



**FINAL REPORT**

# Australian trade liberalisation

Analysis of the economic impacts

*Prepared for  
Australian Department of Foreign Affairs and Trade  
October 2017*

**THE CENTRE FOR INTERNATIONAL ECONOMICS**  
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#### **CANBERRA**

Centre for International Economics  
Ground Floor, 11 Lancaster Place  
Majura Park

Canberra ACT 2609  
GPO Box 2203  
Canberra ACT Australia 2601

Telephone +61 2 6245 7800  
Facsimile +61 2 6245 7888  
Email [cie@TheCIE.com.au](mailto:cie@TheCIE.com.au)  
Website [www.TheCIE.com.au](http://www.TheCIE.com.au)

#### **SYDNEY**

Centre for International Economics  
Suite 1, Level 16, 1 York Street  
Sydney NSW 2000

Telephone +61 2 9250 0800  
Email [ciesyd@TheCIE.com.au](mailto:ciesyd@TheCIE.com.au)  
Website [www.TheCIE.com.au](http://www.TheCIE.com.au)

#### **BRISBANE**

Centre for International Economics  
Suite 1, 888 Brunswick Street  
New Farm QLD 4005

Phone +61 419 040 735  
Email [cie@TheCIE.com.au](mailto:cie@TheCIE.com.au)  
Website [www.TheCIE.com.au](http://www.TheCIE.com.au)

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## *Executive summary*

Australia has a long history of undertaking economic reforms aimed at realising a more flexible and resilient economy. The floating of the dollar, the deregulation of financial markets, the broadening of the tax base and corporatisation of government businesses, to name just a few reforms, have produced an economy that is better placed to take advantage of emerging opportunities and to weather global economic storms.

An integral part of the reform agenda has been the sustained liberalisation of trade barriers and reduced industry protection. Throughout the 1970s, 80s, 90s and over the last decade, Australia has embarked upon unilateral, bilateral and multilateral trade liberalisation.

This report updates a 2009 study that quantified the economic impacts of Australian merchandise trade liberalisation over the 20 year period between 1988 and 2008.<sup>1</sup> This report, as did the previous, uses economic modelling to simulate the economic impact of Australian merchandise trade liberalisation. This time, however, a 30 year trade liberalisation window (1986–2016) has been considered.

Importantly, the economic modelling has only taken Australian merchandise trade liberalisation into account – the modelling excludes Australian services and investment liberalisation, and any trade liberalisation undertaken by Australia's trading partners. As such, the economic modelling results can be seen as representing the minimum of what has resulted from Australia's overall process of trade and investment liberalisation over the past 30 years.

### **Trade is an important element of the Australian economy and accounts for 1 in 5 jobs**

*Trade liberalisation undertaken by Australia over the period 1986 to 2016 has seen Australia become more integrated into the global economy and more trade orientated, with trade growing faster than nominal GDP over the period. In 2016, merchandise trade was equivalent to nearly 31 per cent of nominal GDP, up from 26 per cent in 1986. Overall goods and service trade was even larger, at just under 40 per cent of nominal GDP in 2016.*

*Trade is also important to the Australian labour market. Using the latest input-output tables from the national accounts, it is estimated that around one in five Australian workers, or 2.2 million people, are employed in a trade-related activity. This includes workers in heavily export-focused industries like agriculture, minerals and energy, but also, importantly,*

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<sup>1</sup> See CIE (2009), *Benefits of trade and trade liberalisation*, report prepared for the Department of Foreign Affairs and Trade, May 2009.

*incorporates the many tens of thousands of employees who each day work to bring imported goods into Australia and to distribute them to consumers and businesses who need them.*

### **Trade liberalisation has increased overall GDP and average Australian household incomes**

*The economic modelling undertaken for this report suggests that the merchandise trade liberalisation over the 1986 to 2016 period has benefitted the Australian economy, with real GDP being 5.4 per cent higher in 2016 than it would otherwise have been (with no trade liberalisation).*

*For the average Australian family, this period of trade liberalisation is estimated to have seen real income being A\$8448 higher in 2016 than otherwise.*

### **Increased tariffs would be detrimental to the Australian economy and labour market outcomes**

*Over the last few years, there have been increasing calls to rollback decades of trade liberalisation and renegotiate, or even tear-up, previously agreed to trade agreements. These calls have been made on the basis of an argument that trade liberalisation has been undertaken at the expense of local jobs and a loss of sovereignty, to the net detriment of the liberalising country. In response, a number of modelling simulations were conducted for this report to investigate the economic impact should tariffs be increased globally.*

*The economic modelling suggests that if tariffs on manufacturing imports were raised such that there was a 10 per cent price increase in such products across the world, real GDP in Australia would be 1.8 per cent lower; while global real GDP would be 3.5 per cent lower. If tariffs on all merchandise imports were increased to raise all import prices by 10 per cent, real GDP in Australia would be 2.2 per cent lower, and global real GDP 4.1 per cent lower. The short-term impacts of tariff increases would see job losses in Australia, while over the longer-term, real wages for Australian workers would be lower, in turn cutting household consumption and Australian living standards overall.*

*In contrast to the impact of raising tariffs, further liberalising global merchandise trade would act to grow economic activity. The modelling suggests that lowering tariffs such that import prices fall by 10 per cent across the world would see real GDP in Australia being 0.6 per cent higher, and 1.1 per cent higher globally. Short-term employment would grow, and in the longer-term, Australian real wages and living standards would increase.*

# *1 Australian trade liberalisation*

Australia has a long history of undertaking economic reforms aimed at realising a more flexible and resilient economy. The floating of the dollar, the deregulation of financial markets, the decentralisation of the industrial relations system, the introduction of competition policy, broadening the tax base, and corporatisation of government businesses have produced an economy that is better placed to take advantage of emerging opportunities and to weather global economic storms. The economic reforms have also benefited Australian households, with higher wages, higher levels of wealth, and improved living standards.

An integral part of the reform agenda has been the sustained liberalisation of trade barriers and reduced industry protection. In 1948 Australia became a founding member of the General Agreement on Tariffs and Trade (GATT), the multilateral organisation overseeing the global trading system prior to the establishment of the World Trade Organization (WTO) in 1995. And throughout the 1970s, 80s, 90s and over the last decade, Australia has embarked upon unilateral, bilateral and multilateral trade liberalisation.

Economic modelling has been used to quantify the contribution of Australian merchandise trade liberalisation over 1986–2016, and the resulting integration into the global economy, to Australian economic activity in 2016.

The report is structured as follows. A brief history of Australia's trade liberalisation and our growing global integration is provided below. Estimates of the number of people who are directly employed in trade-related activities are presented in Chapter 2. The modelling of the merchandise trade liberalisation undertaken by Australia between 1986 and 2016 and the resulting economic impact is presented in Chapter 3. In Chapter 4, consideration is given to what recent calls for increasing protection mean for workers and the economy in Australia and elsewhere.

There are two appendixes. Appendix A provides details on the Australian tariff schedule; while Appendix B discusses the economic analysis methodologies employed

## *Australian merchandise trade liberalisation*

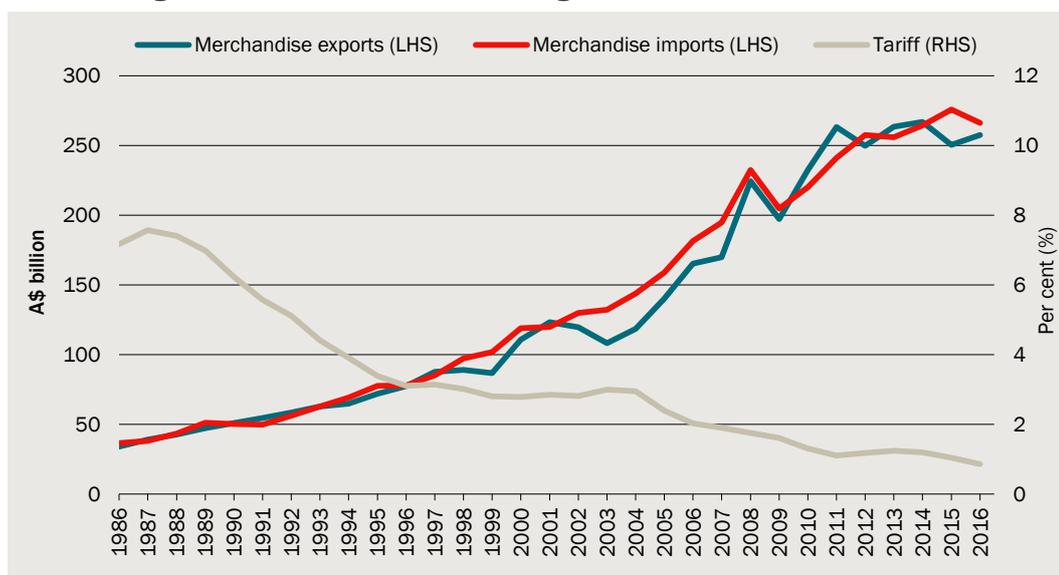
Movement towards economic deregulation and trade liberalisation in Australia began in the mid-1970s. It accompanied large changes in the world economy following on the breakdown of the Bretton Woods system of fixed exchange rates and the turmoil associated with the first oil price shock. These events, which were outside of Australia's control, led to an increased consciousness that Australia faced an uncertain external environment. Australia needed to be competitive and responsive to maintain its place in the world. This continues to be the case today.

In this report we look at the impacts of Australian tariff liberalisation for merchandise trade over the 30 year period from 1986 to 2016. This time period is chosen for a number of reasons. Despite tariff reductions in 1973, trade protection peaked in the mid-1980s with industry assistance measures introduced for the textiles, clothing and footwear (TCF) and passenger motor vehicles (PMV) sectors. The period from 1986, therefore, presents a 30 year window of near consistent reduction in trade protection. Using the 1986–2016 period also excludes the significant short-term swings in the Australian dollar that occurred in the years immediately after its float in 1983. The implications of tariff reductions under a fixed exchange rate are quite different from those under a floating exchange rate. Finally, gaining access to the relevant data in earlier years is challenging and acts as barrier to detailed analysis.

Over the past 30 years the average (import-weighted) tariff rate applied in Australia has fallen from over 7 per cent to less than 1 per cent. Individual tariffs have declined from a maximum of nearly 90 per cent down to a maximum of 5 per cent. Despite the maximum, most tariff lines are duty free. In 2016, 79 per cent of all imports (by value) to Australia attracted no tariff. Almost half of all product categories were tariff free for all countries and least developed countries enjoy tariff free access on all goods.

The period of declining tariffs has coincided with increased trade — both merchandise imports and exports — and increasing integration of the Australian economy with the rest of the world. Chart 1.1 shows the volume of merchandise imports and exports over time alongside the Australia’s (import-weighted) average tariff rate. Aside from some volatility around the time of the 2008 Global Financial Crisis, trade has increased consistently for 30 years.<sup>2</sup>

### 1.1 Falling Australian tariffs and increasing Australian trade

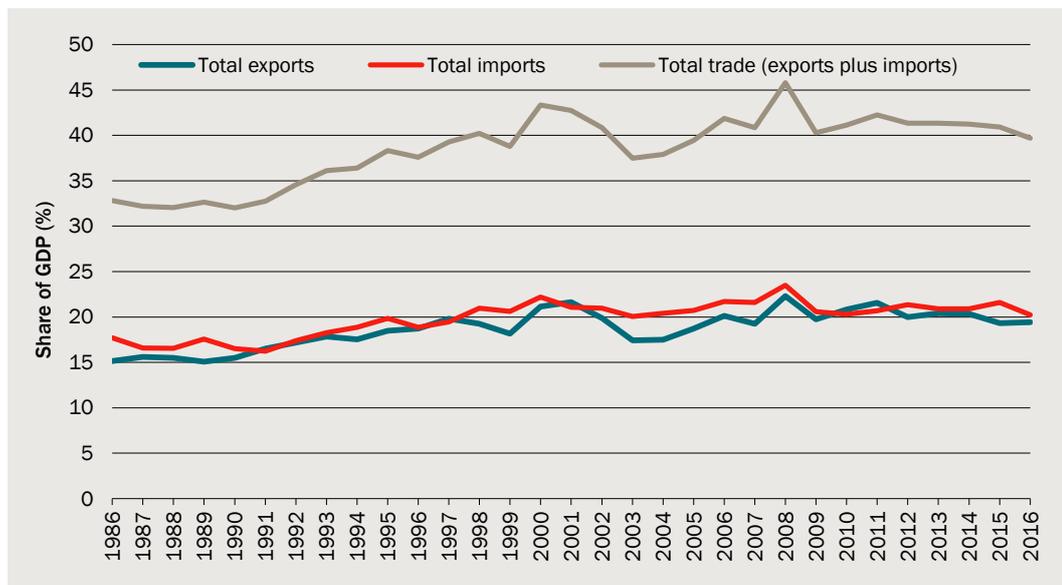


Data source: ABS Cat. No. 5368.0 (Table 2) and CIE calculations based on ABS Cat. No. 5368 (Table 2), and Budget Paper No. 1 in various Budgets ([www.budget.gov.au/past\\_budgets.htm](http://www.budget.gov.au/past_budgets.htm)).

<sup>2</sup> The greater volatility in exports compared with imports is associated with the impact of seasonal conditions on Australian agricultural exports, and volatility in mineral export markets.

Increased trade volumes are both a driver and consequence of economic growth. Chart 1.2 shows how total — merchandise and service — trade is becoming an increasingly important part of the Australian economy. As a share of GDP, both imports and exports have increased since 1986. Total exports have increased from being equivalent to 15.1 per cent of GDP in 1986 to a peak of 22.3 per cent in 2008. Total imports have increased from 17.7 per cent of GDP in 1986 to a high of 23.5 per cent in 2008, and currently sits at 20.2 per cent of GDP. Total trade was equivalent to 39.7 per cent of GDP in 2016.

## 1.2 Australia's increasing trade integration with the world

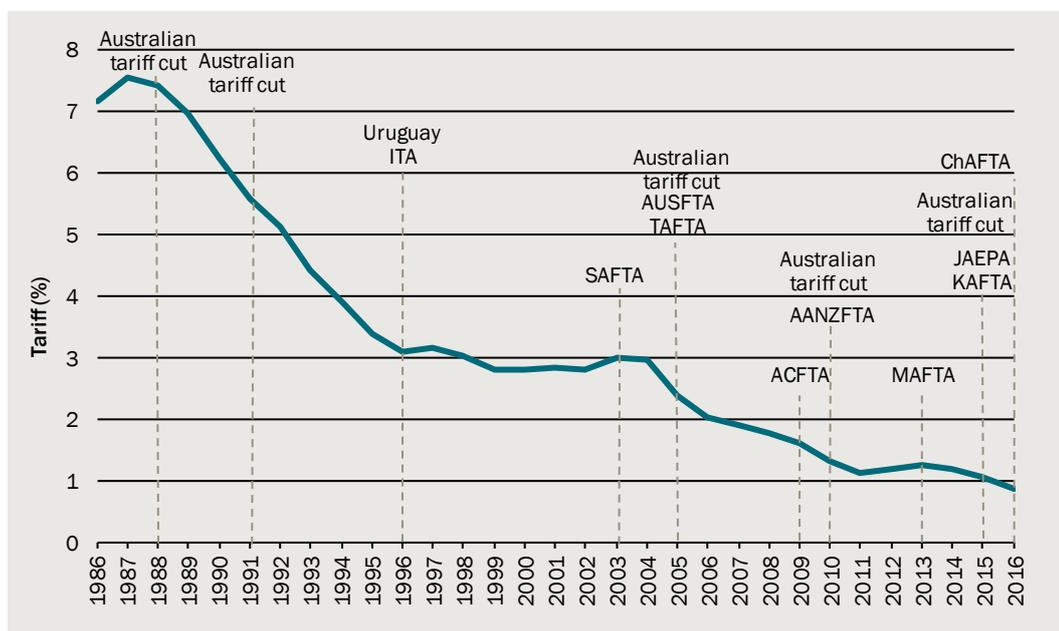


Data source: ABS Cat. Nos. 5206.0 (Table 3) and 5368.0 (Table 2), and CIE calculations.

### *Liberalisation history*

Australia has pursued trade liberalisation through three different avenues — unilateral liberalisation, regional or bilateral liberalisation, and multilateral liberalisation under the auspices of the GATT and then the WTO. As can be seen from chart 1.3, the various trade liberalisation avenues pursued by Australia has lowered the average (import-weighted) tariff rate from around 7 per cent in 1986 to under 1 per cent in 2016.

### 1.3 Estimated Australian import-weighted tariff rate



Note: ITA = Information technology agreement, SAFTA = Singapore-Australia FTA, AUSFTA = Australia-US FTA, TAFTA = Thailand-Australia FTA, ACFTA = Australia-Chile FTA, AANZFTA = ASEAN-Australia-New Zealand FTA, MAFTA = Malaysia-Australia FTA, JAPEA = Japan-Australia Economic Partnership Agreement, KAFTA = Korea-Australia FTA, ChAFTA = China-Australia FTA.  
Data source: CIE calculations based on ABS Cat. No. 5368 (Table 2), and Budget Paper No. 1 in various Budgets ([www.budget.gov.au/past\\_budgets.htm](http://www.budget.gov.au/past_budgets.htm)).

Liberalisation efforts started with unilateral liberalisation cuts in the 1970s. At that time Australia was using a fixed exchange rate regime, with the tariff reductions acting as a macroeconomic management tool and used to limit currency appreciation. They also allowed increased imports into Australia — addressing shortages of goods and inflationary pressures. Overall, goods purchased in Australia became more affordable.

After significant economywide tariff cuts in 1973, a recession in 1975 put pressure on the government to support Australian manufacturers. The government increased tariffs on PMVs and introduced import quotas. The TCF industry was also protected by tariffs, bounties and import quotas. By the 1980s, however, there was general recognition that Australian manufacturing was not internationally competitive. As Australia's Industry Minister, John Button, said in 1983:

Australian manufacturing industry was still focused on the domestic market. Factories were closing. People were not prepared to think much about longer term solutions. There was no export culture.<sup>3</sup>

Further economywide unilateral tariff reductions followed in 1988 and 1992.<sup>4</sup> By this stage the Australian dollar had been floated which meant adjustments from any further tariff reductions would flow through the economy faster. It also meant that tariff reform became a microeconomic instrument.

<sup>3</sup> Button 1998, in Emmery, M. 1999, *Australian Manufacturing: A Brief History of Industry Policy and Trade Liberalisation*, Department of the Parliamentary Library Research Paper No. 7, Canberra.

<sup>4</sup> Economywide tariff cuts referred to here exclude the TCF and PMV industries. Tariff reductions in these industries followed a different schedule (see box A.1 in appendix A).

The 1992 tariff reductions were implemented during a recession and time of high unemployment. Prime Minister Hawke highlighted that past tariff protection in Australia had led to:

...inefficient industries that could not compete overseas; and higher prices for consumers and higher costs for our efficient primary producers. Worse still, tariffs are a regressive burden — the poorest Australians are hurt more than the richest.<sup>5</sup>

Prime Minister Hawke's point was that the tariffs that support domestic industries are paid for by the consumer through higher prices for both imported and domestic products (compared to if the goods were imported without tariffs, or produced efficiently domestically). The benefit of unilateral tariff liberalisation is removing this burden on consumers and allowing for efficient resource allocation within the economy. In addition to these sources of benefit, a reduction of trade restrictions can:

- improve dynamic productivity by providing greater incentive for firms to innovate and improve
- reduce unemployment effects through a more competitive labour market
- avoid administrative costs associated with managing tariff systems.

Through the late 1980s Australia also participated in the multilateral trade negotiations through the GATT. The outcomes, while binding, had no material impact on Australia because of the larger unilateral cuts in applied tariffs that Australia had already implemented.<sup>6</sup> The WTO succeeded the GATT in 1995, with multilateral negotiations continuing in the WTO's Doha Round from 2001. However, the Doha Round negotiations stalled in 2008 and the Round has not yet been concluded.

Since the mid-2000s Australia's trade liberalisation efforts have shifted towards bilateral or regional agreements, as well as continuing to implement unilateral tariff reductions in TCF and PMV. Australia is currently party to 10 agreements spanning a total of 16 trading partners, with some trading partners being party to numerous agreements. A further 10 multilateral, regional and bilateral agreements are under negotiation, or finalised but have not yet entered into force. Most provisions in earlier agreements with New Zealand (starting in 1933) and Canada (implemented in 1960) have been superseded by tariff reductions achieved by negotiation in the WTO and subsequent bilateral agreements.<sup>7</sup>

Australia's current tariff schedules reflect all of these various liberalisation efforts. Appendix A provides a discussion of the detail and complexity of the resultant tariff schedules, and the challenges in estimating the effective tariff rate applied to Australia's imports.

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<sup>5</sup> Commonwealth of Australia 1991, in Emmery, M. 1999, *Australian Manufacturing: A Brief History of Industry Policy and Trade Liberalisation*, Department of the Parliamentary Library Research Paper No. 7, Canberra.

<sup>6</sup> At the Tokyo and Uruguay rounds members agreed to reduce bound tariff rates. These reductions were less than the unilateral reductions in applied tariffs implemented by Australia around the same time. Therefore, Australia's applied tariff rates were not affected by the multilateral negotiations.

<sup>7</sup> See <http://dfat.gov.au/geo/canada/pages/canada-country-brief.aspx>, and <http://dfat.gov.au/trade/agreements/anzcerta/Pages/australia-new-zealand-closer-economic-relations-trade-agreement.aspx>.

## 2 *International trade and Australian employment*

**This chapter shows that trade is important to the Australian labour market. Drawing on input-output tables produced by the Australian Bureau of Statistics, it is estimated that around 1 in 5 Australian workers are employed in trade-related activities.**

Employment in Australia grew by 72 per cent between 1986 and 2016, increasing from just under 7 million employed persons to nearly 12 million in 2016. However, employment growth has not been consistent across all (aggregated) sectors of the Australian economy. Reflecting longer-term trends in Australia and elsewhere in the developed world, over the 1986–2016 period, employment in the agricultural and manufacturing sectors fell by 26 and 17 per cent (respectively). Meanwhile, employment in the mining and service sectors grew by 121 and 97 per cent (respectively).

The varying employment growth rates reflect the fact that employment is mobile within an economy, and as employment has contracted in one industry it has increased elsewhere.

Total employment depends on the overall level of economic activity and sectoral mix, and not just on the volume of imports or exports. Indeed, population growth, technological change, growing household wealth and shifting consumption patterns can also be expected to influence employment.

### *Trade-related employment*

International trade plays an important role in the Australian economy, and as will be seen below, many Australians are employed in trade-related activities. Trade-related jobs are not only associated with exports, but also imports, which require people to move goods from the port of entry to the end user.

To calculate the number of jobs that are related to international trade, ABS input-output tables produced for the national accounts are used. The tables allow us to trace the production of exports to their source and to account for import use. A description of the methodology underlying the analysis is provided in Appendix B.

Since 1989-99, it is estimated that the number of people in the Australian economy employed in trade-related activities has increased by 15 per cent, to reach around 2.2 million in 2013-14, representing 20 per cent of the total number of people employed (see table 2.1). The analysis therefore suggests that 1 in 5 jobs in the Australian economy are currently related to international trade.<sup>8, 9</sup>

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<sup>8</sup> One in every 5.1 workers.

<sup>9</sup> Similar work undertaken for Canada found that 17 per cent of employment was due to exports, higher than Australia's 14 per cent due to Canada's greater share of exports in GDP (32 per

## 2.1 Australian employment related to international trade

	1998-99		2013-14	
	Trade-related employ.	Share of total employ.	Trade-related employ.	Share of total employ.
	'000 people	Per cent	'000 people	Per cent
Agriculture	186.2	44	184.0	59
Mining	64.5	81	178.6	67
Manufacturing	408.3	38	377.8	41
Services	627.1	9	826.5	8
<b>Total exports</b>	<b>1 286.2</b>	<b>15</b>	<b>1 566.9</b>	<b>14</b>
Imports	655.1	8	671.2	6
<b>Total trade</b>	<b>1 941.3</b>	<b>22</b>	<b>2 238.1</b>	<b>20</b>

Source: CIE calculations based on ABS 1998-99 and 2013-14 I-O tables.

As table 2.1 shows, of all people employed in export-related activities in Australia in 2013-14, the greatest number were employed in service industries. This is primarily due to the significantly higher total employment accounted for by the service industries.<sup>10</sup> The individual industry with the greatest number of people involved in export activities was the Professional, Scientific and Technical Services industry with 188 900 people. This is greater than the total export-related employment in agriculture or mining.

In terms of trade-related share of employment, however, the mining sector has the greatest export-orientation, with 67 per cent of all jobs estimated to be related to export activities. This share has declined from 81 per cent in 1998-99 due to:

- a declining export-orientation share across all mining
- a more significant share of total mining employment (26 per cent) is associated with the (relatively less export-oriented) Mining Exploration and Services industry.

The relative decline in export-related mining and manufacturing employment has been partly offset by an increase in the share of export-related employment in the agriculture sector. Export shares in the agriculture sector are highly variable because of the sector's exposure to weather events. In a year of poor seasonal conditions and low output, the export share would be small.

In addition to export-related jobs, many Australians are employed in services related to imports. ABS input-output tables suggest that around 38 per cent of all goods in the Australian economy were imported in 2013-14. Using that share and applying it to the number of Australian workers employed in the distribution industries associated with the movement of goods in the economy (transport and storage, wholesale and retail trade), we estimate that around 671 200 employees are associated with getting merchandise imports to end users.<sup>11</sup> This is 6 per cent of total Australian employment.

cent compared to 19 per cent in Australia). See Cross, P. 2016, *The importance of International Trade to the Canadian Economy: An overview*, Fraser Research Bulletin, October. Available at: <https://www.fraserinstitute.org/studies/the-importance-of-international-trade-to-the-canadian-economy-an-overview>.

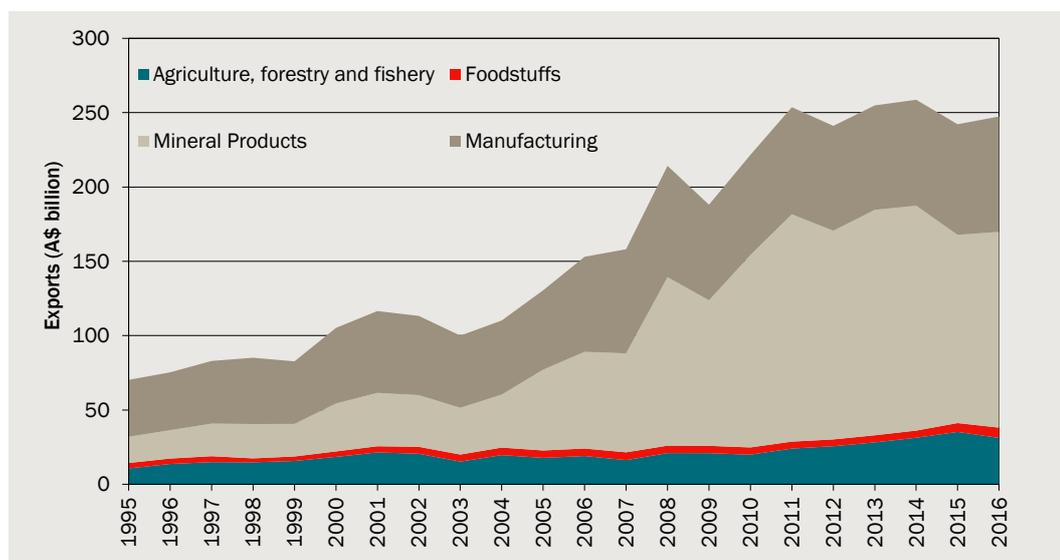
<sup>10</sup> The service industries accounted for 78 per cent of all employment in 2013–14.

<sup>11</sup> 671 200 is 38 per cent of the total employment in distributional services (1.7 million).

While trade has increased over time, the share of workers involved in trade-related activities has remained relatively constant at 20–22 per cent.<sup>12</sup> This reflects two factors. Firstly, an increase in exports will typically increase employment in export sectors. However, the composition of those exports is important. Chart 2.2 shows how Australia’s merchandise trade has increased since 1995, and also shows the dominance of the mining sector in the increased trade volumes. Mining, however, is less labour intensive than the rest of the economy. For example, labour expenses account for just 22 per cent of value added in mining compared to 52 per cent in services. The changing composition of exports will therefore affect the share of economywide employment accounted for by exports.

Secondly, trade will also have an income effect. Increased economic activity due to trade liberalisation will increase overall demand in the economy. Services are by far the largest sector in the Australian economy, so the higher level of economic activity will increase employment in the service sectors. The service sectors are not overly export focused, and are more labour intensive than many of Australia’s export sectors (such as mining). The expansion of labour intensive and less export-orientated sectors therefore sees the share of employment in export-related activities potentially being smaller, even though the absolute number of people employed in export-related activities has increased.

## 2.2 Change in Australian merchandise exports by broad product category



Note: Merchandise exports falling under HS Chapters 97 (Works of Art, Collectors’ Pieces and Antiques) and Chapters 98 and 99 (Special classification Provisions) have been excluded from the chart. Australia’s exports of products falling under HS Chapters 97, 98 and 99 amounted to A\$7.8 billion in 2016.

Data source: Global Trade Atlas.

<sup>12</sup> The ABS I-O tables for years 2004-05 and 2008-09 also suggest that 20 per cent of total employment was trade-related.

### 3 *Modelling the effects of Australian merchandise trade liberalisation*

**Economic modelling of Australian merchandise trade liberalisation over 1986 to 2016 has been undertaken in this chapter to understand the contribution of increased openness to the Australian economy in 2016. The modelling suggests that the merchandise trade liberalisation over the 1986 to 2016 period has benefitted the Australian economy, with real GDP being 5.4 per cent higher in 2016 than it would otherwise have been (with no trade liberalisation). For the average Australian family, the trade liberalisation is estimated to have seen real income being A\$8448 higher in 2016 than otherwise.**

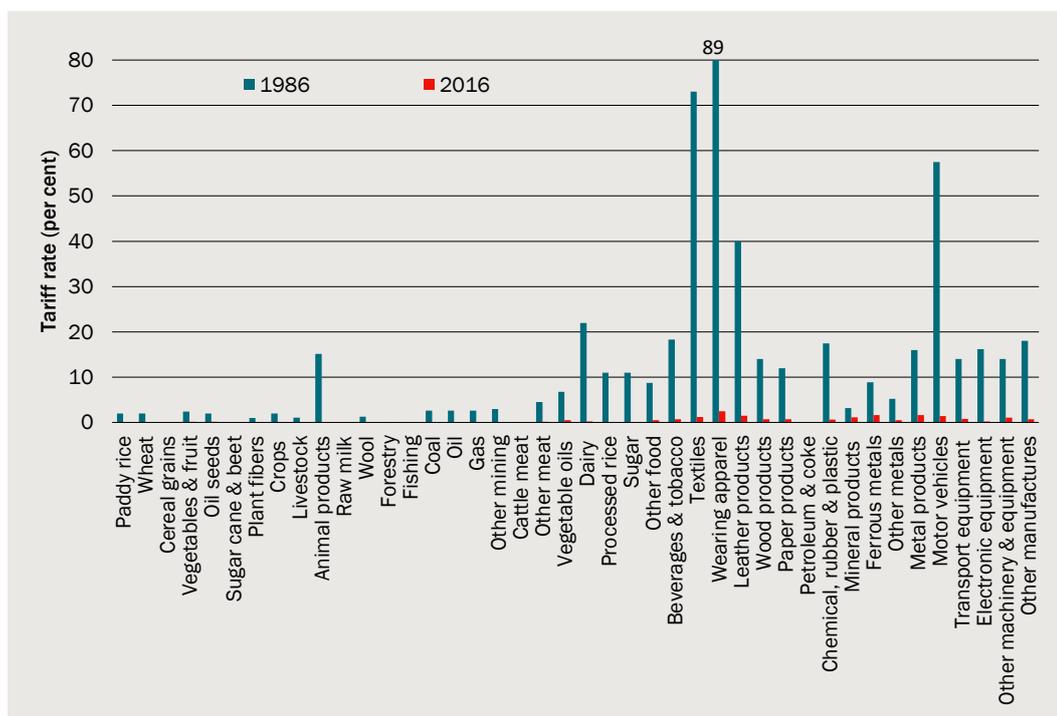
It is important to note that the economic modelling undertaken here only includes Australian tariff liberalisation. It does not model any Australian service trade and investment liberalisation, nor any trade liberalisation undertaken by Australia's trading partners. As such, the modelling results can be seen as representing the minimum of what has resulted from Australia's overall process of trade and investment liberalisation over the past 30 years.

As already noted, over the last three decades Australia has undertaken substantial trade liberalisation — in 2016 the average (import-weighted) tariff was under 1 per cent, versus over 7 per cent in 1986.

However, and as can be seen from chart 3.1, these average tariffs mask considerable variation at the product level. In 1986, tariffs ranged between 0.5 per cent (forestry products) and 89 per cent (apparel). By 2016 the breadth of tariffs was substantially smaller, ranging between 0 (various primary products) and a maximum of 2.4 per cent (apparel). While the most protected sectors in 1986 are still the more heavily protected sectors in 2016, the magnitude of that protection has been greatly reduced. For example, in the case of wearing apparel, tariffs have fallen from 89 per cent to 2.4 per cent, a reduction in protection of nearly 87 percentage points, while motor vehicle protection has fallen by 56 percentage points.

Removing such large price distortions should be associated with substantial efficiency gains in Australia.

### 3.1 Ad valorem equivalent tariff rates in 1986 and 2016



Note: Import-weights have been used to aggregate across countries facing differing tariff rates (for the same product) to arrive at average tariff rates for the various types of merchandise imports.

Data source: CIE analysis of Australian tariff schedules.

### *Quantifying the economic impacts of Australia's trade liberalisation*

Quantifying the economic impacts of Australia's merchandise trade liberalisation over the period 1986–2016 is a technically challenging exercise. Changes in the Australian economy between 1986 and 2016 reflect a multitude of factors — general productivity improvements, population growth, domestic and international policy reforms, global economic events such as the 2008 Global Financial Crisis, trade liberalisation and (any) trade-related productivity gains.

Given the wide range of factors influencing the Australian economy, the economic modelling is not a matter of simply re-imposing the post 1986 tariff reductions. If this were done, then too much change will be attributed to the trade liberalisation. Rather, account needs to be taken of the factors that have given rise to the Australian economy today. To do this, a series of economic databases were used that reflect the evolving Australian and global economic structures. Further details of the methodology used for the economic modelling is provided in Appendix B.

The modelling approach has only taken Australian merchandise trade liberalisation (that is, tariff reductions) into account. Due to difficulty in measuring barriers to services trade and foreign investment, the impacts of any services trade or investment liberalisation undertaken by Australia has not been modelled in this exercise. Also excluded from the analysis is trade liberalisation undertaken by Australia's trading partners. As a consequence of these omissions, the results of the modelling exercise will likely

understate the economic impacts of Australian trade and investment liberalisation over the last 30 years.

### *Economic modelling results*

Estimates of the economywide impacts of Australia's trade liberalisation over the 1986 to 2016 period on key economic indicators are shown in table 3.2. As can be seen, the trade liberalisation is estimated to have seen all key economic indicators being higher than otherwise (had there been no trade liberalisation).

#### **3.2 Estimated impacts of merchandise trade liberalisation over 1986–2016**

Indicator	Unit	Modelling result
Real gross domestic product	Per cent	+ 5.4
Real national income	Per cent	+ 5.1
Real consumption	Per cent	+ 2.1
Real exports	Per cent	+ 28.5
Real imports	Per cent	+ 28.6
Real investment	Per cent	+ 11.7
Real wages	Per cent	+ 7.4
Nominal wages	Per cent	+ 3.8
Prices	Per cent	- 3.4
Real gross domestic product	\$ billion	+ 85.5
Real national income	\$ billion	+ 65.1
Real GDP per capita <sup>a</sup>	\$	+ 3 506
Real national income per capita <sup>a</sup>	\$	+ 2 671

<sup>a</sup> The Australian population as at December 2016 is estimated to be 24 385 635 (ABS 3101.0, Table 4).

Source: CIE analysis using the GTAP model and ABS publications 3236 and 5206 (Table 1).

The tariff liberalisation is akin to removing a tax from imports. Competition between importers sees the tax removal, and resultant cost savings, being passed on, giving rise to cheaper imports. The modelling results demonstrate the relationship between tariff liberalisation (and resulting cheaper imports) and greater exports. As can be seen, trade liberalisation is estimated to have seen an increase in exports of roughly the same magnitude as the increase in imports. This reflects imports being used as production inputs in goods that are then exported, with cheaper imports improving the competitive position of Australian exports. Lowering tariffs therefore sees an increase in exports.

By removing protection for some domestic industries, the tariff liberalisation sees productive resources — land, labour and capital — moving to activities where they are most highly valued and productive, and where consumer preferences are met.

The improved efficiency within the Australian economy sees capital earning a greater return, leading to greater investment and productive capacity. Higher exports and investment is associated with higher demand for labour, with the tariff liberalisation seeing real wages being 7.4 per cent higher. Higher wages, combined with cheaper imports and lower Australian production costs, sees household consumption being

higher. Rising exports, investment and household consumption see Australian real GDP being 5.4 per cent, or some A\$85 billion, higher as a result of tariff liberalisation over the 1986 to 2016 period.<sup>13</sup>

Part of the increase in real GDP is due to an increase in the capital stock (real investment is 11.7 per cent higher), part of which is funded by inflows from overseas. As the capital inflows need to be serviced, the increase in real national income is less than real GDP at 5.1 per cent.

In terms of the average Australian family, Australia's trade liberalisation over 1986–2016 is estimated to have seen real GDP in 2016 being some A\$11 088 higher than otherwise. Once adjustments are made for payments to foreign capital inflows, real income for the average family household (represented by real national income) is estimated to be A\$8448 higher.<sup>14,15</sup>

### *Economic impacts at the sectoral level*

The tariff liberalisation undertaken by Australia between 1986 and 2016 saw substantial tariff reductions for some merchandise imports. As such, imports of those products could be expected to likewise substantially increase. Chart 3.3 shows how much higher (or lower) imports are in 2016 than would have otherwise been the case (if the trade liberalisation over 1986–2016 had not occurred). The change in exports is also reported.<sup>16</sup>

The change in imports is driven by two factors. Firstly, imports are cheaper following the trade liberalisation, and depending on the extent to which imports are substitutes for local production, demand for the now cheaper imports will increase. Secondly, and as was reported above, the trade liberalisation is associated with an expansion of economic activity, with the now larger Australian economy sucking in additional imports. However, for some imports, the 'larger economy more imports' rule needs to be tempered by what happens at the sectoral level (as discussed below).

<sup>13</sup> In CIE (2009), Australian trade liberalisation over the 1988 to 2008 period was estimated under the GTAP model to have increased Australian (real) GDP by 3.1 per cent, versus 5.4 per cent as reported here. The additional 2.3 percentage point increase in GDP reflects two factors. Firstly, a 30 year liberalisation window (1986–2016) was considered in this study versus a 20 year period (1988–2008) in the earlier study, with the additional liberalisation carried out over 1987–1988 and 2009–2016 accounting for 1.1 of the 2.3 percentage point gain. Secondly, a different methodology was employed that saw usage of databases that better reflected the structure of the Australian economy in the earlier time periods. The methodological change accounted for 1.2 percentage points of the 2.3 percentage point GDP gain.

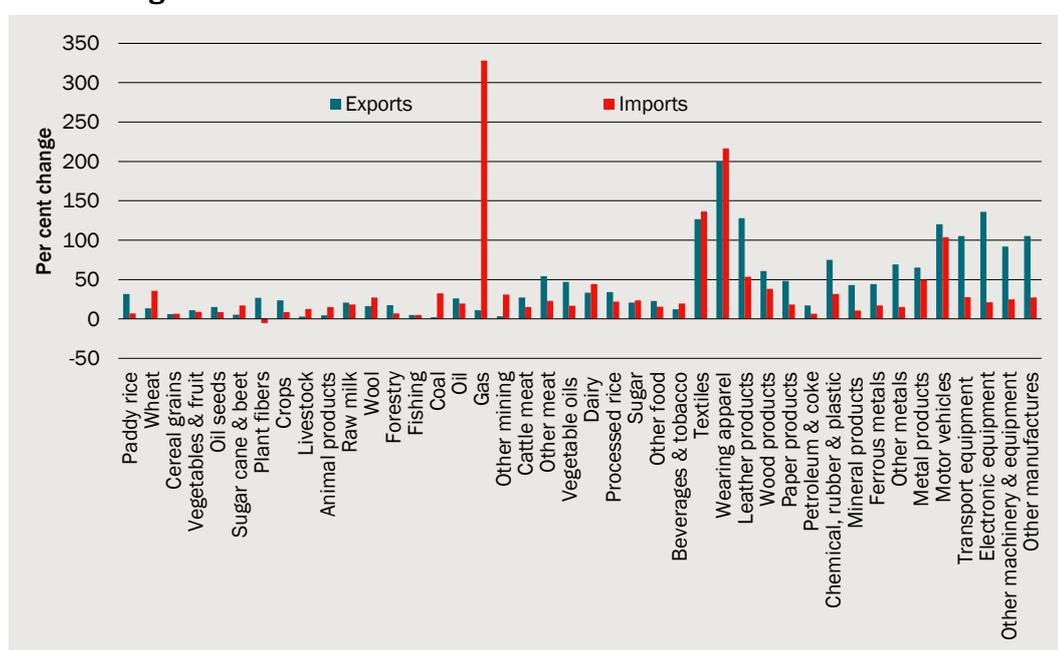
<sup>14</sup> The number of family households (taken from ABS 32360DO001, Table 1.1, Series III) and number of people in family households (taken from ABS 32360DO003, Table 1.1, Series III) are combined to arrive at an average of 3.16 people per average Australian family household.

<sup>15</sup> Note that the estimated increase in household income is pre-tax, with increases in disposable income also depending on government taxational and welfare policies.

<sup>16</sup> Note that the modelling results presented in this chapter can also be used to calculate how much lower (or higher) observed imports, exports etc in 2016 would have been had there been no trade liberalisation over 1986–2016 (given by  $1/(1+\text{per cent change}) - 1$ ).

The increase in imports is broadly proportional to the degree trade is liberalised. Imports of agricultural and mining products typically show the smallest change, as these products typically face relatively small tariff reductions in the order of 2–3 percentage points. While agricultural and primary products typically experience the lowest tariff reductions, such imports are often commodity type products, with small price changes leading to large substitution effects from domestic production to imports. Imports of foods and most manufactures face tariff reductions in the order of 10–20 percentage points, with imports increasing by up to 50 per cent. Imports of textiles, wearing apparel and motor vehicles are all more than 100 per cent higher than otherwise, reflecting the large tariff reductions for these imports.

### 3.3 Change in trade in 2016 due to Australian trade liberalisation over 1986–2016



Data source: CIE analysis using the GTAP model.

While imports typically increase in line with the size of the tariff reduction, there are some standout results — imports of plant based fibres fall (the trade liberalisation sees imports being 5 per cent lower than otherwise in 2016), while gas imports are over 300 per cent higher in 2016. These modelling results can be explained by the fact that imports are often used by Australian firms, rather than being destined for end consumers. For example, consider imports of plant based fibres. Imports of plant based fibres are used by many Australian sectors, however, the Australian textiles sector is the largest user. Textile imports experience a large 72 percentage point reduction in protection, leading to a large (136 per cent) increase in textile imports and a fall in output of the Australian textile sector. The smaller Australian textile sector demands less production inputs, including imported plant based fibres.

A similar story exists for gas imports. The vast majority of gas imports are used by the petroleum sector, whose output is higher as a result of the trade liberalisation and resulting economic growth. As the petroleum sector grows, it demands more gas, some of which is imported. Gas is a commodity type product, with users being very price

sensitive, with imported gas being highly substitutable for domestically sourced gas. This high degree of substitutability means that the petroleum sector's increased demand for gas inputs is mainly met through an increase in (now cheaper) imports. Finally, gas imports are not overly large (about 1.5 per cent of domestic production), so the greater than 300 per cent increase in gas imports result also reflects a low base issue.<sup>17</sup>

While the tariff liberalisation sees an increase in imports, it is also associated with an increase in exports. The increase in exports reflects the fact that imports are often used in the production of goods that are later exported, hence production costs fall due to tariff reductions on imported components. This improves the competitive position of Australian products in foreign markets, leading to an increase in exports.

Take exports of wearing apparel as an example, which are estimated to be some 200 per cent higher in 2016 due to Australia's trade liberalisation. Around 75 per cent of textile imports are destined for industrial use in Australia, with the main users being the textile industry itself (around 20 per cent of textile imports) and the wearing apparel sector (around 25 per cent). With 72 percentage points of tariff being removed, textile imports are substantially cheaper following Australian trade liberalisation. The imported textiles used by the wearing apparel sector account for a sizeable share of production costs, and with these imports now being substantially cheaper, production costs fall for the wearing apparel sector. The falling domestic production costs see a large increase in exports.

While Australia's merchandise trade liberalisation over 1986 to 2016 is estimated to have been beneficial for the Australian economy, with real GDP being 5.4 per cent higher than otherwise, the increase in imports is associated with a fall in output for some Australian sectors. Most notably, the (formerly) more heavily protected textiles, wearing apparel and motor vehicle sectors are smaller than otherwise due to the removal of their large tariffs.

While other sectors also experience increasing competition from imports, the negative effects of greater import competition is more than offset by gains in the export market and a larger Australian economy.

It is also interesting to note that the service sectors, which were not subjected to trade liberalisation in the modelling, also benefit from liberalisation of merchandise trade. The trade liberalisation is associated with an (overall) increase in economic activity of the merchandise sectors, and as activity in these sectors increases, their economic linkages to the service sectors see the demand for, and output of, the service sectors increasing.

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<sup>17</sup> To put sector import and export results into perspective, and as was reported in table 3.2, total Australian imports and exports are both estimated to be around 28 per cent higher in 2016 due to the trade liberalisation undertaken over 1986–2016.

## 4 *Economic scenario modelling of possible global changes in trade protection*

**In this chapter a number of hypothetical economic modelling simulations are conducted to investigate whether a more protectionist trading environment can lead to better economic outcomes. Overall, if tariffs on all merchandise imports were increased to raise all import prices by 10 per cent, the economic modelling suggests real GDP in Australia would be 2.2 per cent lower, and global real GDP 4.1 per cent lower. The short term impacts of increased tariffs would see job losses in Australia, while over the longer term real wages and living standards would be lower.**

**By contrast, further liberalising global merchandise trade would act to grow Australian and global economic activity. The modelling suggests that lowering tariffs such that import prices fall by 10 per cent would see real GDP in Australia being 0.6 per cent higher, and 1.1 per cent higher globally. Short term employment in Australia would grow, and over the longer term, Australian real wages and living standards would be higher.**

Over the last 2–3 decades, Australia, like many other developed and developing economies, has implemented a policy of unilateral, bilateral and multilateral trade liberalisation. Underpinning Australia's approach to trade liberalisation is the view that protecting inefficient and uncompetitive domestic industries is not in the wider nation's best interests. This approach to liberalising trade has become even more important as world economies become more integrated. This is particularly so where businesses are creating increasingly-sophisticated regional and global production system (called 'value chains'), and where the success of these business models is based in part on continued low barriers to cross-border trade.

However, over the last few years in other parts of the world, there have been increasing calls to rollback decades of trade liberalisation and renegotiate, or even tear-up, previously agreed to trade (and common market) agreements. The line of arguing is that trade liberalisation has come at the expense of local jobs and a loss of sovereignty, to the net detriment of the country. An often-cited complaint is the loss of local manufacturing jobs and capability, which is attributed to trade liberalisation and increasing imports. Returning to a protectionist trading regime, and by association, restricting imports is seen as necessary if manufacturing is to return.

### ***Is increased trade protection the answer?***

In response to increasing calls for a move to a more protectionist trade policy, several additional (and illustrative) modelling simulations have been conducted to investigate the economic impacts if this were to happen. An increase in tariff rates, which increases the

price of imports to a certain specified extent, is used as a proxy for increased protection. The following three simulations have been conducted:

- tariffs increased such that the price of manufacturing imports increase by 10 per cent worldwide
- tariffs increased such that the price of all imports increase by 10 per cent worldwide.

And, as a counter to the increasing protection simulations, we have also undertaken a simulation of more openness globally whereby:

- tariffs are decreased such that the price of all imports decrease by 10 per cent worldwide.<sup>18</sup>

Of interest is whether economic activity is higher with increased, or lower, protection; and what the findings suggest for trade policy going forward.

### *Modelling the economic impact of changing protection*

The economic impact for a number of countries/regions of increasing or lowering trade protection under the above three simulations is reported in table 4.1.

The first observation to make is that increased protection does not benefit workers or economic activity. Increased protection sees both wages and GDP being lower than otherwise. As can be seen from table 4.1, increased protection is associated with contractions across the reported key (real) economic indicators. Furthermore, as the coverage of increased protection expands from manufacturing imports to all imports, the size of the negative economic impacts increase.

Globally, world GDP is estimated to be some 3.5 per cent lower as a result of increased protection such that the price of manufactured imports increased by 10 per cent, and 4.1 per cent lower if the price of all imports increases by 10 per cent.

#### **4.1 Impact of changing protection (per cent deviation from baseline)**

Country/ region	Wages	Imports	Exports	Investment	Consumption	GDP
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
<b>Simulation 1: 10 per cent increase in price of manufacturing imports</b>						
Australia	-0.3	-11.7	-10.9	-4.0	-1.0	-1.8
ASEAN	-4.4	-22.2	-22.1	-15.0	-6.2	-9.2
China	-0.8	-19.2	-16.1	-4.9	-1.1	-2.8
New Zealand	-3.4	-14.7	-12.7	-9.5	-4.0	-4.7
Other North Asia	-1.7	-15.7	-15.5	-5.4	-1.7	-2.5
United States	-0.6	-16.5	-22.5	-3.5	-0.7	-1.2
Rest of World	-2.5	-15.8	-15.4	-8.8	-3.4	-4.5
Global	-1.7	-16.5	-16.5	-6.9	-2.4	-3.5

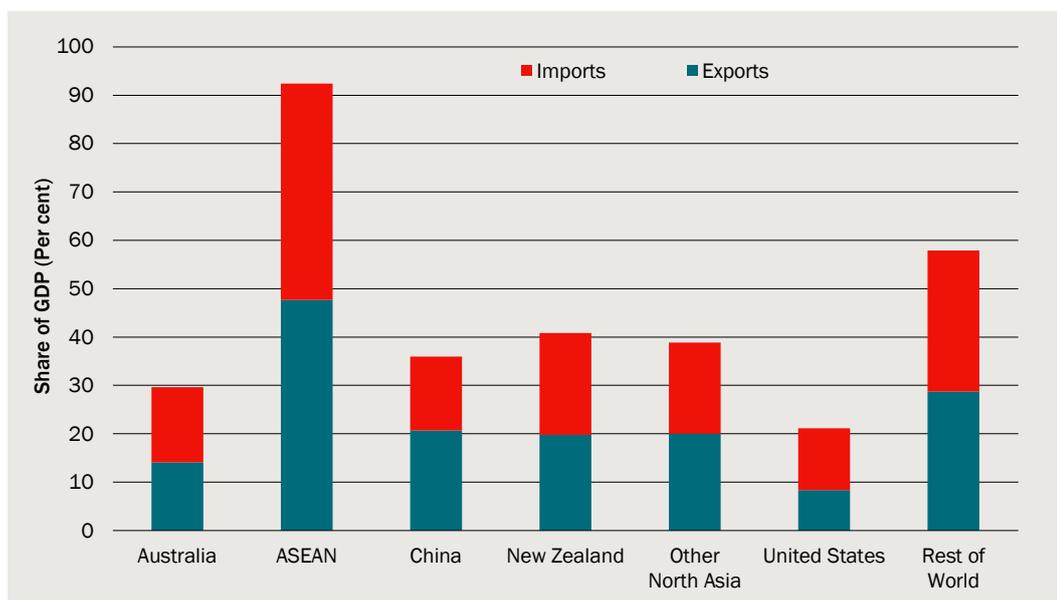
<sup>18</sup> If a country's tariffs saw import prices being increased by less than 10 per cent, then such tariffs have been lowered to zero.

Country/ region	Wages	Imports	Exports	Investment	Consumption	GDP
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
<b>Simulation 2: 10 per cent increase in price of all imports</b>						
Australia	-0.7	-14.4	-12.5	-4.7	-1.5	-2.2
ASEAN	-4.8	-24.4	-24.2	-16.4	-6.9	-10.2
China	-0.7	-21.9	-18.7	-6.8	-0.9	-3.7
New Zealand	-3.7	-16.4	-14.2	-10.0	-4.4	-5.1
Other North Asia	-1.9	-17.4	-18.0	-6.8	-2.0	-3.3
United States	-1.0	-19.6	-26.4	-3.9	-0.9	-1.3
Rest of World	-2.9	-18.0	-17.5	-9.9	-4.0	-5.2
Global	-2.0	-18.8	-18.8	-8.1	-2.8	-4.1
<b>Simulation 3: 10 per cent decrease in price of all imports</b>						
Australia	0.2	3.8	3.0	1.4	0.4	0.6
ASEAN	1.5	8.6	8.5	5.6	1.9	3.1
China	0.5	12.7	10.3	3.2	0.7	1.7
New Zealand	1.6	5.5	3.4	3.2	1.8	1.5
Other North Asia	1.3	7.7	6.4	2.7	1.1	1.2
United States	0.1	2.7	3.6	0.6	0.1	0.2
Rest of World	0.4	4.1	4.2	2.6	0.8	1.2
Global	0.5	5.1	5.1	2.5	0.7	1.1

Source: CIE analysis using the GTAP model.

Also apparent from table 4.1 is that those countries more heavily trade orientated, such as the ASEAN group of countries, stand to incur large economic losses from even a small increase in global protection. As can be seen from chart 4.2, merchandise trade is less important to countries such as Australia and the US, with the increase in tariffs consequently having a smaller (but still negative) impact on these countries.

## 4.2 Merchandise trade in 2015 as a share of GDP – various countries and regions



Data source: World Bank World Development Indicators.

If Australia were to raise its tariff barriers in the manner simulated here, merchandise imports would fall, as they will now be more expensive. Imports are also used by local Australian businesses in the production of their goods and services, with some of those goods and services being exported. The increasing cost of imports sees Australian exports also becoming more expensive and hence less competitive internationally. Crucially, therefore, increasing Australian tariffs sees a fall in Australian exports also (reinforcing the idea that tariffs act as a tax on exports). With our trading partners also increasing their tariffs, Australian exports will obviously be even less competitive in foreign markets, further reducing Australian exports.

Increasing protection sees distortions (allocative inefficiencies) being introduced into the Australian economy, culminating in capital earning a lower return and therefore making Australia a less attractive destination for investment. In the short run<sup>19</sup>, increased protection could lead to a decline in employment of up to 2.2 per cent, or up to 270 000 jobs. Over time, however, real wages are expected to decline and employment increase back to the level before the change in protection. Lower exports and investment is associated with increasing short term unemployment and persistent lower wages over the longer term, which in turn sees household income falling. Lower disposable income combined with higher import and local production costs see household consumption falling. Falling exports, investment and household consumption combine to see a contraction in Australian GDP compared to without the increased protection.

In contrast to increasing trade barriers, further liberalising merchandise trade acts to grow economic activity. As can be seen from table 4.1, lowering tariffs sees increases in all of the (reported) key economic indicators. The modelling suggests that lowering tariffs such

<sup>19</sup> Short run results are based on the same GTAP model simulations as the long term results, but using a short run model closure where wages are assumed to be sticky (fixed) and employment changes.

that import prices fall by 10 per cent across the world will see real GDP in Australia being 0.6 per cent higher, and 1.1 per cent higher globally.

The lower priced imports improve the competitive position of exports, improve allocative efficiency and make an economy a more attractive investment destination, with the increased exports and investment seeing a short run fall in unemployment and a lasting increase in wages. In the short run, lower protection could increase the number of jobs in Australia by up to 1.2 per cent, or 146 000 jobs. Employment will return to the baseline level as wages increase over time. As household income rises so too does household consumption. Greater exports, investment and household consumption combine to see an increase in Australian GDP.

## *A Understanding Australia's tariff schedule*

Tariff schedules are, in general, complex documents and Australia's tariff system is no different. Based as it is on the Harmonized Commodity Description and Coding System (HS system) international standard, Australia's tariff schedule identifies over 6000 different product categories. There is also a different tariff schedule for each preference arrangement Australia has in place. That is, a schedule for each partner under a bilateral or regional trade agreement, and a separate schedule for each category under Australia's Generalised System of Preferences arrangements. Across all preference arrangements, Australia had over 84 000 lines of tariff schedule in 2016.

Australia's preference arrangements currently comprise five preference categories: Least Developed Country (LDC), Forum Island Country (FIC), Developing Country (DC), Developing Country Status (DCS), and Developing Country Category T (DCT).<sup>20</sup> Some countries face multiple tariff schedules. For example, imports from Malaysia could enter Australia under three alternative preferential tariff schedules: the Malaysia-Australia FTA, the ASEAN-Australia-NZ FTA, or the DCS schedule.

In addition to preferential tariffs, there are currently over 15 000 Tariff Concession Orders. These orders provide importers an exemption from import duties where particular conditions are met, such as where there are no known Australian manufacturers of goods that are substitutable for imported goods.<sup>21</sup> The applicability of these orders can change at any time. Individual importers can apply for a concession, and once in place the concession may be applied to any qualifying imports. Domestic manufacturers, however, may seek to revoke concession orders at any time. Other tariff concessions also apply to goods donated to charity organisations and products imported under policy by-laws (such as those applying in the TCF sector) as intermediate inputs to domestic production.

For a range of reasons, not all importers make use of preferential tariff rates made available through the various bilateral or regional trade agreements. For example, an importer may conclude that the costs associated with establishing the country of origin required to make use of the preferential rate are greater than the benefits of the preferential rate; some traders do not know they require origin certificates to make use of

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<sup>20</sup> A list of countries included under each category can be found in DFAT 2016, *Review of the Australian System of Tariff Preferences (ASTP) Discussion Paper*, available at: <http://dfat.gov.au/trade/topics/Documents/astp-review-discussion-paper.pdf>

<sup>21</sup> See Department of Immigration and Border Protection, *Advice about Tariff Concession Orders*, available from: <http://www.border.gov.au/Tariffclassificationofgoods/Pages/Advice-about-tariff-concession-orders.aspx>

preferential rates; and some goods do not meet origin requirements of the agreements. The rate of utilisation of preferential rates is an area that requires further research.<sup>22</sup>

The various tariff concessions available, the complications of different tariff schedules, and less than comprehensive utilisation of preferential tariffs, mean that precise calculation of Australia's effective tariff rate is difficult. A bottom-up approach based on individual tariff rates under various preferential arrangements and trade data results in an estimated value of import duties somewhat different to the official revenue accounts. A top-down approach, using the value of imports and duty collected has been used in this report to establish the average effective tariff rate applied in Australia over the past 30 years (as shown in chart 1.3). A bottom-up approach, based on individual tariff rates, was used to determine the change in tariff rates at the sectoral level for the analysis outlined in Chapter 3.

### *Measures implemented by Australia to realise tariff reductions*

As was noted in Chapter 1, Australia has pursued trade liberalisation through three different avenues — unilateral liberalisation, regional or bilateral liberalisation, and multilateral liberalisation under the auspices of the GATT and then the WTO. Overall, trade liberalisation by Australia has lowered the average (import-weighted) tariff rate from around 7 per cent in 1986 to under 1 per cent in 2016 (see chart 1.3). Box A.1 describes the specific measures implemented to realise these tariff reductions.

#### **A.1 Australian tariff reductions over 1986–2016**

##### *Unilateral tariff reductions*

Australia has undertaken two major rounds of economywide unilateral tariff reductions since 1986:

- 1988–1992
  - all tariffs over 15 per cent reduced to 15 per cent
  - tariffs between 10 and 15 per cent reduced to 10 per cent
  - passenger motor vehicles (PMV) and textiles, clothing and footwear (TCF) industries excepted.
- 1992–1996
  - all tariffs reduced to 5 per cent
  - PMV and TCF industries excepted.

The PMV and TCF industries followed separate trade liberalisation schedules. These industries actually saw an increase in protectionist measures in the period between 1974 and 1984. A range of tariffs, import quotas and bounties were implemented.

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<sup>22</sup> In calculating tariff rates for this report we have assumed 100 per cent utilisation of tariff preferences. While we understand this is unlikely to be true, this is not believed to change the substantive outcomes of the analysis as the other elements that lower the effective tariff rate (such as concessions) appear to more than offset the impact of a lower utilisation rate at the aggregate level. This would differ by sector, however.

A schedule of liberalisation for each industry was prepared in the mid-1980s under Industry Minister John Button, and subsequently extended to reduce tariff rates to 5 per cent or lower by 2015. The tariff reductions implemented for these industries is shown in the table below.

#### TCF and PMV tariffs 1990–2015

	1990	1992	1994	1996	1998	2000	2005	2010	2015
	%	%	%	%	%	%	%	%	%
Apparel and certain finished textiles	55	51	43	37	31	25	17.5	10	5
Footwear	45	41	33	27	21	15	10	5	5
Woven fabrics	40	37	31	25	19	15	10	5	5
Sleeping bags, table linen	25	23	19	15	12	10	7.5	5	5
Passenger motor vehicles	40	35	30	25	20	15	10	5	5

Source: Industry Commission 1997, *The Textiles, Clothing And Footwear Industries Volume 1: Report*, Report No. 59, Table 6.1; Department of Immigration and Border Protection, *Current Tariff Classification* available at: <http://www.border.gov.au/Busi/cargo-support-trade-and-goods/importing-goods/tariff-classification-of-goods/current-tariff-classification/schedule-3/section-xii/chapter-64>.

#### *Multilateral trade liberalisation*

Australia has been a member of the GATT since inception in 1948 and subsequently the WTO from 1995. Despite this, Australia did not participate in many of the early tariff negotiation rounds because they excluded agricultural products.<sup>23</sup> Concessions agreed to under the Tokyo and Uruguay rounds to lower bound rates did not result in significant reductions in applied rates due to the unilateral tariff reductions that Australia had already undertaken in the 1970s and 1980s.

Australia has also implemented tariff concessions under the Generalised System of Preferences (GSP). This provides developing countries with non-reciprocal, concessional tariff rates. Australia currently has five categories of member countries that receive varying levels of preferential treatment. These countries enjoyed tariff rates 5 percentage points below the general tariff rate (or free entry for goods with a tariff rate lower than 5 per cent).

From 1992 Australia started a process of reducing preferences to all but the least developed countries (LDC) and Forum Island countries. Under this process, tariff rates did not increase for any country, but gradually moved towards the general rate. LDC and Forum Island countries have duty and quota free access to Australia.<sup>24</sup>

<sup>23</sup> Parliament of Australia 2001, *Who's Afraid of the WTO? Australia and the World Trade Organization*, Joint Standing Committee on Treaties, Report 42.

<sup>24</sup> UNCTAD 2000, *Generalized System of Preferences: Handbook on the Scheme of Australia*, UNCTAD Technical Cooperation Project on Market Access, Trade Laws and Preferences, [http://unctad.org/en/Docs/itcdtsbmisc56\\_en.pdf](http://unctad.org/en/Docs/itcdtsbmisc56_en.pdf).

Australia was also party to the Information Technology Agreement, reached in 1996, which sought to eliminate tariffs on high technology products. In 2015 members agreed to extend product coverage of the agreement to an additional 201 products. Tariffs on these products will be eliminated between 2016 and 2019.<sup>25</sup>

### *Bilateral and regional liberalisation*

Australia's current bilateral and regional agreements, and their date of entry into force, are listed in the table below. In addition to these, Australia is currently negotiating a number of other regional and bilateral agreements.<sup>26</sup>

#### **Australia's bilateral and regional agreements**

Country/region	Entry into force
New Zealand	1983
Singapore	2003
US	2005
Thailand	2005
Chile	2009
ASEAN & NZ	2010–2012
Malaysia	2013
Korea	2014
Japan	2015
China	2015

Source: DFAT n.d., *Status of FTA negotiations*. <http://dfat.gov.au/trade/agreements/Pages/status-of-fta-negotiations.aspx>.

Under each of the trade agreements, Australia has lowered tariff barriers below most favoured nation (MFN) rates (as well as services and investment provisions) for partner countries. The extent of the tariff reductions varies between agreements. As a result of these agreements, Australian exporters also gain enhanced access to partner markets.

<sup>25</sup> WTO n.d., *Information Technology Agreement – an explanation*, [https://www.wto.org/english/tratop\\_e/inftec\\_e/itaintro\\_e.htm](https://www.wto.org/english/tratop_e/inftec_e/itaintro_e.htm).

<sup>26</sup> For details of these see the DFAT website at: <http://dfat.gov.au/trade/agreements/Pages/status-of-fta-negotiations.aspx>.

## *B Economic analysis methodologies*

### *Trade-related employment estimates*

The estimates of trade-related employment, reported in Chapter 2, were compiled using Australia's input-output (I-O) tables.<sup>27</sup> The export share of each I-O industry was used to approximate the number of people employed in export-related activities in each industry. Table 5 (Direct allocation of imports) of the I-O tables was used for the export share calculation so that only Australian production was included. Changes in inventory were excluded from final use to ensure final use was positive. For all years except 2013-14, employment data by industry was sourced from table 20 of the I-O tables. Table 20 was not published for 2013-14 so employment data for 2013-14 was from ABS Quarterly Labour Force data (series 6291, Table 6). Employment for ANZSIC sub-divisions was allocated to the I-O industries before the export share was applied. In each year, export-related employment was summed to the reported aggregate sectors to determine the overall export-related employment share.

The employment in activities associated with imports was estimated based on the share of goods consumed in Australia that were imported, and the employment in goods distribution services, again using Australian I-O tables. The share of goods consumed that were imported was calculated based on total final use of goods in Australia, and total imports of goods (sourced from tables 2 and 3 of the I-O tables). Three industries — transport and storage, retail trade, and wholesale trade — were determined to be the key distribution industries involved in moving imports from the port of entry to the final consumer. Therefore, it was assumed that employment in these industries, adjusted by the share of imports in the economy, was import-related employment.

Total trade-related employment is the sum of the export and import-related employment.

### *General equilibrium modelling — economic effects of liberalisation and protection*

Modelling results presented in chapters 3 and 4 are based on results of analysis using the Global Trade Analysis Project (GTAP) model. GTAP is a publicly available modelling framework and database managed from the Center for Global Trade Analysis at Purdue University.

The standard GTAP model is a multi-region, multi-sector, computable general equilibrium model, with perfect competition and constant returns to scale. Innovative aspects of this model include:

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<sup>27</sup> See ABS series 5209 for each year.

- the treatment of private household preferences using the non-homothetic constant difference of elasticity functional form
- the explicit treatment of international trade and transport margins, with substitutability between imports by source and domestic production being handled via the Armington assumption
- a global banking sector which intermediates between global savings and consumption.

For the analysis presented in Chapter 3, the GTAP model is used to compare the world economy under current tariff rates with the state of the economy had Australian tariff rates remained as they were in 1986. Results presented in Chapter 4 use the GTAP model to compare the world economy under current tariff rates with hypothetical scenarios with higher or lower rates of protection across the world.

A key advantage of the GTAP model for this project was the availability of historical databases. The model databases effectively determine the structure of the economies on which the analysis is conducted. The starting economic structure (database) has significant impacts on the modelling results. As the Australian (and world) economy has changed significantly over the past 30 years (for many different reasons, including changes in trade protection), simply increasing tariff rates back to levels seen in 1986 on the current economic structure would provide an unrealistic estimate of the impact of continual tariff reductions over a long time period. Rather, we have used the available historical databases so that the economic structure on which the tariff changes are applied more closely reflect reality. The databases used for the project were GTAP 4 (base year 1995), GTAP 5 (base year 1997), GTAP 6 (base year 2001), and GTAP 9 (base years 2004, 2007, 2011). The results of separate model runs (using each database and the tariff change corresponding to the time period between the databases) were compiled to provide an overall impact of 30 years of trade liberalisation.



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