Australian Government

Productivity Commission

Modelling Economy-wide Effects of Future Automotive Assistance

Measuring welfare

Technical Supplement

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Introduction

In a second response to the Commission's recent report *Modelling Economy-wide Effects of Future Automotive Assistance*, Lateral Economics and Professor Peter Dixon allege that the modelled net community gains from implementing scheduled assistance reductions (of around $0.5 billion) are overstated by at least $0.4 billion (LE 2008a and Dixon 2008).

While one or two media reports suggested that the consultants had found a 'technical error' in the Commission's modelling, the main point of contention concerns the appropriate measure of 'economic welfare'.

Specifically, it is claimed that the Commission has misinterpreted the welfare implications of the modelled $0.6 billion increase in GDP flowing from scheduled assistance reductions.

They also advocate applying a lower capital–labour substitution elasticity to the automotive industry than that used by the Commission. By constraining resource responses in this way, economic welfare would be further reduced. Several other matters raised in their earlier papers (LE 2008b and Dixon and Rimmer 2008) are also repeated.

The Commission does not accept this critique, or the posited alternative results, for the reasons outlined below.

What does the indicator 'adjusted GNE' measure?

An indicator of welfare attempts to assess the effect of a policy change on the economic wellbeing of Australians, which ultimately derives from the scope for additional consumption.

The Commission has used gross national income (measured in terms of 'adjusted' GNE) to indicate changes in aggregate economic welfare. Essentially, this measure translates to GDP *less* after-tax income paid to foreigners, most of which relates to their ownership of the capital stock in Australia. Adjusted GNE therefore represents current income of Australians, which is then allocated between current consumption and future consumption (where future consumption derives from the savings of Australians from their current income), as outlined in the Commission's automotive modelling report (see box 3.5).

The key issue underlying changes in economic welfare in the model is what happens, in the long run, to foreign and domestic ownership of the domestic capital stock. Consistent with the initial database in the MMRF model, the Commission's modelling assumes that in the long run, the capital stock will be 80 per cent domestically owned and 20 per cent foreign owned. This is also broadly consistent with the nature of actual investment flows in the Australian economy. In the long run, ownership of the domestic capital stock will tend to follow the trend in the foreign and domestic composition of investment flows.

The consultants' paper instead adopts the position that the increase in capital stock induced by the policy change will be 100 per cent foreign owned. This is analogous to assuming that, in the long run, Australia's entire capital stock would be foreign owned, which is implausible.

Capital–labour substitution and other issues

On the matter of capital–labour substitution, it is argued that the substitution elasticity of 0.5 used by the Commission exaggerates the expansion in the economy's capital stock from a cut in automotive assistance. While it is true that a smaller elasticity would reduce the projected economic expansion somewhat, the Commission applied the standard, economy-wide value for the capital–labour substitution elasticity adopted by the developers of the MMRF model at the Centre of Policy Studies and widely used in their own modelling.

Moreover, the paper cited by Dixon to support a capital–labour elasticity of substitution of 0.15, in fact appears to indicate an elasticity closer to 1, around double the standard value in MMRF used by the Commission (see box 1).

Other matters raised in this most recent paper, including the appropriate export demand elasticity, 'cold shower' effects and the excess burden of taxation, have already been addressed in the Commission's modelling report and an earlier technical supplement (PC 2008b).

In sum, the Commission considers that its modelling results remain robust. Indeed, it could be argued that the welfare implications of reductions in automotive assistance are more likely to be understated, because modelling does not fully account for the redistributional impacts of transferring more than $1 billion per year under current assistance arrangements from Australian taxpayers and car buyers to this predominantly foreign-owned industry.

Box 1 **Inferred elasticity of substitution between labour and capital**

Based on a CES production function, the relationship between the elasticity of substitution (between labour and capital) and the own-price elasticity of demand for labour is given by:

$$\sigma = -\frac{\varepsilon}{S_k}$$

where σ is the elasticity of substitution, ε is the own-price elasticity of demand for labour, and S_k is capital income as a proportion of the total income from labour and capital.

In the publication cited by Dixon 2008 (Debelle and Vickery 1998), the long run own-price elasticity of demand for labour is about -0.4 and capital's share of income is about 0.42. Using the above formula, the elasticity of substitution implied in that paper would be about 0.95, which is significantly larger (not smaller) than the value adopted by the developers of the MMRF model at the Centre of Policy Studies, Monash University, and used by the Commission in its recent modelling studies.

References

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