



Australian Government
Productivity Commission

Modelling Economy-wide Effects of Future Automotive Assistance

Technical Supplement

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Introduction

This note provides further clarification and discussion of elements of the Commission's modelling that have in effect been challenged in recent papers by consultants Lateral Economics (LE 2008), incorporating modelling conducted at the Centre of Policy Studies (CoPS).¹ Their work was funded by the Victorian Department of Innovation, Industry and Regional Development.

Key contentions of the LE papers are that:

- in contrast to the Commission's modelling results (which show economy-wide gains from further reductions in automotive tariffs), current automotive tariffs generate net benefits to the economy
- this is due to the size of the favourable terms of trade effect flowing from existing tariffs, which raises the costs and reduces the volume of Australia's exports, resulting in higher prices being paid for them by foreign buyers
- the terms of trade effect outweighs economy-wide efficiency gains from further automotive tariff reductions and, accordingly, automotive tariffs should not be reduced as currently scheduled
- accounting for the excess burden of taxation and diminishing productivity improvements flowing from further tariff reductions reinforces the case for retaining tariffs at current levels.

In the course of the Commission's study these matters were explored with a panel of experts² and are addressed in the report. In particular, the Commission conducted a number of sensitivity and decomposition simulations to highlight the role of various assumptions in the model. Although the Commission's study was released well in advance of the LE papers, the latter refer only to modelling in earlier Commission reports, including on general reductions in assistance (PC 2000).

This note reiterates the perspective and approach presented in the Commission's recent report in relation to the matters raised. It remains the Commission's assessment that none of the arguments for reversing or delaying scheduled tariff reductions for the automotive industry is supported by the evidence.

¹ The modelling paper is authored by Dixon and Rimmer (2008). When referring to both papers, they are cited here as the 'LE papers'.

² The panel comprised David Pearce of the Centre for International Economics, Chris Murphy, Director of Econtech and Professor Philip Adams, Director of CoPS. Their written reports are summarised in PC (2008) and are available in full on the Commission's website www.pc.gov.au

Does Australia have export market power?

The notion of an ‘optimal’ or ‘scientific’ tariff is not new. In essence, it involves a country exploiting any market power it has in world markets by restricting imports or exports (or both) to improve its terms of trade. (Any such improvement necessarily comes at the expense of trading partners.) The potential gain from an ‘optimal tariff’ comes despite the efficiency cost arising from protecting domestic production.

The ‘optimal tariff’ argument posited for maintaining automotive tariffs at current levels relies on a terms of trade loss that is large enough to offset the efficiency gains associated with cutting tariffs. The LE papers claim that this is indeed the case, with modelling based on a framework in which the net benefits from changing tariffs are represented as:

$\text{Net effects} = \text{Allocative efficiency gain} - \text{Terms of trade loss}$

The point at which the terms of trade loss outweighs the efficiency gain depends mainly on the value assigned to the export demand elasticity — that is, the degree to which Australian exporters are considered to be able to exercise market power. In their modelling for Lateral Economics, Dixon and Rimmer (2008) use -4 as the preferred value, arguing that Australia faces less elastic demand for its exports than the Commission has used in previous studies.

Various arguments are made in the LE papers to support this proposition, including that:

- some commodity exporters can capture market premiums because of geographical proximity (a ‘transport’ premium), seasonal advantages relative to northern hemisphere exporters, or trade restrictions imposed by importing nations
- Australian exports increasingly comprise differentiated or ‘branded’ goods and services
- a doubling of Australia’s exports of any commodity would be unlikely to result in only a small decline in prices received (which, it is suggested, is implied by elasticity values used in previous Commission modelling).

For reasons discussed in its recent report, the Commission has consistently argued that values of -5 or less in CGE models are likely to overstate the extent to which Australian exporters can influence prices for their products on world markets, particularly in the longer term, once foreign buyers and rival suppliers have been able to adjust.

While there are circumstances where controlling otherwise competitively-supplied exports into foreign markets might deliver net gains, these instances will generally be isolated, market-specific and may be temporary, therefore requiring carefully-targeted policies. For example, where a country imposes source-specific quotas (such as for Australian exports of beef to the United States), only exports to that country should be controlled (as, indeed, beef exports to the United States have been for many years). The reality is that Australia's market power is limited for most commodities because it is not a large world producer (even though it might have a larger share of international trade), and also because actions to raise prices significantly will elicit substitution responses by buyers and supply responses by competitors, particularly over time. (Measured demand elasticities are typically higher for longer time intervals. They also tend to increase as prices rise.)

Suggesting that a *doubling* of Australia's exports would not sit easily with the small price falls implied by larger elasticities is itself not a convincing argument that Australia currently has market power. If Australia's exports doubled (all else held constant), the average export elasticity would almost certainly be smaller. But Australia's exports are at the levels that they are, and the modelled increase in national exports resulting from assistance reductions is very small (less than 0.3 per cent in the reference case).

Automotive tariffs are not an optimal 'optimal tariff'

Even if Australian exporters did have potential to obtain price premiums, government intervention to control exports directly or indirectly is unlikely to be warranted. Where goods and services are differentiated at the provider level, there is no need for government intervention to assist individual firms to exploit any market power they might have — they will seek to do so themselves, to enhance their profitability. And controlling exports will not be required to extract premiums resulting from proximity or seasonal advantages unless Australian exports can fully meet demand at the premium price.

Moreover, as the Commission observed in its report, even if it could be demonstrated that control over some exports would yield net gains, retention of car tariffs above the manufacturing average would be a very blunt and indirect means of achieving them. It has nevertheless been suggested that retaining car tariffs as an (imperfect) optimal tariff would have advantages over imposing targeted export taxes or other direct mechanisms (such as export licensing), including that imposing export taxes would have the undesirable effect of raising world food prices. Yet keeping car tariffs at their current levels must be having precisely this effect if, as is being argued, the existing car tariff is increasing Australia's terms of trade (and thereby reducing incomes of trading partners) by constraining our exports of food and other commodities.

It is also suggested that leaving car tariffs at current levels would avoid incurring unnecessary adjustment costs. Again, as discussed in the Commission's report, in current economic conditions, adjustment costs for displaced workers are likely to be lower than in the past. Further, investors might be expected to have factored the phased assistance reductions into their decision-making by now, given that they were announced in December 2002 and legislated the following year.

Elasticities used in the Commission's modelling are widely adopted

At any rate, Lateral Economics argues that Australia's average elasticity of export demand probably lies between -8 and -12 , which is consistent with the value of -10 used by the Commission in its recent study. Similar values were also used recently by Murphy (2002) and are implied by recent applications of the GTAP model by the CIE (2002). These higher export demand elasticities produce smaller terms of trade losses than those that imply more market power.

The Commission also conducted sensitivity testing of its results using an export demand elasticity of -5 (scenario S2). The results show that when the elasticity is halved, the terms of trade loss doubles, but the measure of welfare, real adjusted GNE, is reduced only slightly. This is because, with a standard long-run model closure featuring capital accumulation, the choice of export demand elasticity plays a much diminished role in determining the overall outcome. This key reason for differences between modelling results from the Commission and from modelling for Lateral Economics is discussed below.

Model closure

In their work for Lateral Economics, Dixon and Rimmer (2008) set up an experiment with a closure appropriate for the particular technical issues being explored; namely, to examine the links between export demand elasticities and terms of trade losses, and those between import substitution elasticities and efficiency gains. By fixing the capital stock and trade balance, essentially they model a partially 'closed' economy, designed to isolate the price responses associated with changing tariff rates that feed into changes in the terms of trade.

As part of its sensitivity analysis (scenario S5), the Commission also simulated tariff reductions under a similar closure, where the capital stock is fixed, and generated similar results.³

³ The Commission extended its sensitivity analysis to a third closure (scenario S4), intermediate between scenario R1 and S5, which restrains the rate of growth in capital accumulation, by introducing an increasing cost of capital.

The Commission ran this sensitivity simulation to illustrate the ‘short run’ or ‘decomposition’ effects of changes in automotive assistance. This closure is not, however, a realistic representation of how the Australian economy would operate in the long run. For long-run analyses, it is not appropriate to assume zero growth in the capital stock of the economy, particularly where shocks involve changes in the price of an investment good like cars. For this reason, the standard representation used by CGE modellers to model the long-term effects of trade liberalisation is one where the capital stock is allowed to adjust (box 1).

Box 1 Capital accumulation in a CGE long-run closure

In modelling trade liberalisation in a long-run CGE framework, it is common to assume that capital adjusts to changes in after-tax rates of return. In the long run, rates of return are equalised across industries, and capital is reallocated to its best use, both domestically and internationally, once the economy has fully adapted to the modelled changes.

This is the usual setting used in long-run comparative static models such as the ORANI model (Dixon et al. 1997) and the MMRF model (Adams, Horridge and Wittwer 2002), as well as in models developed and used by Econtech such as MM600+ (Murphy 2002). Similarly, in the more recent recursive dynamic models (including MONASH, USAGE, MM2 and GTEM), capital is allowed to adjust in the long run, usually with a lag. See, for example, Dixon and Rimmer (2002), Dixon et al. (2005) and Powell and Murphy (1997).

These models have been used to simulate the effects of policy changes, including most notably, tariff reductions, and show that after several years of adjustment, the capital stock is bigger than under ‘control’. For example:

- Dixon, Parmenter and Rimmer (1997) and Dixon, Rimmer and Mai (2003) used the MONASH model to simulate reductions to assistance to the textile, clothing and footwear (TCF) sector. They used the MONASH standard long-run setting in which capital accumulation is endogenous.
- Econtech (2002) used the MM600+ model to simulate reductions to assistance to the automotive industry and used the standard long-run closure for that model, which specifies that capital can adjust over time but must be financed from overseas. Econtech also used the same model and closure to simulate changes to assistance to the TCF sector in 2003.

For other applications of CGE models in which capital is allowed to respond to policy changes in the long run, see Dixon and Rimmer (1999); Dixon, Rimmer and Johnson (2008); Access Economics (2002); and ABARE (2006 and 2007).

Therefore, for the principal scenarios, the Commission set up the MMRF model with an endogenous trade balance and capital stock, reflecting Australia's openness to the rest of the world, and the ease with which capital moves within the economy and internationally in response to changes in rates of return.⁴ In the Commission's framework, the net effect of a tariff reduction is given by:

$\text{Net effects} = \text{Allocative efficiency gain} + \text{Resource expansion gain} - \text{Terms of trade loss}$
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With this representation of the Australian economy, the economy-wide benefits of resource (capital) expansion outweigh the terms of trade losses. This leads to the Commission's finding that there are net benefits from reducing automotive assistance, and these are driven primarily by an expansion of capital — the 'investment surge' referred to in an article in the *Australian Financial Review* (Gruen 2008). This capital expansion arises from the *direct* effect that cutting automotive tariffs has in lowering the cost of investment, since cars are an investment good. The mechanism is not indirect, as the *AFR* article suggests.

Replacing tariff revenues

The LE papers correctly observe that there are efficiency costs incurred in replacing tariff revenue by raising another tax. These additional efficiency costs are not fully captured in the standard version of the MONASH and MMRF models developed at CoPS. It is argued that the deadweight losses from taxes required to replace lost tariff revenues are large, possibly in excess of 30 cents for every dollar of tax collected. These losses are modelled by Dixon and Rimmer (2008) as a reduction in economy-wide total factor productivity, equivalent to 5 per cent of the change in tariff revenue.

The Commission likewise noted in its report that the MMRF model probably underestimates the distorting impacts of the tax system and, therefore, the deadweight losses associated with taxation as it operates in practice. As a result, the modelling would also underestimate the *benefits* of reducing or removing the substantial ACIS subsidies.

Since the current policy plan of reducing automotive tariffs to 5 per cent and discontinuing ACIS would result in a decline in automotive tariff revenue of around \$350 million, combined with a saving of around \$500 million in subsidies, there

⁴ In all simulations, the labour supply was assumed not to be affected by changes in the relative cost of cars, a standard assumption in long-run CGE models; see for example, Dixon et al. (1997).

would be a net revenue *gain* from implementing it. Accounting for deadweight losses of taxation would therefore *increase* modelled gains from implementing scheduled assistance reductions.

‘Cold shower’ effect

In its recent report, as in its 2002 inquiry report, the Commission did not specifically model the ‘cold shower’ effect referred to in the LE papers — that is, the impetus for productivity improvements that tariff reductions might encourage.

The Commission did, however, simulate a one per cent productivity gain to illustrate the net economy-wide benefits, in addition to those captured in the reference cases. The results from the productivity simulation can be scaled according to what the effect on productivity induced by automotive policy reform is taken to be. While the Commission did not quantify this, the report acknowledged that productivity gains associated with reducing tariffs are likely to be less pronounced now than in the past — the ‘quadratic’ cold shower effect referred to in the LE papers — but are still likely to be positive.

These productivity gains might be achieved through further economies of scale, cost reductions associated with lower program compliance and administration costs, or more cooperative workplace relations. In particular, the Commission noted that a decision to reverse the current legislated policy of reducing automotive assistance could result in greater resistance by industry or workers to workplace change, increased lobbying activities to gain or retain protection, and a slower uptake of future opportunities for productivity gains.

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