we began*, www.gsma.com/about-us/who-we-are/our-history/ (accessed 30 August 2024).
- Gupta, S 2002, 'Competition and collusion in a government procurement auction market', *Atlantic Economic Journal*, vol. 30, no. 1, pp. 13–25.
- Hagon, T 2024, *Nissan Ariya electric SUV hampered by ADRs*, Carsales, www.carsales.com.au/editorial/details/nissan-ariya-electric-suv-hampered-by-adrs-144914/ (accessed 29 August 2024).
- Hannan, E, Cozzens, K, King, S, Walford, G and Shah, N 2012, 'The New York State cardiac registries: history, contributions, limitations, and lessons for future efforts to assess and publicly

- report healthcare outcomes', *Journal of the American College of Cardiology*, vol. 59, no. 25, pp. 2309–2316.
- Harper, I, Anderson, P, McCluskey, S and O'Bryan, M 2014, *Competition Policy Review: Draft Report*, Australian Government, Canberra.
- , —, — and — 2015, *Competition Policy Review: Final Report*, Australian Government, Canberra.
- Harris, P 2015, 'Reviving Harper', presented at the Australian Competition Policy Summit 2015, Sydney, 22 September, Productivity Commission Chairman's Speech, Canberra.
- Harrison, J and Rouse, P 2014, 'Competition and public high school performance', *Socio-Economic Planning Sciences*, vol. 48, no. 1, pp. 10–19.
- Hausman, N and Lavetti, K 2021, 'Physician Practice Organization and Negotiated Prices: Evidence from State Law Changes', *American Economic Journal: Applied Economics*, vol. 13, no. 2, pp. 258–296.
- Hayashi, E 2024, *Japan, Europe to link industrial data platforms for EV battery materials*, Nikkei Asia, <https://asia.nikkei.com/Spotlight/Supply-Chain/Japan-Europe-to-link-industrial-data-platforms-for-EV-battery-materials> (accessed 3 October 2024).
- HCF nd, *Find the right provider for you*, www.hcf.com.au/locations/find-a-participating-provider (accessed 27 August 2024).
- Health Education England National Health Service 2021, *Community pharmacy workforce survey 2021*.
- Healthdirect 2023, *Annual report financial year 2022-2023*.
- Heavy Vehicle Industry Australia 2023, *Urgent regulatory changes needed to support zero-emissions heavy vehicles*, 19 April, <https://hvia.asn.au/urgent-regulatory-changes-needed-to-support-zero-emissions-heavy-vehicles/> (accessed 24 July 2024).
- 2024, *QLD Announces Steer Axle Mass Increase For ZEHV*, 8 March, <https://hvia.asn.au/qlld-announces-steer-axle-mass-increase-for-zehv/> (accessed 24 July 2024).
- HIA (Housing Industry Association) 2022, *Regulatory barriers associated with prefabricated and modular construction — final report*, <https://hia.com.au/-/media/files/our-industry/regulatory-barriers-with-modular-and-prefabricated-construction-final-report.pdf?srsid=AfmBOowoDGTd7Zj5yTYmLJ4Q7r3IMV-DPV0js7wsnELQNiCu170MZGk> (accessed 11 June 2024).
- Hickory 2024, *La Trobe Tower*, Hickory, www.hickory.com.au/project/la-trobe-tower/ (accessed 23 July 2024).
- Hilmer, F 1993, *National competition policy review*.
- Hisham, F and Johan, S 2021, 'How alternative finance informs central themes in corporate finance', *Journal of Corporate Finance*, vol. 67, p. 101879.
- Hobba, B, Akıncı, Ş and Göktoğan, A 2021, 'Efficient herbicide spray pattern generation for site-specific weed management practices using semantic segmentation on UAV imagery'.
- van Hoenselaar, F, Courède, B, De Pace, F and Ziemann, V 2021, *Mortgage finance across OECD countries*, Organisation for Economic Co-operation and Development.
- HORSCE (House of Representatives Standing Committee on Economics) 2024, *Better competition, better prices*, Canberra.
- Hudson, B 2011, 'Ten years of jointly commissioning health and social care in England', *International Journal of Integrated Care*, vol. 11.
- Hunt, G (Australian Government Minister for Health and Aged Care) 2021, *Community pharmacy to join COVID-19 vaccine workforce*, Media Release.
- IAC (Industries Assistance Commission) 1989, *Annual Report 1988-89*.
- IBISWorld 2024, *Computer and Electronic Equipment Repair in Australia - Market Size, Industry Analysis, Trends and Forecasts (2024-2029)*, www.ibisworld.com/au/industry/computer-and-electronic-equipment-repair/557/ (accessed 24 July 2024).
- IC (Industry Commission) 1994, *Urban Transport*, Report no. 37, Canberra.
- 1995, *The Growth and Revenue Implications of Hilmer and Related Reforms*, Final Report, Canberra.
- 1996, *Competitive Tendering and Contracting By Public Sector Agencies*, Report no. 48, Canberra.
- 1997, *The Textiles, Clothing and Footwear Industries*, Report no. 59, Canberra.
- ICCT 2024, *Zero-emission bus and truck market in the United States: A 2022–2023 update*, The International Council on Clean Transportation, <https://theicct.org/publication/zero-emission-bus-and-truck-market-in-the-us-2022-2023-update-june24/> (accessed 3 October 2024).
- Industrial Relations Victoria 2024, *Owner driver rates and costs schedules*, www.vic.gov.au/owner-driver-rates-and-costs-schedules (accessed 17 September 2024).
- Infrastructure Victoria 2020, *Fair Move: Better Public Transport Fares for Melbourne*, Melbourne.
- International Transport Forum 2023, *New but Used: The Electric Vehicle Transition and the Global Second-hand Car Trade*, 125, International Transport Forum Policy Papers, OECD.
- IPART NSW (Independent Pricing and Regulatory Tribunal of New South Wales) 2014, *Reforming licensing in NSW: Review of licence rationale and design*, Regulation Review — Final Report.
- Irls, S 2023, *Battery electric trucks emit 63% less GHG emissions than diesel*, *International Council on Clean Transportation*, 7 February, <https://theicct.org/battery-electric-trucks-emit-63-less-ghg-emissions-than-diesel/> (accessed 15 August 2024).
- ITA (International Trade Administration) 2024, *Australia - Standards for Trade*, www.trade.gov/country-commercial-guides/australia-standards-trade#:~:text=International%20Standards%20by%20ISO%20and%20IEC&text=As%20a%20result%2C%20approximately%2033,and%20occupational%20health%20and%20safety. (accessed 3 July 2024).
- James, N 2020, *Report of the inquiry into the Victorian on-demand workforce*, Department of Premier and Cabinet, Industrial Relations Victoria.
- Jang, Y 2015, *The effects of the internet and mobile search technologies on retail markets: Evidence from the Korean gasoline market*, Working Paper, Massachusetts Institute of Technology.
- Jenner, K and Tulip, P 2020, *The Apartment Shortage*, Research Discussion Paper, Reserve Bank of Australia.
- Jensen, B 2013, *The myth of markets in school education*, 2013–7, Grattan Institute.
- Jilek, R 2023, *The failure of the aged care star rating system - A discussion paper*, Aged Care Consulting & Advisory Services Australasia.
- Jin, GZ and Sorensen, AT 2006, 'Information and consumer choice: The value of publicized health plan ratings', *Journal of Health Economics*, vol. 25, no. 2, pp. 248–275.

- Johnson, M, Lavetti, K and Lipsitz, M 2023, *The labor market effects of legal restrictions on worker mobility*, Working Paper, December, 31929, National Bureau of Economic Research.
- and Lipsitz, M 2022, 'Why are Low-Wage Workers Signing Noncompete Agreements?', *Journal of Human Resources*, vol. 57, no. 3, pp. 689–754.
- Joint Committee of Public Accounts and Audit 2023, 'Commitment issues' - *An inquiry into Commonwealth procurement*, August, 498, Canberra.
- Jones, B 2024, *Financing SME innovation in Australia – challenges and opportunities*, Reserve Bank of Australia.
- Jones, D, Propper, C and Smith, S 2017, 'Wolves in sheep's clothing: Is non-profit status used to signal quality?', *Journal of Health Economics*, vol. 55, pp. 108–120.
- J.P.Morgan 2024, *How AI can boost productivity and jump start growth*, J.P.Morgan, <https://privatebank.jpmorgan.com/nam/en/insights/markets-and-investing/ideas-and-insights/how-ai-can-boost-productivity-and-jump-start-growth> (accessed 10 October 2024).
- Kane, M 2022, *Munro Live Compares Tesla's NACS Charging Connector With CCS1*, InsideEVs, <https://insideevs.com/news/622650/munro-tesla-nacs-charging-connector-ccs1/> (accessed 24 July 2024).
- Kendall, R and Tulip, P 2018, *The Effect of Zoning on Housing Prices*, Research Discussion Paper, Reserve Bank of Australia.
- Keramat, S, Hashmi, R, Aregbeshola, B and Comans, T 2023, 'Informal Caregiving Provision for Disabled or Elderly in the Families and Work Productivity: Evidence from 11 Waves of an Australian Population-Based Cohort', *Pharmacoeconomics*, vol. 41, no. 9, pp. 1117–1136.
- King, S, Scott, WJ (Bill) and Watson, J 2017, *Review of pharmacy remuneration and regulation*.
- Kini, O, Williams, R and Yin, S 2021, 'CEO Noncompete Agreements, Job Risk, and Compensation', *The Review of Financial Studies*, vol. 34, no. 10, pp. 4701–4744.
- Kleiner, MM, Marier, A, Park, KW and Wing, C 2016, 'Relaxing occupational licensing requirements: analyzing wages and prices for a medical service', The University of Chicago Press, *The Journal of Law and Economics*, vol. 59, no. 2, pp. 261–291.
- Klemperer, P 1987, 'Markets with consumer switching costs', *The Quarterly Journal of Economics*, vol. 102, no. 2, pp. 375–394.
- 1995, 'Competition when consumers have switching costs: an overview with applications to industrial organization, macroeconomics, and international trade', *The Review of Economic Studies*, vol. 62, no. 4, pp. 515–539.
- KNOMAD 2024, *Remittances Data*.
- Kolenda, N 2022, *Fintech SME lending in Australia*, AURA Group, www.aura.co/news-and-insights/fintech-sme-lending-in-australia (accessed 29 July 2024).
- Kruger, C 2023, 'ASX start-up creates cracks in \$800b conveyancing monopoly', *The Sydney Morning Herald*.
- Kruk, R 2023, *Independent review of overseas health practitioner regulatory settings - Interim Report*.
- Kuo, Y-F, Loresto, FL, Rounds, LR and Goodwin, JS 2013, 'States with the least restrictive regulations experienced the largest increase in patients seen by nurse practitioners', *Health Affairs*, *Health Affairs*, vol. 32, no. 7, pp. 1236–1243.
- Lamb, G, Smith, M, Weeks, W and Queram, C 2013, 'Publicly reported quality-of-care measures influenced Wisconsin physician groups to improve performance', *Health Affairs (Project Hope)*, vol. 32, no. 3, pp. 536–543.
- Lateral Economics 2014, *Open for business: how open data can help achieve the G20 growth target*.
- 2019, *Valuing the Australian census*.
- Laurant, M, Vanderbiezen, M, Wijers, N, Watananirun, K and Kontopantelis, E 2018, 'Nurses as substitutes for doctors in primary care', *The Cochrane database of systematic reviews*, no. 7.
- Lee, HS, Chung, J and Kim, W 2020, 'Economic Effect of Zoning Regulations on Korea's Small and Medium-Sized Retailers', *Asian Economic Journal*, vol. 34, no. 2, pp. 185–211.
- Lee, JS, Bhatt, A, Pollack, LM, Jackson, SL, Chang, JE, Tong, X and Luo, F 2024, 'Telehealth use during the early COVID-19 public health emergency and subsequent health care costs and utilization', *Health Affairs Scholar*, vol. 2, no. 1.
- Lee, S and Choi, Y 2016, 'Reviews of unmanned aerial vehicle (drone) technology trends and its applications in the mining industry', *Geosystem Engineering*, vol. 19, no. 4, pp. 197–204.
- Leigh, A 2024, 'The competitive wedge', *The Monthly*, 3 June.
- Lessig, L 1998, 'The New Chicago School', University of Chicago Press, *The Journal of Legal Studies*, vol. 27, no. 2, pp. 661–691.
- 2006, *Code*, www.hachettebookgroup.com/titles/lawrence-lessig/code/9780786721962/?lens=basic-books (accessed 11 July 2024).
- Leuvensteijn, M van, Sorensen, C, Bikker, J and Van Rixtel, A 2011, 'Impact of bank competition on the interest rate pass-through in the euro area', *Applied Economics*, vol. 45, no. 11, pp. 1359–1380.
- Levinson, DM, Corbett, MJ and Hashami, M 2005, 'Operating Costs for Trucks', *SSRN Electronic Journal*, www.ssrn.com/abstract=1736159 (accessed 26 July 2024).
- Lindgren, C, Daunfeldt, S-O and Rudholm, N 2021, *Pricing in retail markets with low search costs: evidence from a price comparison website*, Working paper.
- Lindt, N, van Berkel, J and Mulder, BC 2020, 'Determinants of overburdening among informal carers: A systematic review', *BMC Geriatrics*, vol. 20, no. 1, p. 304.
- Lipsitz and Starr, E 2021, 'Low-Wage Workers and the Enforceability of Noncompete Agreements', *Management Science*, vol. 68(1), pp. 143–170.
- Liu, X and Nassios, J 2024, *Creation of Private Transport and Household Durables Industries for VURM 2018-19' Methodology notes prepared for the Productivity Commission*, Version 1, Centre of Policy Studies, Victoria University, Melbourne.
- Lowe, P 2022, *An efficient, competitive and safe payments system*, Reserve Bank of Australia.
- Luco, F 2019, 'Who Benefits from Information Disclosure? The Case of Retail Gasoline', *American Economic Journal: Microeconomics*, vol. 11, no. 2, pp. 277–305.
- Macquarie Bank 2016, *2016 annual report*.
- Macquarie Group 2017, *2017 annual report*.
- 2018, *2018 annual report*.
- 2023, *Annual report*.
- Maier, CB, Barnes, H, Aiken, LH and Busse, R 2016, 'Descriptive, cross-country analysis of the nurse practitioner workforce in six countries: size, growth, physician substitution potential', *BMJ Open*, vol. 6, no. 9, p. e011901.

- Malambo, L, Popescu, SC, Murray, SC, Putman, E, Pugh, NA, Home, DW, Richardson, G, Sheridan, R, Rooney, WL, Avant, R, Vidrine, M, McCutchen, B, Baltensperger, D and Bishop, M 2018, 'Multitemporal field-based plant height estimation using 3D point clouds generated from small unmanned aerial systems high-resolution imagery', *International Journal of Applied Earth Observation and Geoinformation*, vol. 64, pp. 31–42.
- Margeit, R 2024, *Why most of the world drives on the right side of the road | Drive Flashback*, Drive, www.drive.com.au/caradvice/why-most-of-the-world-drives-on-the-right-side-of-the-road-drive-flashback/ (accessed 19 September 2024).
- Masso, M and Thompson, C 2014, *Nurse practitioners in NSW 'gaining momentum': Rapid review of the nurse practitioner literature.*, Centre for Health Service Development, University of Wollongong.
- McCowage, M and Nunn, L 2022, *The current climate for small business finance*, Reserve Bank of Australia.
- McMillen, DP and McDonald, JF 2002, 'Land Values in a Newly Zoned City: Review of Economics & Statistics', *Review of Economics and Statistics*, vol. 84, no. 1, pp. 62–72.
- Medibank nd, *Members' choice*, www.medibank.com.au/providers/ancillary/members-choice/#:~:text=When%20a%20provider%20is%20a,of%20optical%20items%20and%20orthotics. (accessed 26 August 2024).
- Mellor, J 2024, *Companies balk at high eTruck running costs*, *GoAutoNews Premium*, 21 May, <https://premium.goauto.com.au/companies-balk-at-high-etruck-running-costs/> (accessed 24 July 2024).
- Menachemi, N, Rahrkar, S, Harle, C and Vest, J 2018, 'The benefits of health information exchange: an updated systematic review', *Journal of American Medical Informatics Association*, vol. 25, no. 9, pp. 1259–1265.
- Metrolinx 2008, *Costs of Road Congestion in the Greater Toronto and Hamilton Area: Impact and Cost Benefit Analysis of the Metrolinx Draft Regional Transport Plan*.
- Middleton, S, Gardner, A, Della, PR, Lam, L, Allnut, N and Gardner, G 2016, 'How has the profile of Australian nurse practitioners changed over time? - PubMed', *Collegian (Royal College of Nursing, Australia)*, vol. 23, no. 1, pp. 69–77.
- Mitchell, D 2010, 'Heavy vehicle productivity trends and road freight regulation in Australia'.
- Moenius, J 2004, *Information Versus Product Adaptation: The Role of Standards in Trade*, International Business and Markets Research Center Working Paper, Northwestern University.
- Moffiet, N 2023, *Used light commercial and used car imports see biggest year-on-year decline*, *TRANSPORTtalk*, 9 January, <https://transporttalk.co.nz/news/used-light-commercial-and-used-car-imports-see-biggest-year-on-year-decline> (accessed 19 September 2024).
- Montag, F and Winter, C 2020, *Price transparency against market power*, Working paper.
- Morris, S 2018, 'Medicine shortages in Australia – what are we doing about them?', *Australian Prescriber*, vol. 41, no. 5, pp. 136–137.
- Mulach, J 2023, *BP to buy Tesla Superchargers for US electric-car charging network*, Drive, www.drive.com.au/news/tesla-superchargers-join-bp-pulse-2024/ (accessed 24 July 2024).
- Nagel, NO, Jåstad, EO and Martinsen, T 2024, 'The grid benefits of vehicle-to-grid in Norway and Denmark: An analysis of home- and public parking potentials', *Energy*, vol. 293, p. 130729.
- National Cabinet 2020, *Intergovernmental Agreement on the Automatic Mutual Recognition of Occupational Registration*.
- National Center for health workforce Analysis 2023, *State of the primary care workforce, 2023*.
- National Heavy Vehicle Regulator 2016, *National heavy vehicle mass and dimension limits*.
- NDIA (National Disability Insurance Agency) 2023, *Report: Thin market trials final evaluation*.
- NDIS Review 2023, *Alternative commissioning for remote and First Nations communities*, Australian Government.
- New South Wales Government Office of the Children's Guardian 2024, *Overseas and interstate applicants*, 29 January, <https://ocg.nsw.gov.au/working-children-check/apply-wwcc/overseas-and-interstate-applicants> (accessed 15 August 2024).
- NHS (National Health Service) 2024, *Appointments in General Practice*, <https://digital.nhs.uk/data-and-information/publications/statistical/appointments-in-general-practice/may-2024> (accessed 6 August 2024).
- NIAA (National Indigenous Australian Agency) nd, *Ensure NDIS thin markets projects are culturally appropriate (NDIS Thin Market Projects)*, www.niaa.gov.au/our-work/closing-gap/ensure-ndis-thin-markets-projects-are-culturally-appropriate-ndis-thin-market (accessed 21 August 2024).
- Nissen, L, Lau, E and Spinks, J 2022, *The management of urinary tract infections by community pharmacists: A state-wide trial: urinary tract infection pharmacy pilot - Queensland (outcome report)*, Queensland University of Technology.
- Nous Group 2019, *Health professional workforce plan refresh - consultation summary report*, NSW Government.
- 2023, *Evidence base for additional investment in rural health in Australia*, June, National Rural Health Alliance.
- NSW Fair Trading 2018, *Easy and Transparent Trading - Empowering Consumers and Small Business*, Consultation Paper, July.
- NSW Government 2024a, *Dodgy suppliers to be banned from NSW Government contracts*, 1 September, www.nsw.gov.au/media-releases/dodgy-suppliers-to-be-banned-from-nsw-government-contracts (accessed 30 September 2024).
- 2024b, *Employment zones reform*, Planning, www.planning.nsw.gov.au/policy-and-legislation/planning-reforms/employment-zones-reform (accessed 28 October 2024).
- 2024c, *NSW Government drives innovation utilising 3D printing to deliver much needed social housing*, www.nsw.gov.au/media-releases/nsw-government-drives-innovation-utilising-3d-printing-to-deliver-much-needed-social-housing (accessed 30 September 2024).
- 2024d, *Standard Instrument—Principal Local Environmental Plan (2006 EPI 155a)*.
- NSW Government Valuer General 2024, *Long term land value trends*.
- NSW Health 2024, *NSW Government makes UTI pharmacy trial permanent*, www.health.nsw.gov.au/news/Pages/20240514_01.aspx (accessed 19 September 2024).
- NSW Land and Housing Corporation 2024, *Modern Methods of Construction*, www.dpie.nsw.gov.au/land-and-housing-corporation/plans-and-policies/modern-methods-of-construction (accessed 17 June 2024).

- NSW PC (New South Wales Productivity Commission) 2021, *Productivity Commission White Paper 2021: Rebooting the economy*.
- NSW Productivity and Equality Commission 2021, *Regulating emerging technologies*, www.productivity.nsw.gov.au/regulating-emerging-technologies (accessed 9 July 2024).
- 2024, *eConveyancing market study*.
- NT Government (Northern Territory Government) 2020, *NT Planning Scheme 2020*.
- NTC (National Transport Commission) 2024, *Earlier work on the automated vehicle regulatory framework*.
- Nuridin, N, Alevizos, E, Syamsuddin, R, Asis, H, Zainuddin, EN, Aris, A, Oiry, S, Brunier, G, Komatsu, T and Barillé, L 2023, 'Precision aquaculture drone mapping of the spatial distribution of *kappaphycus alvarezii* biomass and carrageenan', *MDPI, Remote Sensing*, vol. 15, no. 14, p. 3674.
- NZ Institute of Economic Research 1998, *Parallel importing. A theoretical and empirical investigation*, Wellington.
- NZ Transport Agency Waka Kotahi 2024, *Clean Car Standard overview*, www.nzta.govt.nz/vehicles/clean-car-programme/clean-car-standard/overview/ (accessed 14 July 2024).
- OASH (Office of Disease Prevention and Health Promotion) nd, *Access to Health Services*, U.S. Department of Health and Human Services, <https://health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/access-health-services> (accessed 15 August 2024).
- OECD (Organisation for Economic Co-operation and Development) 2014, *Factsheet on how competition policy affects macro-economic outcomes*.
- 2018, *Executive Summary of the Roundtable on Consumer-Facing Remedies*.
- 2019, *Enhancing access to and sharing of data: reconciling risks and benefits for data re-use across societies*.
- 2020, *OECD Economic Surveys: United States*.
- 2024a, *Artificial intelligence, data and competition*, 24 May, www.oecd-ilibrary.org/science-and-technology/artificial-intelligence-data-and-competition_e7e88884-en (accessed 20 August 2024).
- 2024b, *Competition, fintechs and open banking an overview of recent developments in Latin America and the Caribbean*.
- 2024c, *Financing SMEs and entrepreneurs 2024*.
- nd, *Government at a Glance 2023 database*.
- Office of Projects Victoria 2022, *Offsite Construction Guide. Delivering Victorian projects with modern methods of construction*.
- Oliveira, C, Saka, M, Bone, L and Jacobs, R 2023, 'The role of mental health on workplace productivity: a critical review of the literature', *Applied Health Economics and Health Policy*, vol. 21, no. 2, pp. 167–193.
- Omoigui, NA, Miller, DP, Brown, KJ, Annan, K, Cosgrove, D, Lytle, B, Loop, F and Topol, EJ 1996, 'Outmigration for coronary bypass surgery in an era of public dissemination of clinical outcomes', *Circulation*, vol. 93, no. 1, pp. 27–33.
- ONDC (Office of the National Data Commissioner) 2023, *Introducing the DATA Scheme*.
- Padilla, J 1995, 'Revisiting dynamic duopoly with consumer switching costs', *Journal of Economic Theory*, vol. 67, no. 2, pp. 520–530.
- Pan-Canadian Pharmaceutical Alliance 2023, *Pan-Canadian select modules*, www.pcpacanada.ca/sites/default/files/eng/pCPA_Commonly_prescribed_drug_pricing.pdf (accessed 2 October 2024).
- Parliament of Australia 2015, *Shipping Legislation Amendment Bill 2015. Explanatory memorandum*.
- Parliamentary Joint Committee of Corporations and Financial Services 2023, *Corporate Insolvency in Australia*, July, Canberra.
- Parliamentary Library 2023, *Health practitioner regulation: a quick guide*, Research Paper Series, 2023–24.
- PBS (Pharmaceutical Benefits Scheme) 2023, *Expenditure and Prescriptions Report 1 July 2022 to 30 June 2023*.
- 2024a, *Patient Charges*, www.pbs.gov.au/info/healthpro/explanatory-notes/section1/Section_1_4_Explanatory_Notes (accessed 15 October 2024).
- 2024b, *Price Disclosure*.
- PC 2021a, *Plan to identify planning and zoning reforms - Information paper*.
- 2001, *Telecommunication Competition Regulation*, Report no. 16, Canberra.
- 2004, *ICT Use and Productivity: A Synthesis from Studies of Australian Firms*, Commission Research Paper, Canberra.
- 2005a, *2004 Review of Part X of the Trade Practices Act 1974: International Liner Cargo Shipping*, Report no. 32, Canberra.
- 2005b, *Review of National Competition Policy Reforms*, Report no. 33, Canberra.
- 2006a, *Potential Benefits of the National Reform Agenda*, Commission Research Paper, Canberra.
- 2006b, *Road and Rail Freight Infrastructure Pricing*, Report no. 41, Canberra.
- 2008a, *Modelling the Economy-wide Effects of Future Automotive Assistance*, Research Report, Canberra.
- 2008b, *Modelling the Economy-wide Effects of Future TCF Assistance*, Research Report, Canberra.
- 2009, *Restrictions on the Parallel Importation of Books into Australia*, Supplement to the research report, Canberra.
- 2011a, *Disability Care and Support*, Report no. 54, Canberra.
- 2011b, *Economic Structure and Performance of the Australian Retail Industry*, Report no. 56, Canberra.
- 2011c, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments.*, Research Report, Canberra.
- 2011d, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*, Research report, Canberra.
- 2012, *Impacts and Benefits of COAG Reforms: Business Regulation and VET*, Research Report, Canberra.
- 2013, *An Ageing Australia: Preparing for the Future*, Commission Research Paper, Canberra.
- 2014a, *Australia's Automotive Manufacturing Industry*, Report no. 70, Canberra.
- 2014b, *Public Infrastructure*, Report no. 71, Canberra.
- 2014c, *Relative Costs of Doing Business in Australia: Dairy Product Manufacturing*, Research Report, Canberra.
- 2014d, *Relative Costs of Doing Business in Australia: Retail Trade*, Research Report, Canberra.

- 2014e, *Submission to the Competition Policy Review*, Canberra.
- 2016a, *How to Assess the Competitiveness and Efficiency of the Superannuation System*, Research Report, Canberra.
- 2016b, *Intellectual Property Arrangements*, Report no. 78, Canberra.
- 2016c, *Introducing Competition and Informed User Choice into Human Services: Identifying Sectors for Reform*, Study Report, Canberra.
- 2016d, *Migrant Intake into Australia*, Report no. 77, Canberra.
- 2017a, *Data Availability and Use*, Report no. 82, Canberra.
- 2017b, *Funding and Investment for Better Roads*, Shifting the Dial: 5 year Productivity Review, Supporting Paper no. 9.
- 2017c, *Introducing Competition and Informed User Choice into Human Services: Reforms to Human Services*, Report no. 85, Canberra.
- 2017d, *Modelling protectionist trade policies*, Rising Protectionism Technical Supplement to the Research Paper.
- 2017e, *Modelling protectionist trade policies - Technical paper*, www.pc.gov.au/research/completed/rising-protectionism (accessed 28 October 2024).
- 2017f, *National Disability Insurance Scheme (NDIS) Costs*, Study Report, Canberra.
- 2017g, *Realising the Productive Potential of Land*, Shifting the Dial: 5 year Productivity Review, Supporting Paper no. 10.
- 2017h, *Shifting the Dial: 5 Year Productivity Review*, Report no. 84, Canberra.
- 2017i, *Superannuation: Alternative Default Models*, Inquiry Draft Report, Canberra.
- 2018a, *Competition in the Australian Financial System*, Report no. 89, Canberra.
- 2018b, *Superannuation: Assessing Efficiency and Competitiveness*, Report no. 91, Canberra.
- 2019a, *Expenditure on Children in the Northern Territory*, Issues Paper, Melbourne.
- 2019b, *Review of the National Disability Agreement*, Study Report, Canberra.
- 2020a, *Foreign Investment in Australia*, Commission Research Paper, Canberra.
- 2020b, *Mental Health*, Report no. 95, Canberra.
- 2020c, *Victoria's Commercial Land Use Zoning*, Productivity Reform Case Study, Canberra.
- 2021b, *Innovations in Care for Chronic Health Conditions*, Productivity Reform Case Study, Canberra.
- 2021c, *Public Transport Pricing*, Research paper, Canberra.
- 2021d, *Right to Repair*, Report no. 97, Canberra.
- 2021e, *Small business access to finance: The evolving lending market*, Canberra.
- 2021f, *Working from home*, Commission Research Paper, Canberra.
- 2022a, *Carer leave*, Issues Paper.
- 2022b, *Lifting productivity at Australia's container ports - between water, wharf and warehouse*, Draft Report.
- 2022c, *Lifting productivity at Australia's container ports: between water, wharf and warehouse*, Report no. 99.
- 2022d, *The nuisance cost of tariffs*, Research paper, Canberra.
- 2023a, *5-year Productivity Inquiry: Advancing Prosperity Recommendations and Reform Directives*, www.pc.gov.au/inquiries/completed/productivity/report/productivity-recommendations-reform-directives.pdf (accessed 23 February 2024).
- 2023b, *5-year Productivity inquiry: A competitive, dynamic and sustainable future*, Inquiry Report no. 100, Vol. 3, Canberra.
- 2023c, *5-year Productivity Inquiry: A more productive labour market*, Inquiry Report no. 100, Vol. 7, Canberra.
- 2023d, *5-year Productivity Inquiry: Advancing Prosperity*, Inquiry Report no. 100, Vol. 1, Canberra.
- 2023e, *5-year Productivity Inquiry: Australia's data and digital dividend*, Inquiry Report no. 100, Vol. 4, Canberra.
- 2023f, *5-year Productivity Inquiry: Innovation for the 98%*, Inquiry Report no. 100, Vol. 5, Canberra.
- 2023g, *5-Year Productivity inquiry: Whole-of-economy modelling*, Inquiry Report no. 100, Vol. 9, Canberra.
- 2023h, *A case for an extended unpaid carer leave entitlement?*, Inquiry Report no. 101.
- 2023i, *A path to universal early childhood education and care, Draft report*, Canberra, November.
- 2023j, *Towards levyathan? Industry levies in Australia*, Commission Research Paper, Canberra.
- 2024a, *A path to universal early childhood education and care - Vol. 2*, Inquiry report no. 106, Canberra.
- 2024b, *Leveraging digital technology in healthcare*, Research paper, Canberra.
- 2024c, *Making the most of the AI opportunity: AI uptake, productivity, and the role of government*, Research paper, no. 1, Canberra.
- 2024d, *Making the most of the AI opportunity: The challenges of regulating AI*, Research paper, no. 2, Canberra.
- 2024e, *Review of the National Agreement on Closing the Gap*, Study report, Supporting paper, Vol. 2, Canberra.
- 2024f, *Review of the National Agreement on Closing the Gap*, Study report, Vol. 1, Canberra.
- 2024g, *Trade and Assistance Review 2022-23*, Annual Report Series, Canberra.
- Peacock, F 2023, *Why Tesla's NACS Connector Won't Be Adopted In Australia*, Solar Quotes Blog, www.solarquotes.com.au/blog/nacs-connector-australia/ (accessed 16 September 2024).
- Perry, J 2009, 'The rise and impact of nurse practitioners and physician assistants on their own and cross-occupation incomes', *Contemporary Economic Policy*, vol. 27, no. 4, pp. 423–579.
- Peters, GM, Kooij, L, Lenferink, A, van Harten, WH and Doggen, CJM 2021, 'The effect of telehealth on hospital services use: systematic review and meta-analysis', *Journal of Medical Internet Research*, vol. 23, no. 9.
- Pharmac 2024, *Pharmaceutical Schedule*.
- Pharmaceutical Society of Australia 2024, *Pharmacist remuneration*.
- Pharmacy Guild of Australia 2024, *The Workforce Capability Project Pharmacy Profile*.

- PlanSA 2024, *Browse the Planning & Design Code*, https://code.plan.sa.gov.au/home/browse_the_planning_and_design_code (accessed 18 June 2024).
- PM&C (Department of the Prime Minister and Cabinet) 2023, *Draft national care and support economy strategy*.
- POA (Parliament of Australia) 2017, *Report 170 Social Security Agreement - New Zealand; Nuclear Research Cooperation Agreement; Loan Agreement - International Monetary Fund; Harmonization of Wheeled Vehicles - Revision*.
- Pocock, D and Kelleher, B 2024, *Parliamentary debates*, Senate official Hansard, 6 June, Community Affairs Legislation Committee, Canberra, p. 14.
- Poghosyan, L, Liu, J, Shang, J and D'Aunno, T 2017, 'Practice environments and job satisfaction and turnover intentions of nurse practitioners: implications for primary care workforce capacity', *Health Care Management Review*, vol. 42, no. 2, pp. 162–171.
- Pope, D 2009, 'Reacting to rankings: evidence from "America's best hospitals"', *Journal of Health Economics*, vol. 28, pp. 1154–1165.
- prefabAUS 2023, *A prefabrication industry roadmap 2023-2033*.
- Purdy, S 2010, 'Avoiding hospital admissions: what does the research evidence say?', *The King's Fund*.
- Purtill, J 2021, 'When EVs take over our roads and demand for petrol dries up, what will happen to service stations?', *ABC News*, 21 November, www.abc.net.au/news/science/2021-11-22/petrol-stations-can-they-survive-electric-car-uptake/100627312 (accessed 23 July 2024).
- PwC (PricewaterhouseCoopers) 2014, *Deciding with data: how data-driven innovation is fuelling Australia's economic growth*.
- 2022, *Skies Without Limits v2.0*.
- Qu, J, Simes, R and O'Mahony, J 2017, 'How do digital technologies drive economic growth?', *Economic Record*, vol. 93, no. S1, pp. 57–69.
- Queensland Audit Office 2022, *Enhancing Government Procurement*, Brisbane.
- Queensland Government 2022, *Queensland Government procurement statement 2022*.
- Queensland Government Minister for Health and Ambulance Services 2022, Queensland women guaranteed greater access to treatment for UTIs.
- Queensland Transport and Logistics Council 2022, *Addressing barriers to zero emission trucks in Queensland to 2025*.
- RACGP (Royal Australian College of General Practitioners) 2020, *General practice: health of the nation*.
- RBA (Reserve Bank of Australia) 2024a, *Cash Rate Target*.
- 2024b, *Interlinking Fast Payment Systems for Cross-border*.
- 2024c, *Merchant Card Payment Costs and Surcharging – Issues Paper – October 2024*.
- 2019, *NPP functionality and access consultation: conclusions paper*.
- 2024d, *Banks' funding costs and lending rates*.
- 2024e, *Composition of the Australian Economy Snapshot*, Reserve Bank of Australia, www.rba.gov.au/snapshots/economy-composition-snapshot/index.html (accessed 1 August 2024).
- 2024f, *Lenders' interest rates*, Reserve Bank of Australia, www.rba.gov.au/statistics/interest-rates/ (accessed 27 August 2024).
- 2024g, *Payments data*, Reserve Bank of Australia, www.rba.gov.au/payments-and-infrastructure/resources/payments-data.html (accessed 30 July 2024).
- 2024h, *Resilience of the Australian financial system*, www.rba.gov.au/publications/fsr/2024/mar/resilience-of-the-australian-financial-system.html (accessed 29 July 2024).
- Reagan, PB and Salsberry, PJ 2013, 'The effects of state-level scope-of-practice regulations on the number and growth of nurse practitioners', *Nursing Outlook*, vol. 61, no. 6, pp. 392–399.
- Registrar General 2023, *Interoperability between Electronic Lodgment Network Operators*.
- Richards, B 2015, *Should switch, don't switch*.
- Rocard, E and Llana-Nozal, A 2022, *Supporting informal carers of older people: policies to leave no carer behind*, OECD.
- Rosavina, M, Rahadi, R, Kitri, M, Nuraeni, S and Mayangsari, L 2019, 'P2P lending adoption by SMEs in Indonesia', *Qualitative Research in Financial Markets*, vol. 11, no. 2, pp. 260–279.
- Roy Morgan 2019, *Ride-sharing app Uber overtakes taxis as preferred private transport service*, www.roymorgan.com/findings/ride-sharing-app-uber-overtakes-taxis-as-preferred-private-transport-service (accessed 13 July 2024).
- 2023, *Over 1.57 million Australians are now 'at risk' of 'mortgage stress' representing 30.3% of mortgage holders*.
- von Rueden, C and Bambalaite, I 2020, *Measuring occupational entry regulations: A new OECD approach*, No. 1606, OECD Economics Department Working Papers, OECD.
- Sanderson, A-J 2023, *Pharmacy option for UTI diagnosis for Western Australian women*, WA Government.
- Savills 2020, *A modern approach to construction, Savills Impacts*, 11 May, www.savills.com/impacts/technology/why-modern-methods-of-construction-are-a-good-fit.html (accessed 23 July 2024).
- SCCA (Shopping Centre Council of Australia) 2018, *Submission to Senate Red Tape inquiry into the effect of red tape on occupational licensing*.
- Schmidt, B 2024a, *August EV sales hold ground as drivers flock to hybrids*, My NRMA, www.mynrma.com.au/electric-vehicles/news/ev-sales-august-2024 (accessed 9 October 2024).
- 2024b, *Every EV plug type explained*, My NRMA, www.mynrma.com.au/electric-vehicles/charging/ev-plug-types (accessed 23 July 2024).
- Schmidt, J and Steingress, W 2022, 'No double standards: Quantifying the impact of standard harmonization on trade', *Journal of International Economics*, vol. 137, p. 103619.
- Schultz, AB and Edington, DW 2007, 'Employee health and presenteeism: a systematic review', *Journal of Occupational Rehabilitation*, vol. 17, no. 3, pp. 547–579.
- SCRGSP (Steering Committee for the Review of Government Service Provision) 2024, *Report on Government Services 2024 - Health (part E)*, Productivity Commission, Canberra.
- Seek 2024a, *General practitioner salary*, August, www.seek.com.au/career-advice/role/general-practitioner/salary (accessed 21 August 2024).

- 2024b, *Nurse practitioner salary*, August, www.seek.com.au/career-advice/role/nurse-practitioner/salary (accessed 21 August 2024).
- 2024c, *Pharmacist salary*, www.seek.com.au/career-advice/role/pharmacist/salary (accessed 22 August 2024).
- Select Committee on Workforce Australia Employment Services 2023, *Rebuilding employment services final report on workforce Australia employment services*, Parliament of Australia.
- Senate Red Tape Committee (The Senate Select Committee on Red Tape) 2018, *Effect of red tape on occupational licensing*, Interim report.
- Sharpe, S 1997, 'The effect of consumer switching costs on prices: a theory and its application to the bank deposit market', *Review of Industrial Organisation*, vol. 12, pp. 79–94.
- Shendryk, Y, Sofonia, J, Garrard, R, Rist, Y, Skocaj, D and Thorburn, P 2020, 'Fine-scale prediction of biomass and leaf nitrogen content in sugarcane using UAV LiDAR and multispectral imaging', *International Journal of Applied Earth Observation and Geoinformation*, vol. 92, p. 102177.
- Sibbald, M 2024, *How much is a used electric truck worth? - Fleet EV News*, 22 April, <https://fleetevnews.com.au/how-much-is-a-used-electric-truck-worth/> (accessed 24 July 2024).
- Solomon, L and Davis, N 2023, *The state of AI governance in Australia*, <https://apo.org.au/node/322937> (accessed 11 July 2024).
- South Australia Health nd, *SA community pharmacy urinary tract infection (UTI) services*, www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/clinical+resources/clinical+programs+and+practice+guidelines/medicines+and+drugs/sa+community+pharmacy+uti+services/sa+community+pharmacy+uti+services (accessed 18 September 2024).
- Spooner, SH and Emerson, PK 1994, 'Using hospital pharmacy technicians to check unit dose carts', *Hospital Pharmacy*, vol. 29, no. 5, pp. 433–437.
- Sprivilis, P, Walker, J, Johnston, D, Pan, E, Alder-Milstein, J, Middleton, B and Bates, D 2007, 'The economic benefits of health information exchange interoperability for Australia', *Australian Health Review*, vol. 31, no. 4, pp. 531–539.
- SSCCL (Senate Select Committee on Cost of Living) 2024, *Second interim report*, Senate, Canberra.
- Standards Australia 2021, *AS 1067.1:2016 Eye and face protection - Sunglasses and fashion spectacles, Part 1: Requirements*, https://store.standards.org.au/product/as-1067-1-2016?utm_source=standards.org.au&utm_medium=referral&utm_campaign=standards-catalogue (accessed 9 July 2024).
- Stanik-Hutt, J, Newhouse, RP, White, KM, Johantgen, M, Bass, EB, Zangaro, G, Wilson, R, Fountain, L, Steinwachs, DM, Heindel, L and Weiner, JP 2013, 'The quality and effectiveness of care provided by nurse practitioners', *The Journal for Nurse Practitioners*, vol. 9, no. 8, pp. 492–500.e13.
- Starr, E 2019, 'Consider This: Training, Wages, and the Enforceability of Covenants Not to Compete', SAGE Publications Inc, *ILR Review*, vol. 72, no. 4, pp. 783–817.
- , Balasubramanian, N and Sakakibara, M 2018, 'Screening Spinouts? How Noncompete enforceability Affects the Creation, Growth, and Survival of New Firms', *Management Science*, vol. 64, no. 2, pp. 552–572.
- , Prescott, J J. and Bishara, ND 2021, 'Noncompete Agreements in the US Labor Force', The University of Chicago Press, *The Journal of Law and Economics*, vol. 64, no. 1, pp. 53–84.
- Stats NZ 2024, *Integrated Data Infrastructure*, Stats NZ, www.stats.govt.nz/integrated-data/integrated-data-infrastructure/ (accessed 15 August 2024).
- Stewart, WF, Ricci, JA, Chee, E and Morganstein, D 2003, 'Lost productive work time costs from health conditions in the United States: results from the American productivity audit', *Journal of Occupational and Environmental Medicine*, vol. 45, no. 12, pp. 1234–1246.
- Strategy& 2024, *Battery-electric trucks on the rise*.
- Sutrisna, M, Cooper-Cooke, B, Goulding, J and Ezcan, V 2018, 'Investigating the cost of offsite construction housing in Western Australia', *International Journal of Housing Markets and Analysis*, vol. 12.
- Sutton, J 2021, *Telehealth visit use among U.S. adults*, August, Bipartisan Policy Center.
- Sync 2024, *Manufacturing change. Advancing the process.*, <https://sync.industries/> (accessed 20 August 2024).
- Talent.com 2024a, *Community pharmacist average salary in United Kingdom*, <https://uk.talent.com/salary?job=community+pharmacist#:~:text=The%20average%20community%20pharmacist%20salary%20in%20the%20United%20Kingdom%20is,%20%20C%2%A359%2C313%20per%20year.> (accessed 8 October 2024).
- 2024b, *Pharmacy technician average salary in United Kingdom*, <https://uk.talent.com/salary?job=pharmacy+technician> (accessed 23 July 2024).
- Tarver, S, Palacios, J, Hall, R and Franco-Martinez, C 2017, *Implementing a tech-check-tech program at a University health system*, www.ncbi.nlm.nih.gov/pmc/articles/PMC5424832/ (accessed 17 July 2024).
- Tasmanian Government 2024, *Tasmanian Planning Scheme*.
- Tasmanian Government Department of Health nd, *Pharmacist information pack community pharmacist pilot project*.
- Telsyte 2024, *Australia's smart home market set to crack \$2.5B, driven by AI, energy savings and security*, Telsyte, www.telsyte.com.au/announcements/2024/3/20/australias-smart-home-market-set-to-crack-25b-driven-by-ai-energy-savings-and-security (accessed 26 July 2024).
- Temelkov, Z and Samonikov, M 2018, 'The need for fintech companies as non-bank financing alternatives for SME in developing economies', *International Journal of Information, Business and Management*, vol. 10, no. 3.
- Terrill, M, Emslie, O and Fox, L 2021, *Megabang for megabucks: Driving a harder bargain on megaprojects*, May, Grattan Institute, Melbourne.
- TGA (Therapeutic Goods Administration) 2022, *How we regulate medicines*, www.tga.gov.au/resources/resource/guidance/how-we-regulate-medicines (accessed 10 September 2024).
- The Society of Hospital Pharmacists of Australia 2021, *ACT Budget 2021-2022 submission*.
- 2024, *Federal Pre-budget Submission 2024-25*.
- Toomey, J, Burns, A and King, C 2022, 'North Queensland Pharmacy Scope Practice Pilot will put vulnerable patients at risk, doctors say', *Australian Broadcasting Corporation*.
- Totten, A, Wagner, J, Tiwari, A, O'Haire, C, Griffin, J and Walker, M 2012, *Closing the quality gap: revisiting the state of the science (vol. 5: public reporting as a quality improvement strategy)*, Evidence Report/Technology Assessment, 208, Agency for Healthcare Research and Quality.

- Treasury 2015, *Australian Government response to the competition policy review*.
- 2021a, *Fact sheet: Motor vehicle service and repair information sharing scheme*.
- 2021b, *Payments system review*.
- 2021c, *Supporting business through improvements to mandatory standards regulation under the Australian Consumer Law - Consultation Regulation Impact Statement*.
- 2023a, *A Strategic Plan for Australia's Payments System*.
- 2023b, *Competition review*, <https://treasury.gov.au/review/competition-review-2023> (accessed 20 March 2024).
- 2023c, *Non-compete clauses - prevalence, impact and policy implications*, Summary of Treasury-e61 Institute Joint Webinar, October.
- 2023d, *Payments system modernisation: regulation of payment service providers*.
- 2024a, *Aviation*, <https://treasury.gov.au/review/competition-review-2023/aviation> (accessed 16 August 2024).
- 2024b, *Merger Reform: A Faster, Stronger and Simpler System for a More Competitive Economy*, Canberra.
- 2024c, *Revitalising National Competition Policy Consultation Paper*, Canberra.
- Truck Industry Council 2019, *Modernising the Australian Truck Fleet- Budget Submission 2019/20*.
- 2023, *Low Zero Emission Truck Market Update*.
- UK Department of Health and Social Care 2023, *Drugs and pharmaceutical electronic market information tool (eMIT)*, December.
- UNCC (UN Climate Change) 2024, *The Paris Agreement*, <https://unfccc.int/process-and-meetings/the-paris-agreement> (accessed 14 August 2024).
- Ung, B 2024, *Cash rate pass-through to outstanding mortgage rates*, Reserve Bank of Australia.
- U.S. Department of the Treasury 2022, *The State of Labor Market Competition*, March.
- US DOJ (United States Department of Justice) 2020, *Justice Department Sues Monopolist Google For Violating Antitrust Laws*, www.justice.gov/opa/pr/justice-department-sues-monopolist-google-violating-antitrust-laws (accessed 9 September 2024).
- Valuer General NSW 2021, *Review of the impact of rezoning potentiality on land values*, February, Valuer General NSW.
- VDHHS (Victorian Department of Health and Human Services) 2020, *Compendium of electronic medical record (EMR) benefit measures*.
- Verikios, G and Zhang, X 2008, *Distributional Effects of Changes in Australian Infrastructure Industries During the 1990S*, Productivity Commission Staff Working Paper, Canberra.
- Verma, S, Dwivedi, G and Verma, P 2022, 'Life cycle assessment of electric vehicles in comparison to combustion engine vehicles: A review', *Materials Today: Proceedings*, vol. 49, pp. 217–222.
- Victoor, A, Delnoij, DM, Friele, RD and Rademakers, JJ 2012, 'Determinants of patient choice of healthcare providers: a scoping review', *BMC Health Services Research*, vol. 12, no. 1, p. 272.
- Volvo Trucks nd, 'Electromobility made easy'.
- WEF (World Economic Forum) 2023, *How ASEAN is making instant cross-border payments a reality*, World Economic Forum, www.weforum.org/agenda/2023/11/asean-instant-cross-border-payments-paynow-promptpay/#:~:text=Thailand%20and%20Singapore%20connected%20their, days%20now%20complete%20in%20minutes. (accessed 30 July 2024).
- Weidner, AKH, Phillips, RL, Fang, B and Peterson, LE 2018, 'Burnout and Scope of Practice in New Family Physicians', *Annals of Family Medicine*, vol. 16, no. 3, pp. 200–205.
- Wiedemann, M, Vij, A, Banerjee, R, O'Connor, A, Soetanto, D, Ardeshir, A, V., A, Wittwer, G and Sheard, N 2023, *Validating the benefits of increased drone uptake for Australia: geographic, demographic and social insights*.
- Williams, K 2021, *Is CHAdemo EV Charging on Its Way Out? Here's What You Should Know*, The Drive, www.thedrive.com/news/39452/is-chademo-ev-charging-on-its-way-out-heres-what-you-should-know (accessed 18 September 2024).
- Wilson, C 2012, 'Market frictions: A unified model of search costs and switching costs', *European Economic Review*, vol. 56, no. 6, pp. 1070–1086.
- Windle, J 2009, 'The limits of school choice: some implications for accountability of selective practices and positional competition in Australian education', *Critical Studies in Education*, vol. 50, no. 3.
- Workplace Gender Equality Agency 2022, *Gender equality workplace statistics at a glance 2022*, Australian Government, www.wgea.gov.au/publications/gender-equality-workplace-statistics-at-a-glance-2022 (accessed 30 July 2024).
- World Bank 2024, *An analysis of trends in cost of remittance services*.
- WTO (World Trade Organisation) 1995, *Agreement on Technical Barriers to Trade*, www.wto.org/english/docs_e/legal_e/17-tbt_e.htm (accessed 3 July 2024).
- Xinja 2017, *Xinja's response to Treasury's consultation on reducing barriers to new entrants to the banking sector - removing restrictions on the use of the term 'bank'*.
- Xue, Y, Kannan, V, Greener, E, Smith, JA, Brasch, J, Johnson, BA and Spetz, J 2018, 'Full scope-of-practice regulation is associated with higher supply of nurse practitioners in rural and primary care health professional shortage counties', *Journal of Nursing Regulation*, vol. 8, no. 4, pp. 5–13.
- Yurday, E 2024, *Average mortgage rates and loans UK 2024*, NimbleFins, www.nimblefins.co.uk/average-mortgage-rate-loan (accessed 27 August 2024).
- Zhan, J, Fu, H and Zhang, X 2024, *Information Disclosure via Platform Endorsement in Online Healthcare*, 20 June.
- Zhang, Y 2022a, 'The price of PBS medicines is coming down. But are we helping the right people?', <https://theconversation.com/the-price-of-pbs-medicines-is-coming-down-but-are-we-helping-the-right-people-190137> (accessed 20 September 2024).
- 2022b, *What is the PBS safety net and is it really the best way to cut the cost of medicines?*, <https://theconversation.com/what-is-the-pbs-safety-net-and-is-it-really-the-best-way-to-cut-the-cost-of-medicines-180315> (accessed 2 April 2024).
- Zomahoun, HTV, Samson, I, Sawadogo, J, Massougbodji, J, Gogovor, A, Diendéré, E, Turgeon, F and Légaré, F 2021, 'Effects of the scope of practice on family physicians: a systematic review', *BMC Family Practice*, vol. 22.