Housing construction productivity: Behind the numbers

Webinar transcript

Thursday 6 March 2025

Louisa Borland:

I'd like to start today's session by acknowledging the Traditional Owners of the lands on which I'm presenting, the Ngunnawal people.

And as we're meeting today to share knowledge, I'd also like to take this opportunity to recognise the Ngunnawal knowledges that persist today because of the learning practices that have taken place on this country for many thousands of years.

My name is Louisa and I was a member of the Productivity Commission's housing construction productivity research team.

I'm joined here today by Jared Dent, our Assistant Commissioner who led the staff team, and by Colin Burns, who supervised the productivity estimation work.

Today's webinar is going to be a deep dive into one aspect of our recent housing construction report: the labour productivity estimates.

We'll cover the motivation for our work, what is and isn't captured in the estimates and our methodology and data sources. We will also be discussing the work's limitations and assumptions, as well as some possible extensions as we go.

One last thing before I begin, which is just that this is also a great opportunity to thank the many people, some of whom I can see are on the call today, who engaged with our team as we constructed the estimates and drafted the rest of the report.

Hearing and incorporating your ideas, thoughts and feedback is an important part of the work we do at the PC, and we greatly appreciate the time that people take to engage with us.

Alright, so now on to the motivation for our work.

I expect this is familiar context to a lot of you on the call today that governments across all levels in Australia at the moment have big plans to increase housing supply. Everything's underpinned by the National Housing Accord commitment and goal of building 1.2 million new homes by mid-2029.

And productivity growth in the housing construction sector would be one means through which we could be building more homes more quickly. Just as a refresher, productivity looks at how efficiently we transform inputs into outputs – and labour productivity, which is what we looked at specifically in this report, is a ratio of outputs to inputs.

On the output side, we have real gross value added which is a measure of gross output that deducts the intermediate inputs that are used throughout the production process and then on the input side because we're looking at labour productivity, our measure is hours worked.

And so, while strong productivity growth in the housing construction sector would be a good way of building more homes more quickly, the bad news is that in an aggregate sense, construction productivity has barely grown across the past three decades and has also consistently underperformed relative to productivity growth across the whole economy.

This doesn't tell us the whole story, though, and that's because from official statistics, we don't have a good understanding of how housing construction productivity specifically is performing.

This aggregate measure that's on the slide is including a diverse range of construction activities. So things like infrastructure construction (so think of Melbourne's Metro Tunnel or Sydney Metro), commercial construction (so putting up the office building that I'm sitting in at the moment) and housing construction are all incorporated in this navy blue line that's on the slide.

So, while things look bad in an aggregate sense for housing construction productivity, we don't actually know for sure, and there's no official statistics available.

Most other studies that have looked at housing construction productivity will use aggregate evidence like what's on the slide to support their arguments, or they'll look at productivity in terms of narrow activities, like maybe specifically something like bricklaying, or they'll look at productivity across a single project where you can track inputs and outputs really closely.

But what we tried to do in this report was take a novel approach of combining the housing construction-relevant inputs and outputs from multiple sub-industries to try and capture the productivity of the entire homebuilding process. And in doing that, we've gotten to an estimate of what we're calling dwelling construction productivity.

To explain why it was a little bit of effort to get to our figures, I'll start off just by going through the ANZSIC codes for the construction industry. And specifically, if you pay attention to the blue rings, that highlights the problem that we faced.

Every industry that's ringed in the navy blue, the inputs and outputs in those subindustries are at least partially used for building new homes. So, the inputs and outputs from across the entire housing construction process, which is what we were trying to get at to calculate productivity, is split across multiple subindustries.

Just to go through this slide a little bit more systematically, starting at the top with aggregate construction, that's that navy blue line from the last slide, the aggregate construction. And then aggregate construction then splits off into different industry subdivisions.

On the left-hand side, we then go down into building construction, which then splits off again into residential building construction and non-residential building construction.

You might look at the name of the residential building construction industry and think ‘perfect, we just need to find the inputs and outputs for that subindustry to get our estimate of productivity for housing construction.

But unfortunately, that's not the case, and that's because this residential building construction industry is primarily only capturing the main builders and developers who are coordinating and project managing a building construction project.

The firms of the tradies, who they're engaging to do things like the plumbing work and the electrical work, are actually over in the other branch on the right-hand side of the slide. They're counted in construction services. And there's an additional complication of dealing with construction services.

It's not only the case that things are split across the multiple industries, an additional complication with construction services is that the firms are classified based on the type of activity they undertake – so are they doing plumbing work, electrical work, that sort of thing, and not classified on whether they're doing residential work, non-residential work or a mix.

So in a broad sense, what we've tried to do in calculating our estimates, is we've taken our two subdivisions, so building construction and construction services, and we've tried to extract the housing related portions of the inputs and outputs from those two industry subdivisions, and hopefully in doing so, we're capturing as many of the outputs and inputs as possible that are involved in the different stages of building homes.

If you're not super familiar with the ANZSIC structure of construction and aren't remembering the specific that at the moment, that's fine. Just think of it in a general sense as we're trying to combine housing-relevant portions from these two subindustries and then combining them together to get the inputs and outputs for our – what we call dwelling construction industry.

And then later in the presentation, Colin will talk about how we can then split those dwelling construction estimates into industries by dwelling types. So, into estimates for houses and then for higher-density dwellings like townhouses and apartments, that sort of thing.

As much as we try to make our estimates comprehensive, it is important to be upfront that not everything is captured in our estimates. Starting on the left-hand side with what's included: in a general sense, all steps of the construction process, so everything from land acquisition all the way to the construction work that's done on the house is included, on the condition that it's being undertaken in-house by residential building construction firms or by construction services firms.

Just to give you a couple of examples, the first from land acquisition, let's say a developer is negotiating with landowners to acquire land. When that work is undertaken by the developer who's a residential building construction firm, then yes, that would be covered in the estimates. But if the developer is outsourcing that work to a lawyer, then no, that wouldn't be included.

And another example on construction work. If there's been electrical work done on a set of project homes by a firm of electricians, then yes, that would be included. But if there's construction work being done, say, unskilled labour from a labour hire firm, then no, that won't be included.

And it's important to note, I guess, that these issues of capturing the impact of outsourcing and the use of labour hire services, that's an issue for productivity estimation across all industries, not just construction, but it is something that is nonetheless affecting our estimates.

And then on the right-hand side, what's not included. An important omission is the offsite production of prefab building and building components. So, the assembly and installation of prefab building and components, that is included, but the production of those sorts of things is included in manufacturing instead.

Current estimates are that that's about 5% of building activity in Australia at the moment, but definitely something to be aware of, particularly if there's more of a shift towards prefab production in the future.

Labour hire services we've just discussed as being not included.

Other things that are excluded: infrastructure and utilities construction, so things like putting in the new sewage infrastructure or putting up power lines that are associated with new housing developments, they're not included, as well as materials manufacturing. So, things like manufacturing the concrete that's used in buildings, that's counted in manufacturing, not in construction, and therefore isn't included in our estimates.

The next two dot points, in terms of things that aren't included, are delays and what we call lost dwellings.

To give you an example of delays not being captured in the estimates, imagine that there's a building site that's having supply chain issues, and so the site is sitting empty for a few months. No work is being done on the house, so there's no change in output, but equally no hours are being worked at the site. With no change in inputs, no change in outputs, there's just a zero effect on productivity, despite the delay being a bad thing.

And then on the point of lost dwellings, that's just the idea that potentially due to the regulatory environment, a developer might be able to look at a parcel of land and just kind of immediately work out that it's unviable for development. So once again in that case, no home is being developed there, but equally no labour is spent trying to develop a home there, so there's zero effect on productivity in our estimates.

And then lastly, we're not able to capture in our estimates amenity to existing residents that results from housing construction activity. The impacts might say be negative initially, if existing residents are disturbed by noise or by dust as construction goes on, and then it might become positive over time if the new housing development improves the general amenity of the neighbourhood, brings

new retail options, that sort of thing. But those effects, whether they're positive or negative, we're not able to capture them.

All right, so, with that in mind of what's included and excluded, where did we end up and what did we find? What we found is that much like aggregate construction, dwelling construction productivity growth has been slow across the past three decades.

Since 1994-95, our quality-adjusted measure of dwelling construction productivity has fallen by 12% and that's in comparison to 49% growth across the whole economy. And the non-quality-adjusted measure has fallen by even more, so by about 50% across the past three decades.

I think there's two main things we'd like you to take from these headline results.

The first thing is just the importance of being able to calculate productivity at this greater level of disaggregation. While we were aware from that aggregate evidence that construction productivity was growing more slowly than the whole economy, by disaggregating down to this further level, we've been able to see that the performance of the dwelling construction industry specifically has been even weaker across the past three decades.

And the second thing, more from a policy perspective, is that these results are just important evidence that we can't be relying on business as usual productivity growth, as one means to be helping us build more homes more quickly over the next few years.

All right, so now what we'll do is a bit of a deeper dive into the methodology for constructing our estimates. Just a warning before I begin, this is very dense and it will be a lot to take in. Everything's available in written form, written out in appendix B of our report.

So how did we get to our estimates? At a high level, what we do is we deal with the output side first. We estimate our nominal gross value added. We then deflate that to get real gross value added to account for price changes over time. We then deal with the input side and estimate hours worked, and then productivity is just the ratio of the outputs and inputs.

All right, so output side.

First, what we'll do is we make a start with National Accounts data and just remember our general methodology is that we're trying to extract the housing-relevant inputs from building construction and construction services and then combining them together. We'll deal with each of those two subindustries separately.

On the residential building construction side, this is actually straightforward, which is the last time I will say that in this section of the presentation, and that's because the nominal GVA for residential building construction is just directly available in the National Accounts, so we can take that as is.

With construction services, remember the complication is that all the firms of tradespeople are there, classified based on the type of activity they do, like electrical work, plumbing work, that sort of thing, regardless of whether they're working on housing or other types of construction.

So, what we need to be doing is to be estimating what percent of the construction services nominal GVA we think is being used for housing.

And we do that based on the share of construction services that are being purchased by the residential building construction industry, relative to the purchases made by the non-residential and heavy and civil engineering construction subindustries.

This is something that is made, I think a little bit more clear with an example. So, imagine that we have data on purchases of construction services from the supply-use tables. And let's just assume – these are made up figures – that purchases of construction services by residential building construction are $100 million, $100 million by non-residential building construction and then $200 million by heavy and civil engineering construction.

What we do is we take that $100 million worth of purchases and compare it, relative to the $400 million worth of purchases overall. And that leads us to an assumption that 25% of the construction services nominal GVA is being used for housing construction.

This is one of the key assumptions that we make in making our estimates, and that's because construction services aren't just purchased by other construction industry subindustries. We actually have three different cases that we need to consider.

The first situation, which is what's shown on the slide above, is that construction services are being purchased by the other construction subindustries. And then we then use our shares of the purchases to get us to this, say hypothetical 25% estimate.

The second situation is that construction services can actually just be purchased by other firms in the construction services industry. An example of that might be a plumbing firm that's got too much work on its books, so it then subcontracts out some of its plumbing work to another plumbing firm – construction services being purchased by other construction services firms.

And then the third case is that we can have other industries entirely purchasing construction services. An example of this might be a hospital engaging a plumbing firm to do some work at the hospital. In those last two cases we have no way of knowing from the supply-use tables what portion of those purchases are residential. So, what we need to do, is we simply need to assume that the share that's used for housing construction is the same in all those three cases.

And then putting it all together, we have our gross value added for residential building construction and construction services. We then have our share of construction services that we think is related to housing construction. We then simply add those two things together to get us to an estimate of nominal GVA for dwelling construction.

If you are looking to extend this work for state and territory analysis, one thing you could possibly look at doing would be extracting the relevant gross value added using something like the Building Activity Survey shares of residential building work done by state and territory.

So that is our estimate of nominal GVA. Now what we need to do is deflate it to get real GVA, and what we do to do that is we construct our deflator using Building Activity Survey data on the value of residential building work that's done over time – so just the ratio of the current price and chain volume values of those variables. For state and territory decompositions, you could look at making a state and territory-specific deflator using the Building Activity Survey data.

Applying the deflator is what helps us to correct for price changes over time in output.

One thing to note here is that the value of building work done from the Building Activity Survey, that is a gross output measure. So remember, that's the distinction between gross output and gross value added: that gross value added has the intermediate inputs deducted and our measure of the value of building work done is including those intermediate inputs.

Essentially what we're doing is we are deflating nominal gross value added using a gross output deflator. This isn't ideal, but it does appear to be a reasonable approach to take, and we have tested it to the extent possible.

And we've done that by comparing productivity that's calculated using a gross output deflator and a gross value added deflator at a higher level of industry aggregation: at building construction rather than residential building construction. And we do that because we have the data available to construct productivity using both sorts of deflators at that level.

What you can see is the estimates of productivity don't match perfectly, but importantly they are capturing the same trends over the longer term. While it's not necessarily ideal to apply the gross output deflator here, it does appear to be a reasonable assumption.

Okay, so that is the output side done – we've estimated nominal gross value added, we've applied the deflator to get to real gross value added, and it's now time to estimate hours worked.

Remember, once again, our general methodology is we've got our two industry subdivisions, we're extracting the housing-relevant portions and then adding them together to get an estimate for dwelling construction.

We start here with data from the Labour Account, where we have hours worked for both building construction and construction services.

We then try to extract the housing-relevant portion of building construction hours worked using the shares of hours worked in residential, relative to non-residential, building construction from the Labour Force Survey.

And just a couple of important things to note on this decision. We are applying shares to the Labour Account data, rather than just directly using the Labour Force Survey hours worked, because the Labour Account is kind of our gold standard for productivity estimation.

And then a second note on the Labour Force Survey. It was a fantastic data source because it was a frequent survey that went back far enough at the required level of disaggregation for our estimates.

But it is just important to note that one limitation of it being survey data is that labour hire employees who are working in construction – if we remember back to our list of inclusions and exclusions, the work of labour supplied by people from labour hire firms isn't included in our estimates.

It is possible that in the Labour Force Survey, employees working for labour hire firms may self-identify as working in construction, when they're technically employed by labour hire firms, so that may affect the shares that we calculate of residential versus non-residential building construction hours worked.

So that's one side of things – residential building construction – and then on the other side, it's construction services. And this is the side of things that's slightly more straightforward this time, because we just apply the same share to hours worked as we applied to nominal GVA on the output side. In our hypothetical example, that was the 25% from before.

And then once again, bringing it all together, we have our measures of hours worked, we have our shares that we think are the housing-relevant portions of hours worked, and then we can just add those two things together to get us to an overall estimate of dwelling construction hours worked.

And here, in terms of extensions, as a starting point for state and territory analysis, the Labour Force Survey data is disaggregated by state and territory, so you could potentially get more specific breakdowns of the hours worked in residential versus non-residential building construction for a particular state or territory that you're interested in.

And then here we are, nearly at the end, productivity is just our ratio of outputs and inputs. And we end up back with our chart showing the decline in labour productivity over the past three or so decades.

All right, so that is the three-digit work done, so that's dwelling construction. And I'll now pass over to Colin, who will then talk about how we split those estimates off by dwelling type into houses and higher-density dwellings.

Colin Burns:

Thank you, Louisa.

OK, think I'm in control here. So, as Louisa said, I'm just going to run you through how we split that result for all of dwelling construction, so all types of residential structures, down into the further detail of houses versus what we call higher-density, which is really just any other type of residential structure other than a detached house. So that could be terrace houses, apartments, townhouses, whatever.

Essentially, to get the four-digit estimates of nominal GVA for houses and higher-density, we take the three-digit nominal GVA estimates constructed in the previous steps, and then we need to try and apportion those between the two industries.

To do this, we use the shares of work done on houses and higher-density, which is called other residential in the data from the Building Activity Survey, to just apportion that between those two industries.

This work done measure is essentially the same thing as gross output, so it's just using gross output to apportion GVA between those two industries.

Once we have an estimate for nominal GVA in each of those two industries, we then need to find appropriate deflators for each of those.

So, as with the three-digit estimates, unfortunately we do not have appropriate GVA deflators for those, so instead we rely on the implicit deflator derived from the ratio of current price to chain volume work done for each industry in the Building Activity Survey. Again, essentially this amounts to using a gross output deflator instead of using a GVA deflator.

And as we've said earlier, we think this will be more accurate over the longer term, will be accurate enough over the longer term, but will introduce some short-term noise into the estimates.

As with normal GVA, to attain estimates, to obtain 4-digit estimates of hours worked in both house construction and higher-density construction, we need to apportion our 3-digit estimates of hours worked between these two industries.

To do this, we relied on the FTE employment measure from the BLADE data set – we can see that on the screen here.

Note that this FTE, a measure of employment at the four-digit level, is actually based on subclassifying individuals that work in the residential building construction industry. That is predominantly people working for developers, or maybe tradespeople that are then in a larger organisation that predominantly does development activity.

This means that we have to kind of assume that the split between house construction and other types of construction for those developers is indicative of the split for the tradespeople that work in the construction services industry.

And here we can see the results of doing this apportionment. One thing that has notable for both house construction and higher-density construction is that we can see increases in productivity during the expansion phase of the business cycle and a decrease in the contraction phase.

This is more notable for the higher-density construction around the time of the apartment boom in Sydney and Melbourne around the mid-2010s, as well as around the introduction of the GST, where people purchased properties in advance of the bringing in of the GST, and then didn't purchase any properties after the introduction. So, there was kind of a boom-bust cycle introduced by that.

The reason for these, you know, cyclical movements in productivity is pretty similar to the reasons you see these kinds of cycles in other industries as well. And it includes things like mismeasurement and labour hoarding and that kind of thing.

Ideally, we would have tried to find industry-specific productivity cycles and then present average growth over those productivity cycles. But it's a bit of a challenge for this industry: there are location-specific construction cycles which can make it difficult to talk about national aggregate ones, and because of the nature of the exercise, we just wanted to be transparent and present all the data to the reader without any modification.

I'll just talk about some of the limitations of these estimates. Most of this Louisa's already touched on to some degree.

As we discussed in the previous slide, productivity can vary over the business cycle. And again, ideally, we'd present this as averages over this productivity cycles.

Second, as Louisa mentioned, offsite prefabrication and modular construction is not included in these estimates. To the extent that prefabrication is used more widely in this country, this would actually have the effect of increasing productivity in manufacturing rather than construction.

And in fact, we might see a contraction in the construction industry, because there's less value add being delivered from within the construction industry. Instead, they're purchasing services from manufacturing.

Third, we are focusing on the flow of new construction rather than on the stock of existing land. There are instances where construction productivity, onsite construction productivity might increase, but this increase is actually associated with a less efficient allocation of land.

For example, if there's some surge in productivity in detached housing, this could lead to greater greenfield construction and less urban infill, which overall might be a less efficient use of land, even though it's a more efficient construction process as a result.

Finally, like most productivity statistics, most economic statistics, these estimates do not include any of the externalities that are associated with the production of new housing. Perhaps most notably, the effects on the amenity of the existing residents.

And just going through some of the specific issues with each of the data sources we've talked about.

Starting with the National Accounts, obviously that's the best data source we have for productivity statistics, but even they have some issues. For example, with National Accounts, you don't have confidence intervals around your estimates for various reasons. So it's very difficult for us to talk about the level of uncertainty associated with our estimates as a result.

On the supply-use tables, Louisa's already talked about the issue that construction services are purchased by non-construction industries. And we really don't have any insight as to whether those services are being used on residential, non-residential, heavy infrastructure – we don't really know how it's being used. It just requires a bit of an assumption there.

We also have an issue that the Labour Force Survey – again, I think Louisa mentioned this – that many workers who work in administration and support because they are labour hire workers, might self-classify as construction because that's sort of what they do day-to-day.

I mentioned the issue with using BLADE to split up the hours worked at the three-digit level down to housing and higher-density. The issue was that it was only the hours of the developers and we were applying that over to the tradies, so that may not hold.

And finally, the issue that we used a gross output deflator instead of a GVA deflator to deflate our estimates. While we think this is a fair assumption over the longer term, I think it introduces some short-term noise that's difficult to predict.

So I think that's all Louisa and I had to say about the methodology. I think we'll just try and answer some questions now.

Louisa Borland:

And I can see we've had a couple of questions come through already.

Colin Burns:

From David Hardy, we've got: ‘do the assumptions take into account firms involved in building homes that may engage subcontractors that may also provide construction services?’

Yes, so that is the main thing we were trying to adjust the statistics for – was that a lot of the onsite house construction is done by these subcontractors that are classified under construction services, And then it was just a question of how much of the construction services activity is actually on housing as opposed to in non-residential buildings, hospitals, whatever.

Chris Knapp said: ‘it would be helpful to better understand the manufacturing slash construction split. There are prevalent supply chain producers such as frame and truss manufacturers (used in almost all volume home building), precast concrete, window manufacturing, etc. Do none of these businesses, which are 100% suppliers to housing (as opposed to supplying to non-building sectors) contribute to productivity?’

It's a problem with basically any downstream industry, is that you're only capturing the value added of the labour and capital within that industry, as opposed to the inputs that are being supplied to it.

Here, to the extent that these other inputs are produced in manufacturing and then bought by construction firms, that's right, the productivity in those activities and the improvements in the productivity of those activities generally wouldn't be reflected in construction productivity – within the construction industry itself.

Louisa Borland:

And then we had another one that I’ll publish on whether the research paper includes the estimates for combined productivity for houses and higher-density dwellings.

Yes, so that's the section that I presented. What we call dwelling construction, that incorporates all types of housing, so both the detached houses and the higher-density dwellings. And then the section that Colin presented on was then splitting that combined productivity out by dwelling type into the detached houses and the higher-density dwellings.

Colin Burns:

Maurice Tapang asked: 'did you manage to get any further data from the ABS that's not publicly available, such as whether or not KLEMS measures are available for the residential building industry?'

The answer is no, except for the FTE measures from BLADE, which are not publicly available. We had to get special permission to extract that data from BLADE and use those estimates ourselves.

As for the KLEMS, the ABS doesn't do KLEMS at any lower level of aggregation, I believe in part because they don't know the split of capital expenditure at any level lower than one-digit. But yeah, there are the input-output tables and supply-use tables that we did manage to use to try and get some insight into the purchases of construction services by different industries.

I've got Marko Barosevic – I apologise if I'm butchering these names, everyone. 'If I understood the paper properly, the GVA output shares excluded alterations and additions. Was a consistent adjustment factored into the labour input side for renovation work on the existing dwelling stock?'

To be clear, renovations are included in the GVA estimates, so that is in there. One tricky issue on the deflator side is that the deflators the ABS derives for the Building Activity Survey are based on the CPI estimates of new dwelling construction and those CPI estimates only look at finished products. They don't look at renovations and alterations. So it is captured in the nominal GVA, but the prices of renovations aren't necessarily captured, but that's an issue with the National Accounts deflators, rather than anything we did.

Roni asked: 'what plans do we have to refine the methodology so that offsite production of prefabrication building and components would be taken into account in future estimates?'

As it is, we don't have any plans to further refine these estimates. But if one was to do that, my advice would be to look at the product detail publication in the input-output tables that has like 900 plus products and then look at how you could apportion many of the products in manufacturing to construction.

I think the difficulty would probably be on the labour side, though you could probably get Labour Force Survey data down to the 3-digit, which might be granular enough to try and pick out how much of that is on the prefabrication side in manufacturing.

I've got Matthew Bowes: 'how do you interpret the variability in output per worker that you find, particularly in the construction of higher density-dwellings? What about the business cycle might be varying output per hour worked so drastically?'

In any industry we would see cyclical changes in labour productivity like that, but why was it so extreme? One explanation is labour hoarding: firms don't like to lay off workers when things are slow. So, they're still doing some hours worked, but they're not producing as much output.

Another issue could be the way the ABS measures output. In quite a few industries, while we would prefer that they measure production as opposed to end sales – so they measure the process of production as it's occurring as opposed to all at once at the end of production – in some cases, that just isn't practical and we can see those kind of cyclical swings.

We can see those cyclical swings in the heavy and civil construction industry as well, to do with the mining boom. There's a peak around 2011 to 2014 where construction goes way up due to the construction of all these mines and productivity with it, and then slumps back down again.

Jesse Hermans: ‘the trends tell about changes in productivity, but I guess they do not tell us about absolute productivity between houses and higher-density. It looks like higher-density was high productivity the more of it we build (given pro cyclical growth), but not so with houses.’

So, it's true we don't know about the levels of productivity from these numbers. Part of the issue with looking at levels with the way we did things is that we used gross output to apportion GVA, so I'm not sure why we'd trust looking at the levels as opposed to the changes over time, but it is an interesting question.

I guess my prior would be the higher-density would have a higher level, just because it would be more capital intensive than detached housing, and I think we saw that in our data. But like I said, just because of the way we apportioned it, I wouldn't pay too much attention to levels rather than just looking at the growth over time.

Lydia Wang said: ‘construction projects can span over several years, with continuous labour input over time. Should we be concerned that the output (e.g. a building) is only observed at the end of the project?’

Yes, I raised this issue before that ideally, we'd like to see things occurring continuously on the output side rather than all at once at the end, and for the most part the ABS does do this. They have a quarterly survey on the Building Activity Survey, as well as the Building Approvals Survey.

What they do is they track all the approvals that have occurred, and then track them each quarter as to how their progress is going quarter to quarter and then update it as they go there.

I think in practice, there ends up being a little bit of recording of output towards, further towards the end of a project than when it actually occurred, but they do try and sort of track things as they go rather than all at once at the end.

Louisa Borland:

I'm happy to jump in on this next one, Colin, which was about whether there's any plans to do further breakdowns of the other dwellings or the higher-density dwellings. Here, with the data

we've used, we're constrained on the input side. The BLADE data that we used to apportion the shares of hours worked, the level that we use, that four-digit level, that breaks things down into houses and the other residential dwellings, that's a detailed as the BLADE data goes in terms of being able to split out the hours worked.

We'd need to, you'd to find some alternate data source to then split the higher-density development further, say into very high-rise apartments versus mid-rise blocks of flats, that sort of thing.

Colin Burns:

Matthew has asked: 'apologies if it's already been asked, but did the study take waste in the industry into account? The traditional industry is renowned for high waste.'

Generally not, so any of these type of externalities, environmental externalities, externalities to the amenity of existing residents in a neighbourhood, all that type of thing are excluded from the analysis, it's just about the productivity of the construction on the ground and some of the approvals process and what not that occur before that.

Louisa Borland:

Related to this though, you might have seen our Circular Economy team just published their interim report and one of the focus areas of that was construction, I believe. So, obviously, not in a productivity sense or in these estimates, but I think there's some interesting content in there.

Colin Burns:

Erin Cassie asked: 'did we look at the impact of the change in house sizes over time? Average dwelling sizes since 1994 have been increased considerably, meaning that it may be logical for construction to take longer.'

Yep, so we do account to that. Where that comes in is actually through the deflator side of things.

So, what happens is if, say, the nominal GVA doubles because the size of house doubles, then the ABS will actually make that adjustment to the price deflator that you use to deflate that into real housing production. We are, it does come in there, the change in the sizes so as well as many other types of quality.

I think we used a few examples in the report of solar panels and what not. All of those kinds of things, the ABS does try and capture, and I think in appendix C, as well as in chapter 2 of the report, we go into some detail as to what we think of how the ABS tries to adjust for quality.

For the most part, we think they do a pretty good job and they capture most of the major changes in quality. The thing to remember with quality as well is we're comparing this industry to the aggregate economy.

So, the question is, has quality changed to a degree greater than the aggregate economy that is also more unmeasured than for the aggregate economy, taking into account all the measurement issues for other industries as well.

David has said: ‘I believe prefab is considered manufacturing, but may be considered as building work in the future. Do you have any insights or an informed opinion as to whether prefab would impact productivity, assuming it got to scale?’

Well, it depends on whether or not the classification of it changes as you say, David. If the classification stays as it is, what I would expect to happen is that construction productivity, measured construction productivity itself wouldn't change.

Instead, the construction industry would shrink because more of its functions would be outsourced to manufacturing. I would expect respect manufacturing productivity to increase, but if it became classified within construction, as you say it might, then I would expect it to increase productivity in that industry.

Jesse asked: ‘did we account for margin compression during the profitless boom in 2020?’

Interesting question. For the margin compression, bear in mind it is the value of the revenue received by the developers when they when they produce these houses minus the cost of the intermediate inputs. So, theoretically, no, it wouldn't. As long as that didn't affect their value add though, that shouldn't be such an issue.

Louisa, do you have an opinion on this?

Louisa Borland:

No, not beyond what you've just said, Colin.

Colin Burns:

And we've got a thank you from Michael. You're welcome, Michael.

Thank you very much for coming along and asking questions. And also, for those of you who gave us your time during consultations for this inquiry, thank you very much again, really appreciate your input. And please get in touch if you have any more questions.

[END]