The Allen Consulting Group

The strategic role of the Australian Automotive Manufacturing Industry

26 September 2013

Report to the Federal Chamber of Automotive Industries

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Suggested citation for this report:
The Allen Consulting Group, 2013, *The strategic role of the Australian Automotive Manufacturing Industry*, prepared for the Federal Chamber of Automotive Industries.

Contents

Acronyms and glossary

ABS	Australian Bureau of Statistics
ACEA	European Automobile Manufacturers' Association
ACIS	Automotive Competitiveness and Investment Scheme
AISAP	Automotive Industry Structural Adjustment Program
AMAP	Automotive Market Access Program
ANMI	Automotive New Markets Initiative
ANMP	Automotive New Markets Program
ASCDP	Automotive Supply Chain Development Program
ATS	Automotive Transformation Scheme
BCSP	Business Capacity Support Program
CGE	Computable General Equilibrium
CKD	Complete Knock Down
CoPS	Centre of Policy Studies
EIB	European Investment Bank
EU	European Union
FAPM	Federation of Automotive Products Manufacturers
FCAI	Federal Chamber of Automotive Industries
GADC	Greenville Area Development Corporation
GCIF	Green Car Innovation Fund
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GM	General Motors
GMH	General Motors Holden
GRP	Gross Regional Product
GVA	Gross Value Add
GWP	Gross World Product
MMRF	Monash Multi-Regional Forecasting model
OICA	International Organization of Motor Vehicle Manufacturers
PMV	Passenger Motor Vehicle
R&D	Research and Development
RGF	Regional Growth Fund
SD	Statistical Division
TARP	Troubled Asset Relief Program
TERM	The Enormous Regional Model

Key Points

- Automotive manufacturing in Australia receives around $500 million in Government funding each year. For this investment, the Australian economy is $21.5 billion larger (based on an economic welfare net present value calculation) for having an automotive manufacturing industry.
- On a per person basis, Government assistance to automotive manufacturing is around $18 per person — a very low figure by international standards. The $21.5 billion return equates to $934 per person.
- On any analysis, Australia would be a very different place without automotive manufacturing. If we lost this important capability:
  - Australia's GDP would be $7.3 billion smaller (in today's dollars) by 2018.
  - Billions in foreign direct investment would cease. The automotive industry is foreign owned and if their Australian manufacturing arms close, head offices will direct investment to other automotive manufacturing countries, not to other industries in Australia.
  - The economies of Adelaide and Melbourne would be devastated with GRP contracted by up to 1.4 per cent and it is likely GRP will be lower than current levels until the end of 2031, while employment could to fall by around 1.5 per cent.
- These impacts do not include the spill-over effects, including to advanced manufacturing and R&D, which can't be modelled, but are recognised by chief executives of companies like Boeing, Rio Tinto and Coca-Cola Amatil. These include:
  - technology transfers through R&D, and innovation;
  - lean management techniques and applications; and
  - advanced labour skills and manufacturing techniques.
- Economic modelling in this report considered a pick-up in exports back to 2008 levels if barriers to export are lowered. It found that under this scenario there would be a considerable uplift in Australian consumer welfare of around $7.1 billion.

Executive summary

This study has been commissioned by the Federal Chamber of Automotive Industries (FCAI) to assess the strategic role of the automotive manufacturing industry in Australia. The study examines the:

- contribution made by the Australian automotive industry to the national and regional economies;
- extent and nature of industry assistance provided by foreign governments, effect on the Australian economy if automotive manufacturing shuts down; and
- opportunity cost associated with missed export opportunities.

The Australian automotive manufacturing industry is one of Australia's most advanced industries. It deploys advanced manufacturing techniques, technologies and adds value through the broader economy far beyond its manufacturing core. Today the industry consists of three subsidiaries of multinational manufacturers of motor vehicles—Ford, General Motors Holden (GMH) and Toyota—as well as hundreds of parts manufacturers, ranging from small Australian producers to companies that are also subsidiaries of very large multinationals, such as Bosch. The industry directly employs around 50,000 people[1], of which around 17,000 work at Ford, GMH and Toyota.

The industry faces an uncertain future. As has been well-documented, Ford will cease manufacturing operations in 2016. Today Australia produces only around 225,000 motor vehicles (down from historic highs of more than 407,000 as recently as 2004). In an industry where economies of scale are very important in achieving cost competiveness, the current volume is a real disadvantage. This is both in itself and in flow on to major parts manufacturers, who struggle to justify investing in efficiency-enhancing technologies like advanced robotics.

The current historically high value of the Australian dollar exchange rate has placed the industry under further competitive pressure, both from cheaper imports and its effect on export competitiveness. This has impeded efforts to ameliorate scale problems through expanded production for export.

An additional constraint has been the protectionist policies in potential export destinations that have further hampered exports. The exemplar here is Thailand, despite the Thailand–Australia Free Trade Agreement. Ford Australia has exported the Ford Territory to Thailand, but the Thai Government imposes a non-tariff duty, making the Territory's price in Thailand an unattractive $100,000, which is far above the price of a comparable locally made product[2]. This, it should be noted, is *after* the conclusion of an apparently trade liberalising agreement between Australia and Thailand.

[1] http://www.innovation.gov.au/Industry/Automotive/Statistics/Pages/automotivedatacard.aspx

[2] http://www.manufacturelink.com.au/news/view/australian-made-cars-11195.aspx

GMH and Toyota have major decisions forthcoming on whether to invest in new models. While the timing differs somewhat between the companies, their investment cycles have (more or less) coincided. These decisions involve very large (commercially confidential) sums of money, and it is entirely possible that they will decide not to make the investment. This will mean shutting down their Australian manufacturing operations, which amounts to shutting down the Australian automotive manufacturing industry—if the vehicle manufacturers shut down, so will all the suppliers.

In this environment, continued government support is critical to maintaining an automotive manufacturing industry in Australia. There is little or no doubt that without this support and with the open access importers have to the Australian market, the major car companies will not invest in new models in Australia. The removal of this support will make car manufacturing uncompetitive relative to locations elsewhere.

The Australian Government, in turn, has to perform its own benefit–cost analysis to determine whether to continue with industry support, which is the same thing as deciding whether or not it wants an automotive manufacturing industry in Australia. As described in some detail in this report, support from national and regional governments for their car industries is a fact of life around the world, and this support is critical in the location decisions of automobile manufacturers.

Former global Ford CEO Jacques Nasser commented that

> [i]t's difficult to predict [when it will die] because it also depends on the supply base and as soon as you have a reduction in the scale of domestic manufacturing – let's assume one of the three decides to exit Australia in terms of manufacturing – then you end up potentially with a sub-scale supplier infrastructure. Once that happens, I think it's a domino effect.
>
> Jacques Nasser, Australian Financial Review 12 April 2013[3]

He also suggested that the industry might be able to survive if sufficient assistance is provided (De Kretser, Coorey & Murphy 2013).

The Australian industry is replete with highly skilled designers and engineers involving high-value and high-technology practices. The major car companies have designers and engineers who work on global projects for their parent companies. These operations exist in very few locations around the world; they exist in Australia because of the expertise of the people involved and the high regard in which they are held throughout their parent companies. Similarly, the domestic supply industry consists of highly trained and professional engineers and designers that produce advanced equipment and technology for use in the manufacturing process. These design and engineering jobs might be at risk if automotive manufacturing was to shut down. This is because automotive companies prefer to keep design and engineering operations side by side with manufacturing to test the practicality of the design and engineering concepts.

[3] http://www.afr.com/p/markets/market_wrap/bhp_chair_nasser_says_car_making_58LxltmrC60fANwAO9fn4L

The Australian automotive manufacturing industry receives direct support from the Australian Government of around $500 million per year. This is a small number compared to the assistance it received when it was protected from import competition; such protection effectively no longer exists as tariffs are at just five per cent in general and zero for countries with which Australia has a Free Trade Agreement (such as Malaysia, Thailand, the US, and possibly soon Japan, South Korea and China).

Furthermore, the support received by the Australian industry is very small compared to the assistance received by automotive companies in other countries. The level of assistance is also small when compared to the level of assistance received by other industries and sectors across the Australian economy. Government support for industry is provided in a number of ways, some more transparent than others. Automotive industry support is near completely transparent and is reported as a budgetary support annually in the Productivity Commission's (PC's) Trade and Assistance Review. By way of contrast, government support that confers direct financial benefit to some industries is less transparent. For example, the Treasury's 2012 Tax Expenditure Statement reports that Fuel and Energy tax benefits of $1,535 million were conferred in 2011–12 but doesn't disaggregate the benefits by industry. As a result, the degree of public scrutiny associated with the Fuel and Energy tax benefits is much less than that associated with the direct assistance received by the automotive industry, even though they are over three times as large.

In the context of the relatively low level of support provided to the automotive industry, this report sets out to quantify the effect on the economy should a shutdown of the domestic automotive manufacturing occur. A scenario was modelled using a computable general equilibrium model of the Australian economy in which the industry is shut down. In elementary economic analysis, shutting down an industry is unlikely to have large or permanent negative effects on an economy because the productive resources that are inputs to that industry — primarily labour and capital — relocate to other industries.

The modelling in this report shows that, because the assumptions of elementary economic analysis do not apply in the case of the Australian automotive manufacturing industry, a shutdown of the industry will not only lead to a permanent loss of GDP, but a loss of economic welfare (measured as a loss of consumption expenditure) as well. This loss of welfare, in net present value terms, amounts to $21.5 billion, or $934 per person.

The principal reason for this result is that the automotive industry is foreign owned and therefore if the industry shuts down this will represent a significant loss of capital to the Australian economy, which will not be redirected to other Australian industries. If GMH and Toyota cease making cars in Australia, they will not invest instead in other Australian industries. The capital will be lost to Australia, as will the capital of the foreign owned parts manufacturers.

In the automotive industry intensive states of Victoria and South Australia, especially in Melbourne and Adelaide, the effects of the industry shut down are much more severe. In certain regions, like Dandenong and North Adelaide, they are even more severe than the state impacts, as would be expected. Important, but not readily captured in an economic model, are the severely concentrated negative social impacts in areas of high youth unemployment and high automotive dependency if the automotive industry leaves Australia.

Another scenario illustrates the effect of the industry returning to 2008 export levels by 2018. This is assumed to occur via a mechanism of increased access for Australian auto exporters, occurring through (say) a lowering of trade barriers, which currently keep those exports out of other countries. The modelling shows significantly positive effects on the Australian economy in general and the economies of Melbourne and Adelaide in particular. These modelling results show the benefit to the economy if the Australian Government could manage to negotiate lower trade barriers for Australian automotive exporters.

Continued support for the Australian automotive manufacturing industry should not be thought of as just a defensive measure to prevent the loss of national output and welfare that would occur if the industry were to shut down. If barriers to Australian exports could be lowered, the industry would make a further significant positive contribution to the Australian economy.

Chapter 1

This report

This study has been commissioned by the Federal Chamber of Automotive Industries (FCAI). It assesses the strategic role of the automotive manufacturing industry in Australia. The study considers:

- the contribution made by the Australian automotive industry to the national and regional economies;
- the extent and nature of industry assistance provided by foreign governments; and
- the opportunity cost associated with missed export opportunities.

The study has been informed by a review of the available literature and data, as well as by consultations with industry leaders (see Appendix A). Additionally, extensive economic modelling has been undertaken with the assistance of the Centre of Policy Studies (CoPS) at Monash University, which estimates the importance of the industry to the Australian economy, and of the benefits to the economy should the industry regain the level of exports that were occurring just prior to the onset of the Global Financial Crisis.

The recent announcement by Ford that it would cease manufacturing in Australia in 2016 has prompted a serious re-think about the future of the Australian auto manufacturing industry, in particular the strategies that will be necessary to ensure its long-term success. It has also prompted some unwarranted pessimism about the industry's prospects. In fact, the industry *can* have a bright future, especially if it is able to recapture the exports that have been lost in recent years. Without dwelling on the specific factors that prompted Ford's decision, it is notable and significant that Ford is the only one of the three Australian manufacturers not to have an export-orientation. In contrast, exports are key to the strategies of General Motors Holden and Toyota.

The Australian automotive manufacturing industry, including parts manufacturers, employs around 50,000 people. About 17,000 of these are directly employed by the three major vehicle manufacturers: Ford, General Motors Holden and Toyota (DIISRTE 2013b). The motor vehicle manufacturing industry contributes over $2 billion to GDP (ABS 2012a) and plays a significant role in the economy, supporting a number of associated industries and intermediaries. When parts manufacturing is taken into account as well, this contribution is increased to over $5 billion (ABS 2012a). Between them, Ford, Holden and Toyota assemble around 225,000 cars per year (IBISWorld 2012a). Of this amount, Ford produces about 34,000 vehicles, and it is likely that around 19,000 to 20,000 of these will flow to Holden and Toyota when Ford ceases manufacturing operations[4].

[4] Assuming that Ford's fleet sales and 40 per cent of its non fleet sales go to Holden and Toyota.

The sector has faced a growing number of challenges over the past few decades, including:

- increased competition from imports due to trade liberalisation;
- increased competition by emerging economies for automotive investment;
- increasing sophistication of non-tariff barriers; and
- changing preferences of Australian consumers, including a shift to smaller, more fuel efficient cars as well as SUVs and light commercial vehicles.

Recently, the strong Australian dollar has also contributed to industry stress by making Australian cars less competitive in the export market, while lowering the prices of imported cars.

Over this period, the community has witnessed the closure of the Mitsubishi and Nissan manufacturing plants in Adelaide and Melbourne. Holden announced in February 2012 it was cutting 100 casual and flexible jobs at its Elizabeth plant in South Australia, with a further 170 job cuts announced in November of that year. This followed Toyota's announcement of 350 job cuts at its Melbourne plant (ABC News 2012). In April 2013 Holden announced a further 500 job cuts, of which 400 will be at its Elizabeth plant and 100 at its design centre in Fishermen's Bend in Melbourne (Massola 2013).

Globally, the value of automotive manufacturing is well recognised and the sector is a prominent feature of foreign industry policies. Most countries have extensive industry support mechanisms in place, including a range of investment incentives to attract both local and foreign investment in automotive manufacturing.

It is against this backdrop that the Australian automotive industry must compete for a place in global manufacturing strategies. The policies adopted by the Australian Government to stimulate and promote investment in the industry, along with the need for long-term policy certainty, are important factors in strategic decisions made by corporate headquarters.

1.1 Report structure

The remainder of this report is structured as follows.

- *Chapter 2* provides an overview of the global automotive manufacturing industry.
- *Chapter 3* considers Australia's strategic role in the global market;
- *Chapter 4* assesses the importance of the industry to the Australian economy;
- *Chapter 5* assesses the opportunity cost of a restricted export market; and
- *Chapter 6* concludes the report.

Chapter 2

The global automotive manufacturing industry[5]

This chapter provides an overview of the global automotive manufacturing industry, as well as a discussion of recent trends and challenges. It also discusses the types of industry assistance provided to the automotive manufacturing sector, including examples from major manufacturing countries.

2.1 A global manufacturing industry

Worldwide, passenger car production in 2011 was almost 60 million vehicles. Table 2.1 provides key industry statistics for the ten largest producers of passenger vehicles and Australia. Together, the top ten countries account for 76 per cent of global production and 78 per cent of turnover.

Table 2.1

PRODUCTION OF PASSENGER VEHICLES, 2012

Country	No. of vehicles
China	15,523,658
Japan	8,554,219
Germany	5,388,456
South Korea	4,167,089
USA	4,105,853
India	3,285,496
Brazil	2,623,704
Russia	1,968,789
Mexico	1,810,007
France	1,682,814
Australia	**225,000**
Thailand	957,623
Other	12,823,353
Global	**63,069,541**

Production numbers for Australia may differ from those noted elsewhere due to different methods of counting.
Source: www.oica.net

[5] Excluding trucks and special vehicles.

The global automotive industry is a complex structure which comprises of manufacturers and several tiers of component suppliers, spanning a wide array of sectors. Vehicles are manufactured by 55 automotive groups in over 50 countries. Of these, only about a dozen countries, including Australia, have the capability to design and build vehicles from the ground up. According to the International Organisation of Motor Vehicle Manufacturers (OICA), "if auto[motive] manufacturing were a country, it would be the sixth largest economy"[6].

The automotive industry is a hub of economic activity through its demands for a diverse range of skills, capabilities and technologies, and its need to constantly create and utilise cutting edge technologies. At the same time, it is under constant pressure to improve productivity, quality and performance due to strong global competition for investment.

The automotive manufacturing sector employed more than eight million people directly world-wide in 2005. This represents more than five per cent of the global manufacturing workforce. On the latest data, the five largest country producers (in terms of volume), China, Japan, Germany, South Korea and the US, account for 60 per cent of vehicles produced.

The automotive industry is a driver of innovation. In 2005 the global automotive industry invested almost €85 billion in R&D (OICA website).

The ten largest car manufacturers by volume are shown in Table 2.2.

Table 2.2

LARGEST PASSENGER VEHICLE MANUFACTURERS BY VOLUME (2011)

Manufacturer	Global passenger vehicle production ('000)
Volkswagen	8,157
General Motors	**6,867**
Toyota	**6,794**
Hyundai	6,118
Nissan	3,581
PSA	3,162
Honda	2,886
Ford	2,640
Renault	2,443
Suzuki	2,337

Source: OICA (2012)

[6] http://oica.net/category/economic-contributions/

2.2 A challenging market

One of the key challenges to automotive manufacturers is achieving sufficient scale to be profitable. The R&D costs for new vehicles are significant, so it is important that a sufficient volume of sales is reached to recoup that investment.

The automotive industry is becoming increasingly competitive, with car manufacturers from emerging economies such as India and China starting to enter the global export markets. This puts pressure on established brands.

Exchange rates play an important part in the profitability of automotive manufacturers. The automotive industry operates mainly in a global market, with many manufacturers relying on exports to attain sufficient scale. Manufacturers are able to mitigate exchange rate risk, somewhat, by locating manufacturing close to where vehicles are sold. The exchange rate risk is a benefit to the Eurozone, where the joint currency has eliminated the risk for a large part of the European market. Recent falls in the value of the Yen to the US Dollar have led to significant increases in profitability of Japanese car manufacturers.

Due to the strong Australian dollar it is difficult for Australian manufacturers to remain competitive in the global market. In addition, the competitive nature of the domestic market means exports are necessary for domestic producers to attain sufficient scale. The automotive manufacturers have indicated that in order to survive during this period of high exchange rates, some level of government assistance is needed.

Global demand is likely to increase significantly in the near future with demand for motor vehicles increasing in emerging economies. Emerging economies now have a growing middle-class who are keen to own motor vehicles. Demand is likely to be driven more by emerging economies than developed countries, where motor vehicle ownership rates are already high and are likely to remain stable.

The GFC provided a significant shock to the automotive industry, with demand dropping significantly. It led to the bankruptcy of major manufacturers including GM and Chrysler, and brought many others to the brink of bankruptcy. This has precipitated major restructuring and rethinking in the industry, with many factories closing and manufacturers widely looking to cut costs. This is a threat to Australian manufacturers due to the lack of opportunities for scale in the domestic market.

2.3 International industry policy

The significance of the automotive industry to local and national economies has been well recognised across the globe. In support of this industry, governments have sought to provide an environment that is conducive to maintaining the industry within their borders.

Broadly, three types of assistance are provided:

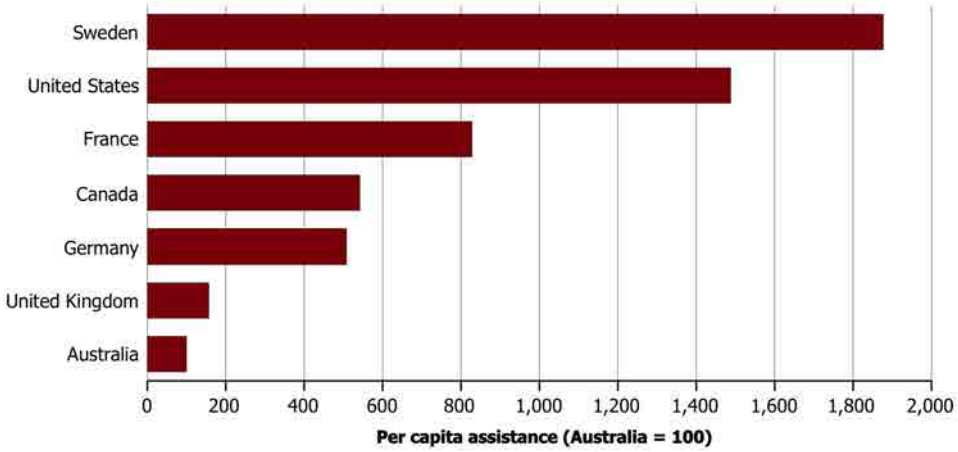
- direct industry support (investment incentives, targeted R&D support, production subsidies, regional aid support);
- restrictions on market access (tariffs and non-tariff barriers, trade bloc membership); and
- indirect industry support and other factors influencing investment decisions (e.g. broad R&D support, education and training support).

This section discusses each of these policy areas, and provides examples of policies in a range of countries including the US, the EU, Japan, China and India. It should be noted that it is not possible to make direct comparisons in assistance offered between countries, due to the varied nature of the assistance and the differences in circumstances faced by the industry in different countries.

The extent of financial government assistance provided to the industry varies widely by country. Davey (2011) found that in 2008–09 per capita assistance to the automotive industry in a selection of countries ranged from US$18 in Australia to US$334 in Sweden[7]. A comparison of Davey's estimates of industry assistance is shown in Figure 2.1, with assistance to the Australian automotive industry indexed as 100.

Figure 2.1

PER CAPITA ASSISTANCE TO THE AUTOMOTIVE INDUSTRY (2008-09)



Note: based on assistance in $US 2007 (purchasing power parity). Australian assistance is indexed to 100 (actual estimated value is US$18).
Source: Davey (2011)

Direct industry support

Governments have a wide range of tools at their disposal to directly affect the attractiveness of making automotive investments in their jurisdiction. These range from the industry specific, such as investment incentives, automotive specific R&D support and production subsidies, to the general, such as regional aid support. Each of these options is discussed below.

Countries and regions that are successful at attracting or retaining automotive investment using these methods are likely to benefit significantly through growth in productivity and employment. However, investment incentives in particular can be inefficient due to the expense involved in securing investment. Also, frequently regions or cities in the same country compete against each other for investment, so competition for investment does not add to GDP.

[7] The Swedish figure may be an overestimate because it includes a line of credit provided to truck producers during the GFC, which was not drawn on by the truck producers. This line of credit forms an estimated 80 per cent of funds quoted.

Investment incentives

Investment incentives are widely used to attract investment in the automotive industry. They can be a deciding factor as to where a company decides to base production. Competition for location decisions can be both domestic (between a number of sites in the same country) and international (between sites in different countries).

The incentives offered range from cash incentives, tax credits on corporate, sales or income tax, free services and property tax abatements. The automotive manufacturing industry has been highly effective at negotiating incentives and, in many cases, a number of states and towns will compete for the same investment. Box 2.1 provides a recent Australian example of investment incentives.

Box 2.1

HOLDEN CRUZE

In March 2012 Holden announced it would build the Holden Cruze and an additional model at its Elizabeth plant in South Australia.

This decision was supported by a $275 million government assistance package from the Australian, South Australian and Victorian governments. The funding offer is provided as an investment incentive and will only be payable to Holden in arrears after it makes its investment. This is in accordance with the usual conditions of Federal and State governments.

Total investment by Holden on this project was estimated to be $1 billion over ten years. Production is due to start in the middle of this decade.

Source: Holden (2012)

Automotive specific R&D support

In addition to providing incentives to locate manufacturing facilities in certain countries or regions, governments can also support the automotive industry by providing R&D support. R&D support to the automotive manufacturing industry can include grants, tax and other credits, subsidised loans and direct government support to R&D centres and funding of the University or Public Research Institute part of joint R&D projects. Some cluster initiatives with public support also partly fall under this category. The US, Canada, Japan and Western Europe all have well developed automotive R&D centres.

The US and the EU both have programs to provide loans to automotive R&D focused on greener technology. Loans may be granted to companies researching cleaner engines, light weighting of vehicles or other measures that increase fuel efficiency. In Australia some support has been provided to improve the green credentials of car manufacturers. Some of these programs are discussed in more detail in the following section.

The Australian Government provided support to Ford through the Green Car Innovation Fund (GCIF) to develop its fuel efficient EcoBoost engine for use in the Falcon. In 2009 the Australian government provided $38 million towards the estimated $230 million project. The project ran over the course of three years (Invest Victoria 2009).

The Government also provided $35 million of funding to Toyota through the GCIF to introduce the Hybrid Camry to Australia. Without this support the Hybrid Camry, for which investment had been secured by Thailand due to generous green car excise tax exemptions, would have been imported to Australia from Thailand.

In addition Toyota received a $63 million GCIF grant to secure a new engine facility, which opened in 2012. Total investment in the facility was $330 million. The engine facility is one of only five of its type operated by Toyota. It means Australia is producing hybrid engines for the first time. Toyota Australia will produce 108,000 engines each year and will also export engines to Malaysia and Thailand. This investment would not have been secured for Australia in the absence of government funding support.

Production subsidies

Production subsidies are cash and other incentives that are tied directly to production levels. Production subsidies do not appear to be used frequently. However, some jurisdictions offer a form of production subsidy.

One example is the Virginia Investment Partnership (VIP) in the US. The VIP provides a grant to companies making an investment in Virginia, with the aim of creating jobs. The level of the grant depends on the actual amount invested and the actual number of jobs created. No minimum job creation is required for a VIP; however, the investment also cannot result in a net reduction in jobs. If the number of jobs created exceeds the expected amount, the value of the grant is increased. Conversely, if job creation is lower than expected the value of the grant will be decreased, possibly to nil if job creation is below 50 per cent of the expected level[8]. This is a form of production subsidy because there is generally a positive relationship between employment and output.

Regional aid support

Regional aid support is aimed at encouraging investment in areas of regional disadvantage. For example, the EU allows member states to provide more industry assistance in countries that are seen as lagging behind (mainly new members) than in other, more prosperous, member states.

Restrictions on market access

The degree of market accessibility by other countries is an important factor in determining the domestic industry's competitiveness. Three key policy areas determine how accessible a market is: tariffs, non-tariff barriers and trade bloc membership.

The more a market is closed to foreign competition, the more likely it is that a domestic industry can be viable. Due to limited foreign competition domestic producers are more likely to reach sufficient scale. Conversely, the more open a market is, the more difficult it will be for domestic producers to attain scale in the domestic market.

[8] From the *Guidelines for Virginia Investment Partnership Grant*, http://www.virginiaallies.org/assets/files/incentives/VIPGuidelines.pdf

Tariffs and non-tariff barriers are widely recognised as economically highly inefficient tools for protecting local industries. They benefit domestic producers by keeping prices artificially high. However, local consumers are prevented from taking advantage of lower cost imported products. In addition, these barriers can prevent necessary structural adjustment to an economy when it loses its competitive advantage.

Australia has progressively reduced restrictions on market access in the automotive industry since the mid 1980s. Quotas were reduced to 20 per cent in 1984 and abolished completely in 1988. Tariffs have been progressively reduced from a peak of 57 per cent in 1984 to 5 per cent from 1 January 2010 (ABS 2005).

Tariffs

High tariffs place importers at a disadvantage compared to local producers due to the increased cost. This serves to protect local producers from foreign competition. Table 2.3 shows the tariffs on motor vehicles for a selection of countries. It is clear that Australia has relatively low tariffs. At 100 per cent, India has the highest tariffs on motor vehicles in the comparison group.

Table 2.3

AUTOMOTIVE TARIFFS IN SELECTED COUNTRIES

Country	Tariff
Australia	• 5 per cent on vehicles. Zero per cent for vehicles imported from the US, Thailand and Malaysia through various Free Trade Agreements.
China	• 25 per cent on vehicles. 10 per cent on components
European Union	• 10 per cent on motor vehicles
India	• 100 per cent on motor vehicles. 10 per cent on parts
Japan	• 0 per cent
Thailand	• 80 per cent on passenger vehicles. 40 per cent on pick-up trucks. 30 per cent on CKD vehicles. Under the Free Trade Agreement with Australia the rates are 0 per cent.
United States	• 2.5 per cent on passenger vehicles. 25 per cent on light commercial vehicles. For most countries with a Free Trade Agreement, including Australia, the rates are 0 per cent.

Source: Austrade (2013); Central Board of Excise and Customs (2012); European Commission (2013); US Department of Commerce (2011); Harmonized Tariff Schedule of the United States (2013) http://www.usitc.gov/publications/docs/tata/hts/bychapter/1300c87.pdf

Non-tariff barriers

Non-tariff barriers consist of a range of measures designed to limit importation. They can include local content rules, complex product and import regulations, and government purchasing policies favouring domestically produced items. Examples of non-tariff barriers include:

- India bans the importation of remanufactured, rebuilt and/or used motor vehicle parts (US Department of Commerce 2011).

- Both the European Union and Japan operate a type of approval system for motor vehicles and parts. This requires parts and vehicles to undergo extensive certification before importation is allowed (Tanabe 2012).
- Korea previously had a practice of subjecting owners of foreign vehicles to tax audits. This policy led to very low levels of importation despite low-tariff barriers (US Department of Commerce 2011).

Trade bloc membership

Trade bloc membership effectively increases a country's domestic market through the removal of trade barriers within a trade bloc. Examples of large trade blocs include the European Union (EU), North American Free Trade Agreement (NAFTA) and the Association of Southeast Asian Nations (ASEAN).

Bilateral Free Trade Agreements (FTAs) can have a similar effect to trade bloc membership by eliminating tariffs and other barriers to trade. Australia currently has FTAs with a number of countries, including the US, Malaysia and Thailand. In addition, FTAs are currently being negotiated with countries including China, Japan, Korea and India (DFAT 2013).

Indirect industry support and other factors influencing investment decisions

Direct investment support and trade protection measures are not the only factors companies take into account when making their investment decisions. There are a range of general and institutional factors that may make one country or region more attractive to invest in than another. Examples of these factors include incentives for R&D, education levels, industrial relations policy, corporate tax rates and other taxes.

General R&D support

Innovation is one of the key factors that allows countries and companies to remain competitive. As a result, many countries provide subsidies and other incentives such as low-interest loans to companies that engage in R&D. This is often focused on particular areas of innovation, for example clean energy.

One key method used to encourage innovation is the provision of R&D tax credits. This allows companies that satisfy the requirements of the program to deduct a percentage of their R&D expenditure from their taxable income. Depending on the deduction rate this can be a significant benefit to the company. An example of UK R&D tax credits is discussed in the following section.

Education and training support

Providing support for education and training also allows countries to remain competitive by maintaining and increasing technical capability within the workforce.

Education and training support encompasses both the general system of education and training provided by the government (e.g. schools and universities), as well as support for training specific to the automotive industry. This support may include direct training efforts, cash grants, tax offsets and rebates, and subsidies.

Corporate tax rates

Corporate tax rates include both national and state corporate taxes. In Australia, this includes the federal corporate tax rate as well as the payroll taxes levied by the states. No easy comparison of corporate tax rates between countries is possible due to the different treatment of deductions, exemptions and other factors. However, the headline corporate tax rate may be taken as a proxy.

In general, a high corporate tax rate makes it less attractive for a company to invest in a certain country. Other incentives may help to offset this disadvantage.

Table 2.4 shows the headline corporate tax rate in selected countries. Australia's corporate tax rate of 30 per cent is similar to that of France, Germany and India. The United Kingdom and China both have lower rates, while Japan and the United States have higher rates.

Table 2.4

HEADLINE CORPORATE TAX RATES IN SELECTED COUNTRIES

Country	Tax rate (per cent)
Sweden	22
United Kingdom	24
China	25
Germany	29.48
Australia	**30**
India	32.45
France	33.33
Japan	38.01
United States	40

Note: there is some variation within countries. For example, Delaware in the US does not levy a corporate tax based on income. However, a franchise tax is levied based on the estimated value of the company.
Source: KPMG (2013)

Other

Various other institutional and cultural factors can affect investment decisions. These include, but are not limited to:

- industrial relations policies (including minimum wages, minimum employment conditions, ease of hiring and firing);
- policy certainty;
- the presence of a carbon tax or other greenhouse gas abatement policies;
- political stability;
- presence of corruption;
- complexity of bureaucratic processes; and
- availability of source materials and skilled employees.

2.4 Examples of industry support programs

This section provides specific examples of some of the policy instruments mentioned above for a number of selected countries.

European Union

In 2010 the automotive manufacturing industry in the European Union produced just over 15 million passenger vehicles. This was an increase of 8.3 per cent compared to 2009. The majority of countries in the EU have some level of automotive manufacturing. The five largest producers are Germany (5.5 million), France (1.9 million), Spain (1.9 million), the UK (1.3 million) and the Czech Republic (1.1 million) (ACEA 2011).

Total automotive employment in the EU in 2007 was 12.6 million, of which 3.5 million were employed in manufacturing. The number of persons employed in the automotive manufacturing sector represent 10.2 per cent of total employment in the EU manufacturing sector (ACEA 2011).

The European Union regularly provides assistance to the automotive industry for specific projects through loans provided by the European Investment Bank (EIB) (see Box 2.2). Individual member states may also provide incentives.

Box 2.2

SUPPORT PROVIDED BY THE EUROPEAN INVESTMENT BANK

The EIB provides loans for projects that are aligned with European Union objectives. This includes a commitment to more sustainable transport. Since 2011 the EIB has provided a number of loans to car manufacturers and parts suppliers to improve the energy efficiency of motor vehicles. Examples include:

- EUR 300 million to Bosch for the construction of a new R&D Centre in Renningen, Germany (total estimated cost EUR 732 million). The R&D Centre will develop technology in the fields of power electronics and e-machines for hybrid and electric vehicle platforms.
- EUR 350 million to Fiat Industrial to support R&D project at five research centres in Italy, Germany and Switzerland. The aim of the research is to improve the energy efficiency of the company's products by improving powertrain technologies and vehicle architecture (including aerodynamics and weight reduction).
- EUR 220 million to Nissan to support the integration of new machinery and tooling for production of the LEAF, Nissan's 100 per cent electric car, in Sunderland (UK). The project also received a EUR 23.1 million Grant for Business Investment from the UK Government. The total investment made by Nissan will be approximately EUR 468.2 million, with 2,250 jobs maintained at Nissan in the UK. Production is set to start in 2013.

Source: EIB (2012a); EIB (2012b); EIB (2011)

R&D investment incentives in the UK

The automotive industry invested around £1.3 billion in R&D in 2010. With developments toward greener technology this is likely to grow in the future. The UK Government provides incentives for investment in R&D through the R&D tax credit system (SMMT 2012). The R&D tax credit system allows companies a tax credit of up to 225 per cent of their R&D expenditure for small to medium enterprises (up to 500 employees with some limits on revenue and balance sheets) and up to 130 per cent for large businesses (HMRC 2013). This represents a significant amount of support to the automotive industry.

UK Regional Growth Fund

The Regional Growth Fund (RGF) is a £2.6 billion fund operating from 2011 to 2016. It encourages private sector investment to create growth and employment. The first 3 rounds leveraged over £13 billion of private sector investment and created or safeguarded over 500,000 jobs. The fund has a minimum bid threshold of £1 million. Recipients in the automotive sector include:

- Unipres UK, a supplier to Nissan, was granted £5 million towards a £36 million project.
- Jaguar Land Rover received £70 million for R&D purposes and invested a further £100 million of its own money. The project is expected to create 2,500 jobs. (Department of Business, Innovations and Skills (UK) 2013)

United States

Before the global financial crisis passenger vehicle sales in the US ranged from 15 to 17 million per year. This dropped to around 10 million per year in the wake of the financial crisis. Car sales have slowly increased since then. In 2012 14.4 million passenger vehicles were sold in the US, an increase of over 10 per cent compared to 2010. Of these, just over half were passenger cars and just under half were light trucks (including utility vehicles and SUVs) (Alliance of Automobile Manufacturers 2013).

The US automotive industry is supported in two key ways:

- general investment incentives; and
- R&D loans.

Investment incentives

Individual states and local governments may decide to provide investment incentives to automotive manufacturers. These incentives are provided to either attract new investment and encourage manufacturers to construct new plants, or to maintain current capability and prevent manufacturers from leaving the area.

Research conducted by the New York Times in 2012 shows that GM, Ford and Chrysler are among the top recipients of investment incentives in the US. These three companies together received more than US$4.7 billion in incentives from more than 20 states. Much of this came from Michigan, where all three have major operations (New York Times 2012).

Box 2.3 provides an example of where investment incentives were a deciding factor into where to locate a new production facility.

Box 2.3

TESLA LOCATES PRODUCTION PLANT IN SAN JOSE

In October 2008 Tesla Motors announced it would base its first production plant in San Jose, California. This decision came after a long process in which Tesla Motors also considered sites in Arizona, the San Francisco Bay area and New Mexico. The company initially chose Albuquerque in New Mexico as its new location. A $20 million subsidy package of infrastructure improvements and business credits was a major factor in this decision.

However, after changes in management the company decided to locate in San Jose instead. The Californian Government offered an $8 million saving on manufacturing equipment through its subsidies for Zero Emission Vehicles, as well as $1 million for employee training. In addition, San Jose offered an 89 acre greenfield site with the first 10 years rent free.

Source: Site Selection 2008

Box 2.4 provides an example of investment incentives that helped to keep open an existing factory in Arlington, Texas.

Box 2.4

GM IN ARLINGTON

GM has had a manufacturing facility in Arlington, Texas since 1954. The future of the factory was under threat due to the need for GM to rationalise its operations.

The future of the factory was assured after the City of Arlington offered GM a 90 per cent discount on taxes for ten years in exchange for a US$200 million investment in a stamping plant. This is in addition to a previous tax deal when GM invested in a body shop and new equipment for the factory. Together these incentives are worth $2.2 million.

Source: Maynard (2012)

Box 2.5 gives an overview of the recently announced assistance by the State of Kentucky to Toyota to expand one of its production facilities. This plant extension is a potential threat to Toyota Australia since the plant already produces a large number of Toyota Camrys.

Box 2.5

TOYOTA PLANT EXPANSION IN KENTUCKY

In April 2013 Toyota and the State of Kentucky announced a $146.5 million incentive package for Toyota to expand its Georgetown, Kentucky plant. The package includes tax breaks over ten years. In return, Toyota will invest $531 million to expand the Georgetown plant to build the Lexus ES model. The project is expected to create 750 new jobs and add around 50,000 units to the plant's capacity of 500,000 cars per year from 2015. The plant already produces the Toyota Camry.

Source: Reuters (2013)

Greenville Area Development Corporation (GADC)

The Greenville Area Development Corporation (GADC) was set up in 2001 to stimulate growth and prosperity in Greenville County, South Carolina. A wide variety of investment incentives is on offer, including (but not limited to):

- property tax concessions and exemptions worth up to 20–25 per cent annually for five years on new capital investment; and
- jobs tax credit of up to 50 per cent of the corporate income tax liability over five years (years 2–6 of operation), which can be carried forward for up to 15 years. (GADC 2013)

BMW, whose only US production facility is located in Greenville County, has been one of the key beneficiaries to this program. BMW employs 7,000 people, and has generated an estimated further 30,000 jobs in the Greenville area as a result of its presence.

R&D investment loans

The Advanced Technology Vehicles Manufacturing Incentive Program (ATVM) is a US$25 billion program that provides loans to vehicle and components manufacturers to invest in advanced technology vehicle production facilities that result in vehicles with higher fuel efficiency. The ATVM was set up in 2008. Loans may be up to 30 per cent of the cost of re-equipping, expanding or establishing manufacturing facilities within the United States. To be eligible manufacturers must produce (parts for) enclosed vehicles designed to carry at least two adult passengers that achieve at least 75 miles to the gallon. Vehicles may be fuelled by diesel, petrol, electric motors or a combination of these (US Department of Energy 2013). Box 2.6 provides two examples of projects funded through ATVM.

Box 2.6

ATVM EXAMPLE PROJECTS

Two examples of projects funded through the ATVM are:

- Ford Motor Company is using a $5.9 billion loan to upgrade factories across Illinois, Kentucky, Michigan, Missouri, and Ohio and to introduce new technologies that will raise the fuel efficiency of more than a dozen popular vehicles. The project will convert nearly 33,000 employees to green manufacturing jobs.
- Nissan is using a $1.4 billion ATVM loan to retool their Smyrna, Tennessee, manufacturing facility and construct one of the largest advanced battery manufacturing plants in the United States. The plant will be capable of producing 200,000 advanced-technology batteries a year.

Source: Loan Programs Office 2013, ATVM, accessed at http://lpo.energy.gov/?page_id=43 on 22 February 2013

China

The Chinese automotive manufacturing industry consists of around 100 domestic car manufacturers, as well as most major international manufacturers (including Volkswagen, GM, Ford and BMW). International manufacturers are permitted to set up production facilities in China only if they have a Chinese partner. Most domestic producers make cars for the domestic market, usually on a relatively small scale (tens of thousands). Many of these are owned by local and state governments and are used as a means to reduce unemployment (The Economist 2012). International manufacturers operating in China produce mainly for the Chinese market.

Chinese manufacturers have expanded as well by buying well known established brands. For example, Geely bought Volvo Cars from Ford in 2010.

Currently, around 1 million Chinese produced vehicles are exported per year. This represents around 5 per cent of total production. Chinese manufacturers have recently started exporting to Australia. This includes brands such as Great Wall Motors since 2009 and Geely since 2011. These brands compete mainly on price. Chinese brands focus their exports mainly on emerging markets where price is a strong factor in the decision about which car to buy (Bradsher 2012).

India

India has historically been strongly protective of its automotive industry, although over time the market has been liberalised substantially. From 1947 until 1980 foreign involvement with the automotive industry was severely limited. The rules were relaxed somewhat in the 1980s, allowing foreign automotive manufacturers to enter the market in partnership with Indian companies (e.g. Maruti Suzuki). Indian car companies were also able to import technology from this time to improve competitiveness. In the 1990s rules on foreign ownership were relaxed further, which allowed the car industry to grow strongly (Ranawat and Tiwari 2009).

India still has strong barriers to trade including a 100 per cent import tariff on passenger vehicles and a ban on the importation of used vehicles. In addition, the Indian government provides generous investment support to the automotive industry, as outlined below.

In the 2011–12 financial year, India produced more than 3 million passenger vehicles. More than half a million cars were exported (SIAM 2012).

India is the home of the world's cheapest car, the Tata Nano, produced by Tata Motors. The car was launched in 2009 and is made and sold in India. Production of the Tata Nano was initially planned for Singur in West Bengal; however, after protests from local farmers it was decided to move production to Gujarat. Tata Motors received significant incentives to locate its plant in Gujarat, including a very low interest loan with an interest rate of 0.1 per cent and tax free electricity supply (The Indian Express 2009).

Investment support

The Indian Government released its *Automotive Mission Plan 2006-2016* (AMP) in 2006. The AMP outlines how the Indian Government will support the development and growth of the Indian automotive industry. It includes a range of policy recommendations, including recommendations for investment support. This includes:

- tax holiday for the automotive industry for investment exceeding Rs.5 billion (approximately $90 million);
- one-stop clearance for FDI proposals in the automotive sector;
- tax deductions of 100 per cent of export products;
- deduction of 30 per cent of net (total) income for 10 years for new industrial undertakings; and
- concession of import duty on machinery for new plants or capacity expansion (Ministry of Heavy Industries and Public Enterprises).

Japan

Japan is home to four of the ten largest car manufacturers by volume. The Japanese automotive industry encompasses all activities related to automotive manufacturing including parts manufacturing and design. In total, 5.45 million people are employed in industries related to automotive manufacturing. This represents nearly 9 per cent of total Japanese employment. Only a small proportion of these (around 3 per cent) are employed in automobile manufacturing (Japan Automobile Manufacturers Association 2012).

Market access policies

Although Japan has no tariffs on motor vehicle imports, it does have strong non-tariff barriers. In accordance with WTO rules the measures listed in Box 2.7 below apply to Japanese made vehicles as well as imported ones. However, they are likely to be a deterrent to entry into the Japanese market by foreign companies.

In addition to the measures listed in Box 2.6, it is our understanding from speaking to stakeholders that the Japanese government also imposes tight restrictions on the distribution networks of foreign brands. These restrictions act as an effective barrier to importation.

Box 2.7

MARKET ACCESS POLICIES

Japanese automotive policies that may act as a deterrent to importation include:

- Vehicle noise: Requirements for noise testing of vehicles.
- Vehicle type approval: Ministry of Transport requires that each time a feature of a car is altered, the whole car must be presented again in order to obtain type approval.
- Anti-theft alarm devices: No regulations, a number of manufacturers have removed antitheft devices to avoid breaching safety standards for alarms signal and lighting devices.
- Number plate attachment and dimensions: Unique requirements for attachment and dimensions affect the design and styling of rear part of car.
- 500mm provision for control devices: All control devices must be located no more than 500mm from the left or right of steering wheel.
- Motor vehicle inspection: Strict inspections known as 'shaken' to determine compliance with safety standards.
- Energy conservation: Petrol powered passenger cars must achieve average increase in fuel economy of 22.5% over 1995 levels by 2010. 70% reduction in carbon monoxide and nitrogen oxide emissions.
- Recycling: Ministry of Economy Trade and Industry has targeted 95% recyclability of vehicles.
- Low emissions vehicles: Target of 10 million low emission vehicles on the road by 2010 (630,000 in use in 2002). Prime Minister has requested that government agencies only purchase environmentally friendly vehicles.

Source: FAPM (2008)

Thailand

In 2011 Thailand was the 12th ranked producer of motor vehicles in the world, producing 1.8 million vehicles. Thailand is committed to growing its automotive manufacturing industry and is planning to be ranked in the top ten and produce 2.5 million vehicles annually by 2020. Production in Thailand is focused mainly on pick-up trucks (it is the second largest producer of pick-up trucks in the world). It is looking for a second area of specialisation in small eco cars (Wright n.d.).

The Thai government has stimulated demand for locally produced cars through the First Car Buyer Scheme. Under this scheme, Thai nationals aged 21 and over who have never owned a car can receive a subsidy to buy a new car. Vehicles have to be valued at less than one million baht (approximately $31,000), be manufactured in Thailand and have an engine capacity of less than 1.5 litres. Eligible applicants can get a tax rebate of up to 100,000 baht (approximately $3,100) if they own the car for more than five years.

Thailand charges an excise on all motor vehicles based on engine size. This ranges from 30 per cent for engines less than 2000 cc to 50 per cent for engines over 3000 cc (Preece 2012). As an example, the Ford Territory attracts a 40 per cent excise in the diesel form and 50 per cent for the petrol engine due to its engine size, which significantly increases its price compared to other vehicles on the market.

Investment support

The Thailand Board of Investment offers incentives to FDI in a number of eligible industries, including the automotive manufacturing industry. The precise terms depend on the type of vehicle manufactured, for example whether it is a new or existing vehicle. Production must be at least 100,000 vehicles in each of the first five years of production. Also, investment must be at least 10 billion baht (approximately $310 million) for new vehicles and 15 billion baht (approximately $470 million) for existing vehicles. Incentives include a corporate tax exemption of up to six years and exemption of import duty on machinery (Thailand Board of Investment 2011).

Malaysia

In 2012, Malaysia produced around 500,000 cars. Most of these were built for the domestic market. Malaysia has two national brands: Proton (also exported to Australia) and Perodua. Both of these brands were established with the assistance of the Malaysian Government, which continues to provide assistance to the industry.

Investment support

The Malaysian Investment Development Authority (MIDA) provides incentives to the automotive industry. Incentives are available for the manufacture of high value-added parts and components for the automotive industry, as well as for the assembly or manufacture of hybrid or electric vehicles. High value-added parts include transmission systems, brake systems, airbag systems and steering systems. Qualifying critical parts and components supporting the manufacturing of hybrid and electric vehicles include electric motors and batteries, battery management systems, inverters, electric air conditioning and air compressors.

Incentives include Pioneer Status with an income tax exemption of 100 per cent for a period of 10 years. Unabsorbed capital losses and accumulated losses incurred during the pioneer period can be carried forward and deducted from the post pioneer period income of the company. In addition, a 100 per cent Investment Tax Allowance is offered on the qualifying capital expenditure incurred within a period of five years. Manufacturers of hybrid and electric vehicles may further be eligible for a 50 per cent exemption on excise duty for locally assembled/manufactured vehicles (MIDA 2013).

South Africa

The South African Government introduced a new Automotive Production and Development Program from 2013. This replaced the Motor Industry Development Program, which provided subsidies contingent with exports, and was incompatible with WTO rules. The Automotive Production and Development Plan is similar in design to the Australian ACIS and ATS programs; however, it is much more generous. Conservative estimates on a $30,000 car indicate that production support of around $2,000 is available. This is in addition to upfront investment grants of up to 30 per cent (AIEC 2011).

Brazil

In 2012, Brazil was the seventh biggest producer of motor vehicles in the world, producing more than 2.6 million vehicles. The industry has grown strongly since the 1970s, with many major car companies, including Volkswagen and Ford, having production facilities in Brazil.

In 2011, Brazil increased the industrial products tax on car makers by up to 30 per cent on vehicles that are assembled mainly from foreign-manufactured components. This was in response to a rapid appreciation of the Real, which was threatening competitiveness of the Brazilian car industry. This tax increase was in contravention of the WTO rules that dictate that countries are not allowed to tax domestic and imported products differently (Baker 2011).

This increase in tax illustrates how far some countries are willing to go to protect their automotive industry, in contravention to the WTO framework.

Support to the automotive manufacturing sector during the GFC

The GFC put significant pressure on the automotive manufacturing sector, with demand dropping suddenly and finance becoming more difficult. This threatened to bankrupt a number of global car companies. Some governments implemented specific assistance packages to the automotive industry to help the industry through the aftermath of the GFC. This section gives a brief overview of measures taken in the European Union and the United States.

European Union

In the wake of the GFC a number of countries provided bailouts to their local automotive industry. For example, France provided a €6 billion rescue plan to allow Renault and Peugeot Citroen to refinance. This package came with significant conditions on the manufacturers, including a ban on redundancies, suspension of factory closures in France and the exclusion of major restructuring plans during the five year life of the plan (Espinoza 2009). Italy, Spain and the UK also announced bailout packages.

United States

In the wake of the GFC, the US Government provided significant support to the automotive manufacturing industry to prevent the disorderly bankruptcy of major manufacturers. Box 2.8 provides an overview of this support.

Box 2.8

US AUTOMOTIVE MANUFACTURING AND THE GFC

The Troubled Asset Relief Program (TARP) was established in October 2008 under the Emergency Economic Stabilization Act of 2008. The aim of TARP was to restore liquidity and stability to the financial system in the US. TARP contained three automotive industry support programs:

- **Automotive Industry Financing Program**: The AIFP was aimed at supporting car manufacturers and their financing arms to prevent disorderly bankruptcies. The Treasury provided US$79.7 billion in support to General Motors (GM) and Chrysler, as well as their respective financing arms, in return for common shares in these companies. Chrysler exited TARP in 2011 after Fiat bought out the Treasury's remaining shares in Chrysler. GM remains in TARP, with Treasury holding approximately 22 per cent of GM's common stock as of 31 December 2012. Treasury intends to sell GM stock progressively in order to fully exit its GM investments by early 2014.
- **Auto Supplier Support Program**: The ASSP was announced in March 2009 as a US$5 billion program to help stabilize the automotive supply base and restore credit flows in the sector. Loans were made to GM (US$290 million) and Chrysler (US$123.1 million) that were fully repaid in April 2010.
- **Auto Warranty Commitment Program**: The AWCP was established to increase consumer confidence that Chrysler and GM would meet their warranty obligations while the companies were going through bankruptcy and restructuring. Both companies fully repaid the funds committed to them in July 2009 when they exited bankruptcy.

Source: SIGTARP (2013), *Quarterly Report to Congress*, January 30 2013

Chapter 3

Australia's strategic role

The automotive industry includes manufacturing as well as R&D, design and many other activities along the supply chain, such as retailers and mechanics.

This chapter examines the role and structure of the automotive industry in Australia and outlines the major issues facing the industry at present. The focus in this chapter is on automotive manufacturing (particularly assembly). The chapter also recounts some of the historical background to the industry today, looking in particular at the impact of the Button plan and the closures of Nissan and Mitsubishi manufacturing plants in Australia. The level of government support for the industry in Australia is also examined.

3.1 Automotive manufacturing in Australia

Australia has a long history of car production and Australian constructors have been active and innovative since the making of the first steam cars in 1896. The first major Australian carmaker was the Ford Motor Company of Australia and the very first Australian built Ford was a Model T that came off an improvised production line in a disused Geelong wool store in July 1925. However, the first wholly Australian designed and produced mass production car was by Holden in 1948 (AATSE 1988).

Australia is best known for the production of large vehicles and the Australian automotive industry has a significant heritage and a devoted base of customers. The list of companies that have produced cars over the years in Australia includes British Leyland, Chrysler, Ford, Holden, Mitsubishi, Nissan, Renault, Rootes, Toyota and Volkswagen.

The Australian automotive industry has traditionally enjoyed a high degree of protection. From as early as 1965, specification of minimum levels of local content, import quotas and considerable tariffs on imported vehicles were used to ensure Australian vehicle manufacturers were protected to a large degree from external competition (ABS 2005).

Fundamental changes to the policy landscape were introduced in the mid-1980s with the implementation of the *Motor Industry Development Plan*. Known informally as the Button Plan, it aimed to reduce the level of protection in the industry achieved through regulations such as quantitative restrictions on imports and import tariffs. Box 3.1 discusses the key points of the Button Plan in further detail.

Box 3.1

THE BUTTON PLAN

The Button plan was the informal name given to the Motor Industry Development Plan of 1985; a federal government initiative to streamline the Australian motor vehicle industry and transition it to lower levels of protection.

Then Minister for Industry and Commerce John Button planned to reduce the number of models produced by Australian industry from 13 to 6, thereby consolidating resources and hence enabling increased economies of scale to be realised within the industry. This would gradually allow the industry to be exposed to greater levels of international competition. At the time of the reform the industry was protected by a tariff of 57.5 per cent (Bracks 2008).

The plan was broadly a success and the industry became one of Australia's top ten export earners and the largest manufacturing export earner at 10.7 per cent of manufacturing exports. In 1991, just 10 per cent of local product of Australian motor vehicles was exported. By 2007 this had increased to 42 per cent (Gray et al 2011).

One interesting upshot of the plan was the sharing of models between different manufacturers with so-called 'badge engineered' models of the same vehicle sold by different manufacturers. However, the badge models proved less popular than the original cars and overtime this arrangement led to car manufacturers importing larger numbers of cars.

Source: Bracks (2008) and Gray et al. (2011)

Alongside the Button plan, the Automotive Competitive Investment Scheme (ACIS) was formulated during the late 1990s to provide the industry with continuing government support. ACIS was a WTO compatible scheme that replaced the Export Facilitation Grants Scheme and the Duty Free Allowance Scheme and provides import duty credits in recognition of overall production levels and investment in plants and equipment and research and development.

In spite of both the Button Plan and ACIS, growing pressure on the industry has seen the number of manufacturers decrease from five to three over the past 20 years, with the exits of both Nissan (1992) and Mitsubishi (2008). The closure of the Nissan Clayton Assembly Plant in South Eastern Melbourne saw 1,800 workers lose their jobs in the face of difficult financial circumstances for the parent corporation in Japan (McKay 1992). More recently, Mitsubishi was forced to close its Australian assembly operations in Adelaide in March 2008. This plant closure resulted in 930 workers losing their jobs (ABC News 2008). Finally, Ford has announced that its manufacturing operations will cease in 2016.

Although the Button Plan achieved medium-term success and reached its objective of streamlining automotive manufacturing in Australia, it did not succeed in opening up access to export markets as much as was expected. This, in part, reflects heightened levels of international competition in the automotive industry and the importance of economies of scale in producing competitively priced automobiles. Non-tariff barriers applied by foreign governments have also limited Australian exports to a number of key markets.

The GFC, strong Australian dollar, proliferation of non-tariff barriers, and increased competition have caused exports to decrease. This is forecast to continue by an annualised 2.5 per cent over the next five years (IBISWorld 2012a). Global over-capacity and currency manipulations by some governments have further contributed to decreasing exports.

Australian built cars continue to feature prominently in the top ten of vehicles sold in Australia. The Holden Commodore, Holden Cruze and Toyota Camry were all in the top ten vehicles sold overall in Australia in 2012. The Ford Territory was ranked sixth most sold SUV (Drive 2013). The Toyota Camry has been the best-selling car in the medium car segment for nearly 20 years, with a 40 per cent market share despite strong competition.

3.2 The industry today

At present, three major companies dominate the automotive manufacturing industry in Australia. These are:

- the Toyota Motor Corporation Australia (45.6 per cent of manufacturing volume);
- the Ford Motor Company of Australia (18.7 per cent); and
- GM Holden (23.7 per cent).

Other firms (mainly truck manufacturers) make up the remaining 12 per cent (IBISWorld 2012a).

The industry at large is far greater than the manufacturing component and employs over 260,000 people across more than 20,000 enterprises across the supply chain. This includes businesses upstream in the supply chain (e.g. parts manufacturers), as well as downstream (e.g. car dealers, maintenance and repair). The automotive industry's share of the economy is 1.52 per cent (IBISWorld 2012b) whereas its share of the manufacturing sector is around 29 per cent by employment.

The automotive supply chain

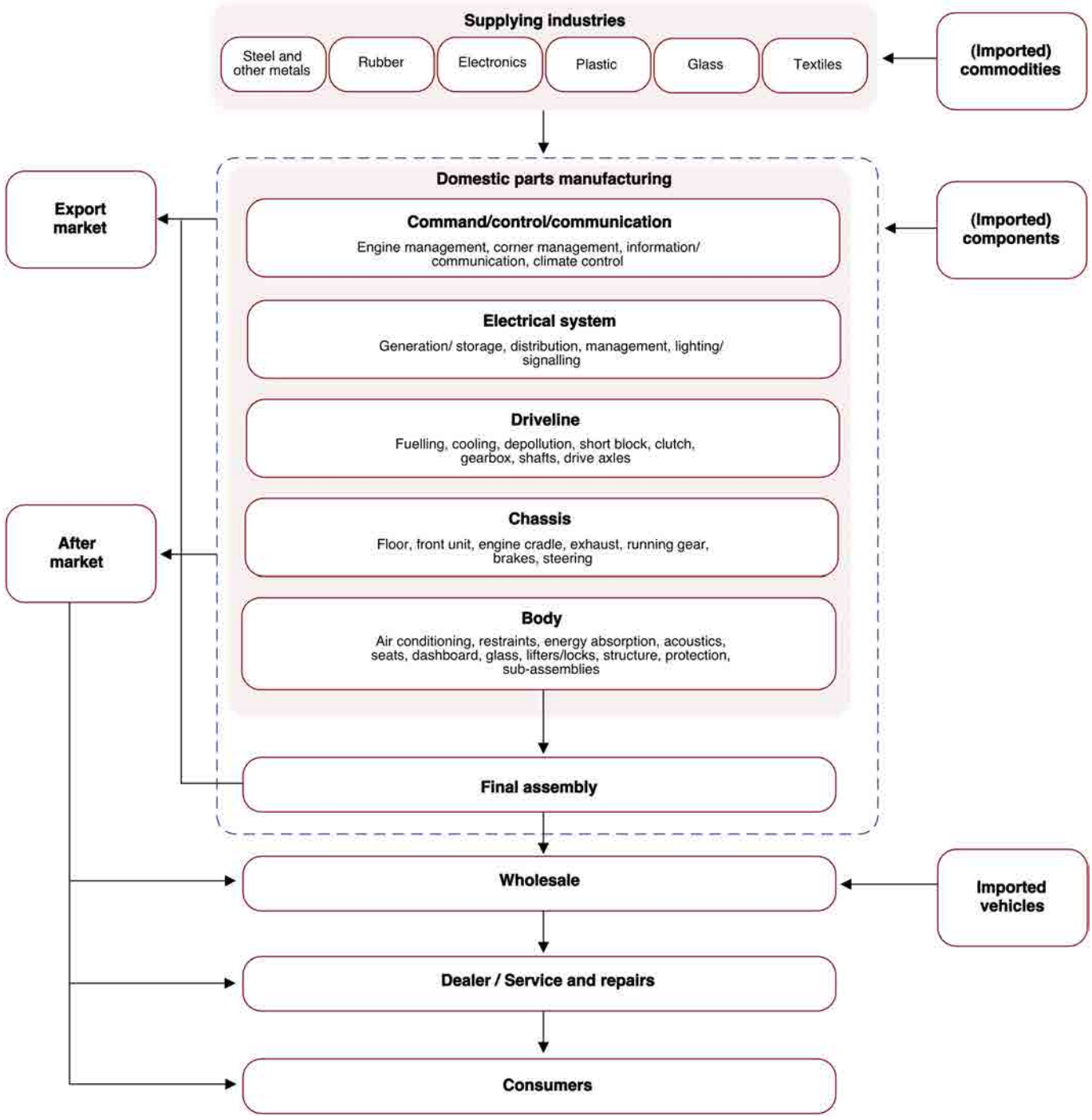
Figure 3.1 provides a simplified view of the automotive supply chain in Australia. It shows the wide-range of industries from which materials and components are drawn, as well as the complexity of the individual parts that make up a motor vehicle. Motor vehicles that are assembled in Australia are made with both imported and domestically produced parts.

The automotive parts and accessories manufacturing sector in Australia employs more than 14,000 people in 850 businesses and is expected to have total revenue of nearly $5.5 billion in 2012–13. Parts manufacturers rely heavily on motor vehicle manufacturers, who account for 59 per cent of revenue. Parts dealers account for a further 28 per cent of revenue, while exports make up 13 per cent (IBISWorld 2012c). This illustrates the degree to which automotive parts manufacturers are reliant on domestic production of motor vehicles for their survival.

Parts manufacturers are geographically concentrated around Melbourne and Adelaide to be closer to the vehicle manufacturers. This concentration is illustrated in maps of supplier locations and operational spend in Attachment 1. These maps further illustrate the significant amounts spent by the three domestic vehicle manufactures on local supplies and parts. According to the data supplied, they spend more than $2.2 billion in Victoria and $600 million in South Australia each year. In addition, smaller amounts are spent at providers in New South Wales and Queensland. Spending on local parts manufacturers has significant flow-on effects across the supplier network, generating employment, R&D investment and other economic activity.

Figure 3.1

AUTOMOTIVE SUPPLY CHAIN



Note: this excludes non-production suppliers such as advertising agencies and vehicle logistics
Source: Allen Consulting Group

Some automotive parts manufacturers have been successful at diversifying their product offerings to reduce their reliance on the domestic motor vehicle manufacturers. One such example is Composite Materials Engineering Pty Ltd, which has used its expertise in composite materials to branch out into construction materials and food packaging (see Box 3.2).

Box 3.2

COMPOSITE MATERIALS ENGINEERING PTY LTD

Composite Materials Engineering Pty Ltd (CME) is an expert in moulding composite materials, and can formulate and compound its own range of Sheet Moulding Compounds (SMC). Historically CME has had a strong emphasis on automotive products; however, in the last 15 years they have diversified into other non-automotive areas.

CME makes parts for the Holden VE/VF Commodore (e.g. spare wheel tub and cover, ute load floor), HSV Maloo Ute (composite tailgate), Ford Territory (load floor and third row seat), as well as painting parking sensors for a number of brands including Toyota, Holden and Mazda.

In addition to automotive parts, CME also makes non-automotive products including building materials, starch trays and seating for trains, buses and trams. SMC materials developed by CME are also sold to other moulders. A recent addition to the CME product range is a range of Akril products. CME produce Akril painted sheets for use in bathroom walls, showers, kitchen splashbacks and foyer walls. Akril is a cheaper alternative to glass splashbacks. In addition, CME produces Akril shower bases.

CME invests heavily in research and development. It is currently working with Technique Solar to manufacture a solar panel that generates electricity and as a by-product would provide all of a household's hot water requirement. The product has the backing of the government affordable housing scheme and could be an asset for remote housing, supporting the mining industry.

Source: Information supplied by Composite Materials Engineering

Another strategy for reducing the reliance on the domestic motor vehicle manufacturers is to focus on export markets. However, this is not an option for all manufacturers, especially if they are part of a global network already. The example of TI Automotive Australia is shown in Box 3.3.

Box 3.3

TI AUTOMOTIVE AUSTRALIA

TI Automotive Australia is part of TI Automotive, a multi-national company. TI Automotive Australia is the core Australian supplier of brake and fuel lines to all three domestic manufacturers. Due to the nature of their products and TI Automotive's extensive international network, TI Automotive Australia is entirely reliant upon the domestic automotive industry. The company has diversified to remain sustainable, for example by establishing production of formed nylon fuel lines and steel filler necks to supplement their traditional steel brake and fuel line business.

Products include underfloor brake and fuel bundle assemblies, engine bay brake bundles, steel brake lines, steel fuel lies, plastic fuel lines, fuel filler necks, sunroof drain tubes, tubular engine and transmission components.

Source: Information supplied by TI Automotive

MTM Pty Ltd, as shown in Box 3.4, is an example of a company that has been successful at tapping into export markets, as well as differentiating its product range.

Box 3.4

MTM PTY LTD

MTM is a Victorian company based in South Oakleigh and employing 95 people. They specialise in automatic gearshift assemblies, doorchecks, park brakes, interior and exterior door handles, and bonnet release mechanisms. MTM engages in R&D which is focused on their two main export items: doorchecks and automatic gearshifts.

MTM was one of the first companies to introduce doorchecks incorporating a spring design. The spring introduction allowed the doorcheck to operate consistently in all weather temperatures (-40C to 80C). MTM has also worked on a specially formulated plastic compound on the doorcheck lever arm to eliminate noise in all environments whilst at the same time creating no additional noises. This makes MTM products suitable for the harshest environments including central Australia and Arabic countries. MTM has also been at the forefront of a plastic designed doorcheck which performs to the same specification as the metal counterparts but are lighter.

MTM was one of the first manufacturers to utilise a plastic base, a complete divergence from the metal fabricated base. It allowed precision in design and improved quality of components for manufacture. MTM has multiple design patents in automatic gearshift assemblies. One of these involves the replacement of a heavy metal arm in rear wheel drive vehicles with a plastic one, which has allowed significant weight savings.

MTM has been exporting since 1997, and exports account for around 30 per cent of sales. They export directly to seven countries, including China, India and the US (they supply all Cadillac vehicles manufactured in the US with doorchecks). Another three countries will be added in 2014.

In addition, MTM has diversified into non-automotive fields. This includes assembling the only Australian made All Terrain Utility Vehicle (the Tomcar), manufacturing a truck immobiliser that has the capability to slow down trucks or trailers while still managing control of the vehicle, and supporting the design and manufacture of water recycling pods.

Source: Information supplied by MTM

Precision Components Australia Pty Ltd has expanded its international presence through international joint ventures. This has allowed significant product innovations, as illustrated in Box 3.5.

Box 3.5

PRECISION COMPONENTS AUSTRALIA PTY LTD

Precision Components Australia (Precision) specialises in metal stamping. It is based in Beverley, South Australia and employs 80 people. It has the largest capacity and capability in metal stamping in Australia, as well as the only hot stamping facility in Australia. Hot stamping is a way of processing steel to make lightweight, high-strength parts that are commonly used in industry. It is also known as hot forming or press hardening.

Precision has entered into joint ventures to achieve major product advancements:

- Xiangtan TQM Transmission Company, located in Xiangtan China. Precision developed specialized metal stamping processes and tooling to produce clutch assembly cylinders for Chinese car maker Geely. This is used to produce ‘China’s first automatic transmission produced by a Chinese national car maker’.
- Precision GNS Hot Stamping Pty Ltd, which was formed with South Korean company GNS. This is Australia’s first hot stamping facility, which was awarded contracts for the new MY14 Commodore. Precision received the GM Holden Supplier of the Year for ‘Best investment in technology’.

Source: Information supplied by Precision Components Australia

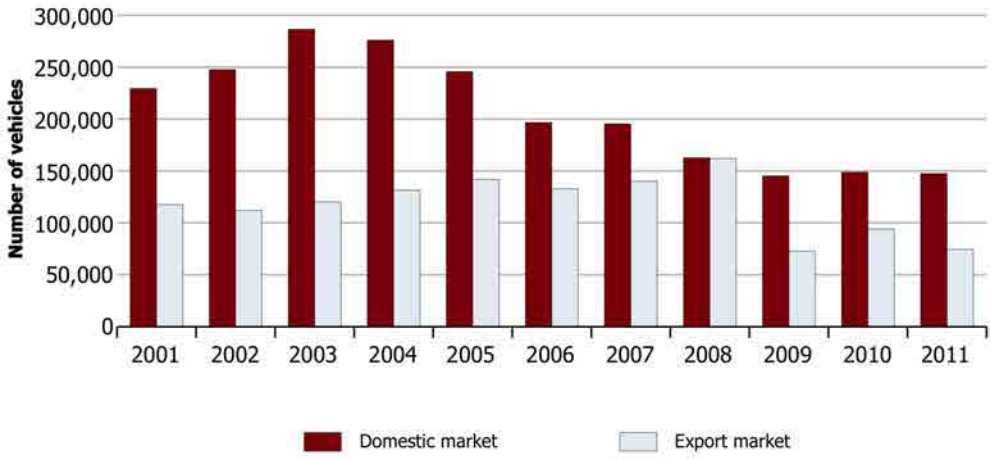
Further examples of automotive parts manufacturers showing the breadth and depth of expertise available in Australia can be found in Appendix C.

Production and revenue

Total production of Australian-made passenger vehicles in 2012 was about 221,000 units, of which 135,000 were sold domestically. This compares to a total production of approximately 408,000 units in 2004 (DIISRTE 2013c). These declining levels of production contrast with total Australian demand for new vehicles, which has risen to 1,028,560 (forecasted sales) in 2012-13 from 901,062 in 2003-04. Figure 3.2 compares domestic sales and exports of locally produced PMV (passenger motor vehicles) and PMV derivatives since 2001 (DIISRTE 2011).

Figure 3.2

MARKETS FOR LOCALLY PRODUCED PMVS AND PMV DERIVATIVES

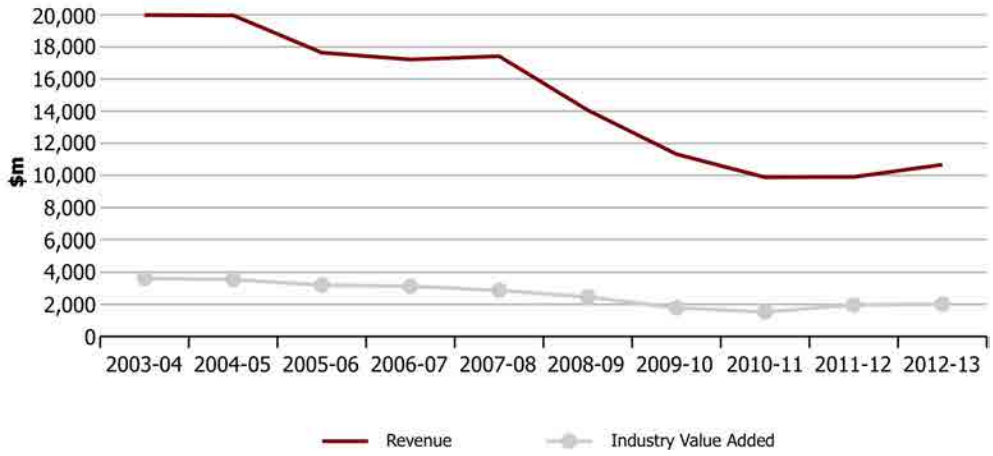


Source: DIISRTE 2011.

The industry is forecast to generate revenues of up to $10.7 billion in 2012-13, with an annual profit of over $213.3 million (IBISWorld 2012a). Although the industry has undergone a significant downturn in recent years, pent up demand from the global financial crisis has begun to generate improvements in the industry overall as shown in Figure 3.3. Note this forecast does not take into account recent job cuts announced by Holden.

Figure 3.3

REVENUE AND INDUSTRY VALUE ADDED



Source: IBISWorld 2012a

Revenue in the industry has decreased steadily over the past decade, although revenue appears to be improving as the impacts of the GFC recede. Demand problems faced by domestic producers have also been intensified by the high Australian dollar, increased input prices and intensified competition.

The market fluctuations of recent years have drawn attention to fundamental threats to the industry, in particular the inability of the Australian automotive manufacturing industry to generate economies of scale to the same degree as major overseas manufacturers (FAPM 2008).

Employment

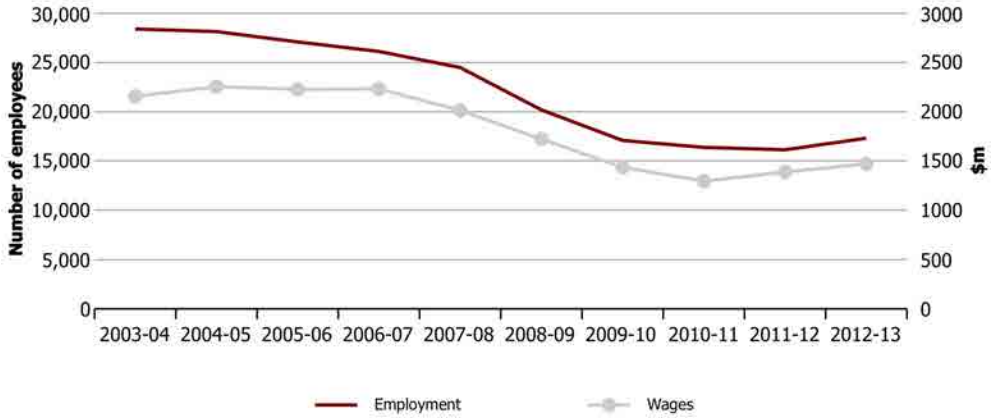
Employment in the automotive sector in total peaked in around 2004–05, with nearly 78,000 people involved in the industry as a whole (DIISRTE 2011) and some 28,500 people directly working in the automotive manufacturing sector[9] at that time (IBISWorld 2012a). The sharp decline in production experienced over the past decade saw this figure fall to just over 16,000 people employed in automotive manufacturing in 2011–12 (IBISWorld 2012a).

As can be seen from Figure 3.4, IBISWorld has forecast that 2012–13 will be the first time in ten years that employment in the sector will have grown. Employment is forecast to reach just over 17,000 people (IBISWorld 2012a). The increase in employment is thought to be due to pent up demand for private vehicles left over from the GFC. In light of recently announced job cuts by GMH it appears unlikely that this forecast increase will occur.

[9] This includes cars, SUVs, light and heavy trucks, vans, buses and automotive engines.

Figure 3.4

EMPLOYMENT IN MOTOR VEHICLE MANUFACTURING



Note: Wages in 2013 dollars.
Source: IBISWorld, 2012a.

While estimates of employment are variable (DIISRTE reports slightly higher figures than IBISWorld over the past decade), employment does appear to be on a downward trend. This stands in stark contrast to growing employment levels in the automotive sector as a whole. Manufacturing (including parts manufacturing) accounted for 20 per cent of all employees in the automotive industry in 2002–03. In 2011, that figure was only 14 per cent (PwC 2011). Growth in the automotive industry as a whole is occurring mainly in automotive servicing.

The industry has a strong reputation for investing in training and skills development for its management and workforce, due to the need for Australian vehicle manufacturers to achieve world-class levels of performance in quality and price. The industry is a key source for the uptake and development of new technologies and engineering and design skills. The automotive manufacturing sector also stimulates considerable economic activity through the demand for raw materials such as iron, plastics, steel, glass and rubber (FCAI 2008).

Capital and investment

Due to the ACIS initiative, a significant amount of investment in the automotive manufacturing industry has come in the form of R&D, although as a general rule, a significant proportion of this is spent on product development, rather than pure scientific research (80:20 is approximate ratio for most MVP nations). This is likely to be higher in the case of smaller producers like Australia (FAPM 2008).

The manufacturing sector spends the largest amount on business R&D ($4.8 billion or 26.6 per cent of total business R&D spending in 2010–11 (ABS 2012b)). Manufacturing businesses are more likely to spend money on innovation because it can provide significant comparative advantages. ABS data shows that nearly $700 million was invested in motor vehicles and parts in 2010–11. This includes around $480 million in motor vehicle manufacturing alone (ABS 2012b).

ACIS and the ATS have been a key support for the automotive industry and its continued provision has attracted international investment in Australia's automotive industry in spite of the challenging global environment.

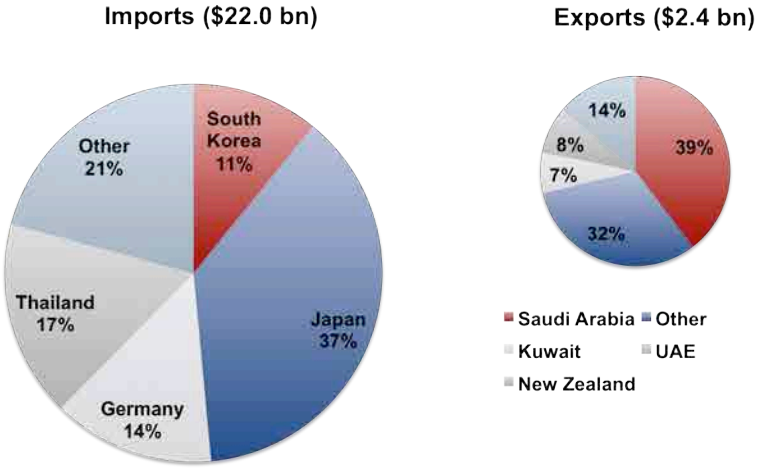
The level of capital intensity required in the automotive manufacturing industry is approximately 0.23 (units of capital per unit of labour). In other words, for every dollar invested in capital, companies in this industry spend an estimated $4.39 on labour (IBISWorld 2012a). This is slightly higher than the capital intensity of manufacturing in general. Capital requirements are obviously higher in the case of car manufacturers than mechanics or retailers, where a higher degree of labour is required. It is anticipated that the capital intensity of manufacturing will increase over the next five years with the need to adopt new technologies in order to adapt to a lower carbon economy.

International trade

Figure 3.5 shows the proportion of motor vehicle imports and exports and the major countries in each category. It is clear that Australia's largest export markets go to Middle Eastern nations (almost 70 per cent), and that imports come primarily from Asia and Europe. Imports from Thailand have also grown strongly since the signing of the Thailand–Australia FTA in 2004 (IBISWorld 2012a).

Figure 3.5

AUSTRALIA'S IMPORTS AND EXPORTS OF MOTOR VEHICLES



Source: IBISWorld 2012a

Over the past decade, there has been a steady trend of growing imports and decreasing exports, with imports now representing more than 87 per cent of domestic demand (VFACTS data). Import penetration is expected to continue over the next five years. Domestic producers have recognised the increased fragmentation of the Australian market and are increasingly tailoring their products to compete (IBISWorld 2012a). Australian built cars continue to feature strongly in the top ten best-selling vehicles.

Australia has one of the world's most open and competitive vehicle markets with a greater range of cars, trucks and buses than can be found in the US. Three hundred and fifty different vehicle types are sold in Australia and 67 brands compete in the Australian market (FAPM 2008, FCAI 2012). In the last four years alone, new makes such as Opel, Chery and Great Wall have entered the market. By comparison, around 46 brands competed in the US in 2012, despite the larger size of the market (DIISRTE 2013c).

3.3 Government assistance to the automotive manufacturing industry

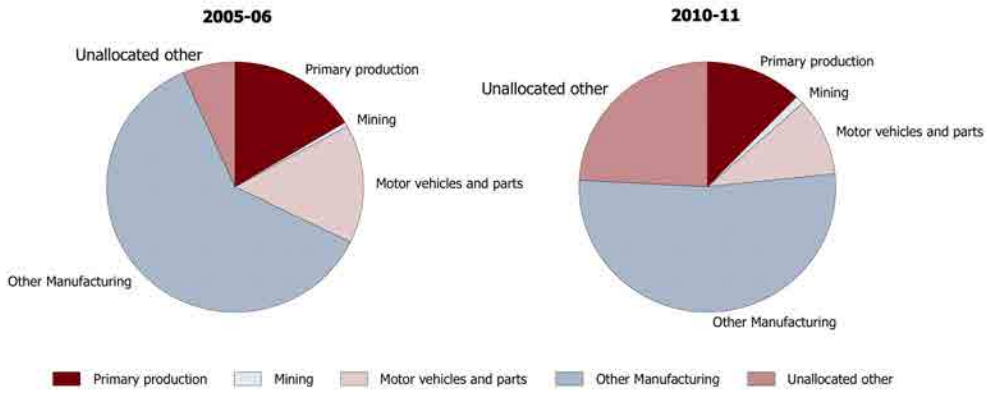
The automotive industry has traditionally received high levels of support from government, although over the past three decades the level of assistance has fallen dramatically. The effective rate of assistance has fallen from 100 per cent in 1984–85, to 12 per cent in 2007–08 and the trend is declining (IBISWorld 2012b). The effective rate of assistance takes into account both direct and indirect levels of assistance.

The level of net combined assistance (net tariff plus budgetary assistance) has decreased in recent years. In 2005–06 the level of assistance to the motor vehicles and parts manufacturing sector was $1,557.2 million. This fell to $1,179.9 million by 2010–11 despite rising assistance levels in most other industries including construction and many agricultural and service industries. For example, over the same period, net assistance in Food, Beverages and Tobacco manufacturing rose from $1,183.1 million to $1,298.8 million and assistance to the Finance and Insurance sector nearly doubled to $586.9 million (PC 2011, p.110).

Not only has the level of assistance to the automotive sector decreased, the proportion of total budgetary assistance has also decreased (see Figure 3.6). In 2005–06 the motor vehicle and parts manufacturing subsector received approximately 15 per cent of assistance. By 2010–11 this had decreased to 10 per cent. This is partly due to a proportional decrease in assistance to the manufacturing sector as a whole; however, assistance to motor vehicle and parts manufacturing also decreased as a percentage of assistance to the manufacturing sector (from 20 per cent to 16 per cent). The increase in the 'unallocated other' category (which cannot be allocated to a specific sector) is largely due to the $2.3 billion General Business Tax Break (PC 2011).

Figure 3.6

NET COMBINED ASSISTANCE BY SECTOR, EXCLUDING SERVICES SECTOR



Note: the services sector is excluded because of the high negative level of tariff assistance received by this sector. This makes comparisons of net combined assistance with other sectors problematic.
Source: PC 2011

It should be noted that the assistance in Figure 3.6 excludes the Fuel Tax Credit Scheme, which allows a number of industries (including mining and agriculture) to claim a rebate on excise paid on certain types of fuel (including diesel). This represents a significant amount of assistance to the mining industry. In 2009–10, the mining industry made $1.7 billion worth of claims under this scheme (ANAO 2011).

Recent research by The Australia Institute indicates that Federal Government support to the mining industry could be as high as $4 billion per year (Grudnoff 2012). This is significantly higher than assistance to the automotive industry.

Automotive Competitiveness and Investment Scheme

The ACIS was introduced in January 2001 and was initially planned to operate for five years. It was extended for a further ten years in 2005. When *A New Car Plan for a Greener Future* was introduced in 2008, changes were made to ACIS and it was finalised in 2010. It was succeeded by the ATS.

The aim of ACIS was to provide transitional assistance to the automotive manufacturing industry to assist with the transition to a more open market. The scheme operated through the provision of import credits linked to investment levels, production and R&D. An additional goal was to deliver overseas market access to Australian manufacturers to facilitate increased exports.

A New Car Plan for a Greener Future

A New Car Plan for a Greener Future was announced in 2008 to provide $6.2 billion in assistance to the automotive industry (including parts manufacturers) until 2020. This figure was reduced to $5.4 billion when the GCIF was terminated in 2011. It consists of a range of different programs, each with their own objectives and timeframes. Some programs have already finished. Box 3.6 provides an overview of the plan.

Through this scheme, the Australian Government is providing General Motors Holden with $215 million in assistance to support capital investment and design and engineering of Holden's next generation vehicles. The Victorian and South Australian governments are providing additional funding. This assistance is expected to keep Holden's production of vehicles in Australia until at least 2022 (DIISRTE 2013).

The Australian Government is also providing $34 million in assistance to Ford Australia. This is aimed at enhancing the performance of Ford's Falcon and Territory vehicles and improve fuel efficiency. With this funding it is expected that production of the Falcon will continue in Australia until at least 2016 (DIISRTE 2013).

The Australian Government provided $35 million of funding to Toyota through the GCIF to introduce the Hybrid Camry to Australia. In addition, Toyota received a $63 million GCIF grant to secure a new engine facility, which opened in 2012. Total investment in the facility was $330 million. The engine facility is one of only five of its type operated by Toyota, and the first to produce hybrid engines in Australia. Toyota Australia will produce 108,000 engines each year and will also export engines to Malaysia and Thailand. This investment would not have been secured for Australia in the absence of government funding support.

Box 3.6

A NEW CAR PLAN FOR A GREENER FUTURE

A New Car Plan for a Greener Future consists of the following components:

- **Automotive Transformation Scheme (ATS)**: The ATS is the successor program to ACIS. It is a ten year scheme set to run from 1 January 2011 to 31 December 2020, and will provide $3 billion in assistance to the industry. The program is designed to improve environmental outcomes and promote the development of workforce skills. Assistance is available for the production of motor vehicles, investment in research and development to a maximum rate of 50 per cent, and investment in plant and equipment to a maximum rate of 15 per cent.
- **Automotive New Markets Initiative (ANMI)**: The ANMI is a joint initiative by the Australian, Victorian and South Australian governments. It is a $35 million initiative that will run for four years from 2012-13. Its aim is to assist the automotive industry to develop new business opportunities domestically and internationally. The ANMI consists of three components:
  - **Automotive New Markets Program (ANMP)**: a $30 million competitive merit based grants program providing direct assistance to businesses to enhance their ability to access new markets.
  - **Business Capability Support Program (BCSP)**: this program provides support through a contracted capability development organisation. Its aim is to support firms to develop new capability and increase efficiency and productivity.
  - **the Automotive Envoy**: the Automotive Envoy will help automotive suppliers to connect to new markets in the global supply chain and potential new markets in non-automotive sectors.
  - **the Automotive Supplier Advocate**: the Automotive Supplier Advocate will provide strategic leadership in helping Australian automotive supply chain firms to broaden their capabilities and identify new customers in automotive and non-automotive industries. This includes increasing the proportion of Australian vehicles chosen for fleet purchases.
- **Automotive Industry Structural Adjustment Program (AISAP)**: the AISAP consisted of two components: a structural adjustment component and a labour adjustment component to provide training and assistance to displaced workers. The structural adjustment component aimed to aid consolidation in the parts manufacturing sector, and closed for applications on 31 March 2012. The labour adjustment component was extended with $15.6 million and will provide support until 30 June 2017.
- **Automotive Supply Chain Development Program (ASCDP)**: the ASCDP is a $20 million program to strengthen capabilities in the automotive components sector and better integrate into local and global supply chains in the four years until 30 June 2013.
- **Green Car Innovation Fund (GCIF)**: the GCIF was a competitive grants program to enhance research, development and commercialisation of Australian technologies to significantly reduce greenhouse gas emissions. The $500 million fund closed in January 2011 as part of measures to bring the budget back into surplus.
- **LPG vehicle scheme enhancement**: this is a $10.5 million expansion to the existing LPG vehicle scheme, doubling payments to purchasers of private use vehicles that are factory fitted with LPG technology.
- **Automotive Market Access Program (AMAP)**: this program provided $6.3 million from July 2009 to 30 June 2012 to boost component suppliers' access to global supply chains.

Source: DIISRTE website, DIISRTE (2012)

3.4 Australia and the global automotive manufacturing industry

Stakeholders[10] interviewed during the preparation of this report mentioned a number of factors that determine the ability of Australian car manufacturers to compete on a global stage. These include strong inter- and intra-firm competition, exchange rate risks and other barriers to trade, as well as Australia's design capability.

Increased competition for investment within companies

All three car manufacturers consulted for this study noted that their biggest competition comes from other international locations within their own companies. Within companies, manufacturing locations compete for finite investment allocated by head office.

One of the key determinants when making investment decisions is the policy environment, including incentives offered by government. The policy environment can significantly alter the business case for an investment. There has been a trend for aggressive industry policies around the world directed at attracting automotive investment, particularly after the GFC. Government support for the automotive industry has decreased in Australia in recent years. This has occurred in the context of a range of negative factors impacting on the manufacturing industry in Australia, including the strong Australian dollar, high labour costs and extensive automotive market liberalisation.

Many countries compete vigorously to attract or retain investment in their automotive industries. However, government financial support in Australia is low by international standards. The Australian manufacturers' parent companies have expressed concern that support for the automotive industry is not bi-partisan, which reduces their willingness to invest. Also, confidence has been reduced by the scrapping of the GCIF in January 2011.

All three domestic car manufacturers have stated that they would be unable to build a competitive business case to attract investment to Australia in the absence of investment incentives. They emphasised the need for consistent, long-term bipartisan support for the automotive industry to encourage further investment in Australia by their parent companies. In the absence of such bipartisan support investment is likely to be made in countries perceived to be more consistent and long-term in their approach to automotive industry policy.

The need for consistent, long-term support is due to the investment horizon in the automotive industry. For example, in developing a business case for its new engine facility, opened in December 2012 in Altona, Toyota was required to look at the business case for the investment over an estimated eight-year time-frame. This is consistent with the expected life-cycle of the four-cylinder engine to be built at that facility. A lack of bipartisan support creates investment uncertainty over the time period, which makes investment less attractive.

[10] See Appendix A for a list of companies consulted for this study.

Another factor determining investment decisions is production cost. Labour costs in Australia are relatively high compared to competitors in Asia and even the United States. Also, due to the small domestic market and reliance on exports it is more difficult to attain sufficient scale in Australia. Scale is an important factor in the ability to automate production processes and use robotics. Stakeholders quoted that production of 200,000 units or more per factory is needed to enable the expanded use of robotics. Australian manufacturers are not currently producing at that scale.

A skilled workforce

All three local manufacturers have design capability in Australia. Ford and Holden have maintained a significant level of design expertise over many decades through their activities in designing cars from the ground up. Toyota's design function has been developed over the past decade. Ford Australia is one of only four design centres for Ford internationally. The Toyota Technical Centre in Notting Hill is one of only five in the world, and undertakes work for global vehicles as well as local models. Stakeholders indicated that the long-term sustainability of design functions may come under pressure if Australian manufacturing ceased. Once lost, this workforce would be very difficult to regain later.

All three local manufacturers are part of large global organisations with significant expertise in innovation, business practices and management. All three train Australians in their manufacturing operations, including managers. Managers in the industry are highly skilled and are experts in just in time engineering. These skills have spill-over effects into other industries when managers leave the automotive sector to work elsewhere. Box 3.7 provides an example of these spill-over effects.

Box 3.7

SPILLOVERS – A NATURAL EXPERIMENT

A natural experiment was conducted over two consecutive weeks in February/March 2013 to ascertain whether automotive managers and experts could have a positive effect on the bottom line of a company in another industry.

A large, high performing, manufacturing firm with around 500 employees was exposed to a performance improving analysis by an ex manager/expert from the automotive industry. During this two-week period short-term performance improvements [less than one year in implementation] equalling an additional five percentage points of contribution margin were identified that had not previously been identified by firm management.

This experiment highlights the potential benefits to the economy of the high degree of management skill fostered in the automotive industry.

Source: Allen Consulting Group analysis

This spill-over benefit has so far been absent from the debate about the contributions of the automotive industry to the Australian economy. As such its value has, to date, been absent from discussion about the return on the investment by the taxpayer in keeping this industry both internationally competitive and present on location in Australia.

While the spill-over benefits are not possible to model, the reality is that the Australian automotive manufacturing industry provides enormous benefit throughout the economy. Crucially, industry leaders have recently been affirming the importance of the domestic manufacturing industry to the broader economy, and specific businesses in particular.

Notably, Sam Walsh (CEO of Rio Tinto), has drawn the strongest link between automotive spillover benefits to other industries.

> If I look at the various things I have shamelessly lifted from the car industry, the most obvious is the business improvement model.
>
> To the uninitiated, the two industries might seem worlds apart.
>
> […] If I had to name one thing I have transitioned from what the automotive industry taught me across to what Rio's mining operations are doing today, it would be an intense, laser-like focus on value and efficiency.
>
> Many of us are familiar with the systems that fall under the banner of 'Lean Six Sigma'…they are far from confined to any particular industry or process. At base level it represents a concentrated intent to eliminate variation or waste at every stage of production.
>
> But, you might ask, what does operating a collection of large mining pits in the Pilbara have in common with producing precision engine components or wheel bearings?
>
> The answer is that that these approaches to process and production are about bigger and more general questions than a specific product or sector. At their heart they are about solving problems and the essential problem is the same for everyone. What is wasting our time, our labour, our workforce skills, our energy consumption, our resources and our money? How do we discover it, isolate it, analyse it and eradicate it?[11]
>
> CEO of Rio Tinto, Sam Walsh

Ian Thomas (CEO of Boeing Australia) and Terry Davis (CEO of Coca-Cola Amatil) have also both spoken of the benefits of the automotive manufacturing industry to their own businesses:

> I will tell you that if you go down to our factory in Melbourne, just as if you go to our factory in South Carolina, a lot of those workers come out of automotive. The robots come out of automotive. Our suppliers also supply automotive. It is a shared ecosystem, whether it is on the R&D side and some of the fundamental research, or on the skilling side for our employees. There is a lot that we learn and draw from automotive.
>
> CEO of Boeing Australia, Ian Thomas (Rintoul 2013)
>
> The downstream, flow-on benefits that are derived from the [Australian] car industry, and you hear this from the Americans as well, are significant.
>
> CEO of Coca-Cola Amatil, Terry Davis (Hutchens 2013)

Similarly, a 3 April 2013 editorial in the Australian Financial Review acknowledged that the "auto industry fairly argues that its skills and expertise spill over to the rest of the economy". This spill-over includes into the important defence sector where companies like AME Systems and Raytheon Australia contribute to the work of both automotive companies and into the defence capability of our nation.

[11] http://shinkamanagement.com/rio-tinto-lean-management-mining/

Services exports

Holden, Ford and Toyota (including sister company Toyota Technical Centre) engage in significant services exports through their design capability. All three local manufacturers have recently played a lead role in the development of new car models for their respective parent companies. Holden designed and engineered the Chevrolet Camaro that went into production in 2009. Ford Australia was responsible for the design and engineering of the Ford Ranger, the first five-star light commercial vehicle in the world. The Ford Ranger was launched world-wide (except the US) in 2011. In 2009, Toyota was tasked with the restyling of the Toyota Fortuner for the Asia Pacific region. (see Box 3.8).

Box 3.8

AUSTRALIAN DESIGN: CHEVROLET CAMARO, FORD RANGER AND TOYOTA FORTUNER

The following case studies illustrate the strong automotive design capability present in Australia.

Holden design

Holden was responsible for the design and engineering of the Chevrolet Camaro, which went into production in 2009. The Camaro won the 2011 World Car Design of the Year award at the World Car of the Year Awards. Holden is expected to take the lead design role for the next generation Camaro, due in 2015, as well.

Holden Design employs more than 100 people in a wide range of disciplines, including industrial designers, engineers and IT specialists.

Ford design

Ford Australia's design centre is one of three major global design centres at Ford. The others are located in the US (Dearborn) and in Germany (Cologne). The design centre was refurbished in 2012 and now includes a virtual reality design studio that allows developers to sit inside a car before it even becomes a prototype. The design centre employs more than 1000 designers and engineers, most of who have tertiary qualifications. The design centre is the hub for design in the Asia/Pacific region.

Ford Australia was responsible for the design and engineering of the Ford Ranger, which was launched in 2011 and is sold world-wide (but not the US) in both left and right hand drive versions. The development of the Ranger represented a $700 million investment in R&D in Australia.

Toyota design

Toyota in Australia was responsible for the facelift and redesign of the Toyota Fortuner in 2009. The Fortuner is a HiLux based luxury SUV that is built in Thailand and sold in markets including Asia, the Middle East and South America. Toyota is now developing the next generation of the Fortuner, joining Ford and Holden in major model development roles within their global design and engineering organisations.

Source: Holden.com.au, FCAI (2008), GoAuto.com.au

Exchange rate risks

The majority of Australian car exports go to the Middle East. Toyota Australia accounts for most of these exports. The Middle East market has little domestic automotive manufacturing and low barriers to entry. Tariffs are 5 per cent on passenger vehicles, and the Gulf Cooperation Council and individual countries have FTAs with a number of countries. This makes the Middle East a highly prized and sought after export market.

Toyota Australia's exports in the region have suffered from new competition and aggressive pricing, which have reduced volumes. In addition, exports to the region are priced in US Dollars. Due to the strong Australian Dollar, export values have decreased. Because of strong competition in the region Toyota is unable to raise prices to offset the decrease in revenue due to the exchange rate.

These problems would lessen if the Australian Dollar were to weaken against the US Dollar in the future. The impact of exchange rates on profitability is apparent in Japan, where major exporting companies have recorded increased profits since the recent devaluation of the Yen.

Chapter 4

The automotive manufacturing industry's role in the Australian economy

The previous chapter summarised the scale of the Australian automotive manufacturing industry in Australia. Indeed, the industry plays an important pillar role in the economy at large—and particularly so in certain regional and state economies.

Simply measuring an industry's Gross Value Add (GVA) or employment; however, does not necessarily provide a full account of the industry's contribution to the Australian economy. Production and employment in automotive manufacturing has been demonstrated to produce extensive flow on effects to complementary industries. Studies show that the automotive industry has high multipliers. Depending on the study these vary between 10 and 2.9 (Center for Automotive Research 2010; Lind 2011). This means that the flow on effects on surrounding industries are so significant that for every $1 of GVA provided by the automotive manufacturing industry, the economy benefits by between $1.9 and nine dollars.

Figures provided by Holden suggest that for every $1 in government assistance it receives, the economy benefits by $18.

One way of illustrating the true economic value of the industry to the community is to consider: *what would the economy look like if the industry were to shut down?* This chapter explores that question using a computable general equilibrium (CGE) model of the Australian economy, the dynamic TERM model. We do so taking into account that Ford will cease manufacturing in 2016, so the shutdown involves Holden, Toyota and the components manufacturers shutting down their operations, relative to a situation where Ford is already not part of the industry.

4.1 CGE modelling`

This study uses dynamic TERM, a multi-regional CGE model of the Australian economy. The model follows the theory of the national dynamic model, MONASH (Dixon and Rimmer, 2002). TERM is a bottom-up model that models each statistical division (SD) in its own right. This allows for the calculation of regional effects. The model takes into account the way different sectors in the economy are interlinked (e.g. the automotive sector uses resources produced by the mining sector), and is able to show the direct as well as the indirect effects of policy changes. The model is explained in more detail in Appendix B.

For the purposes of this exercise, five bottom-up regions have been used instead of one as in the national model. These regions are:

- Melbourne;
- rest of Victoria;
- Adelaide;
- rest of South Australia;
- rest of Australia.

Industries in each region have their own production functions. Each region has its own representative household. The sub-national regions are linked by inter-regional trade matrices. There is also provision for international exports and imports in each region.

Table 4.1

PARAMETERS AND CORE ASSUMPTIONS

Parameter	Assumption
Labour and capital markets	Each region has its own labour market, in which workers respond to the real wage rate. The separate regional labour markets are linked by inter-regional migration in response to changing real wage differentials. Dynamic TERM allows for short run differences between actual and required rates of return on capital stocks. Industries respond to such differences with increases/decreases in investment as actual rates of return increase/decrease relative to required rates of return. Adjustments to capital stocks via investment reduce these differences over time.
The database of the model	The input-output database that is the foundation of the multi-regional CGE database is based on 2010-11 data. The 2005-06 input-output database published by ABS has been updated, based on national accounts data and international merchandise trade data. This national database has been split into regions using ABS 2011 census data on employment and supplementary data such as agricultural census data.
Base case forecasts	Relatively bland national macroeconomic forecasts are imposed on the model for the years 2012 to 2031. Primary factor productivity growth is also imposed on each industry in forecast. In the context of the present study, the most important detail of the base case year-by-year forecast is that the price of imported motor vehicles falls over time relative to the price of domestically produced vehicles. This implies that as sales of motor vehicles increases with growing incomes over time, the domestic share of such sales shrinks.
The consumption function	A consumption function in each region links nominal household spending to nominal regional income. Being a dynamic model, TERM links stocks of net foreign debt to flows of interest payments to foreigners. Such payments reduce the amount of nominal income available for consumption. As the model does not contain details on foreign investment, foreign debt is used a proxy.

Source: COPS

4.2 Change scenario — industry shutdown

The change scenario describes a hypothetical scenario in which the Australian automotive manufacturing industry shuts down over a two year period from 2017 to 2018. No judgment is made as to the sequence of the closedown by region.[12]

As a result of the industry shutdown, any related foreign-owned capital invested in Australia is assumed to exit the economy.[13] This in turn reduces the payments from GDP that go to foreigners after the industry closes.

[12] That is, all regions close by the same percentages in each of 2017 and 2018.

[13] This has been reflected by a reduction in foreign debt by the residual dollar value of the scrapped capital.

At present, the automotive manufacturing industry receives subsidies of around $500 million per annum[14]. When the industry closes, these subsidies cease and monies are returned to the Australian households by a proportionate reduction in government taxes.

4.3 Impact analysis

This section reports on the consequences of shutting down the automotive manufacturing industry.

The discounted[15] net present value of welfare losses arising in the scenario is $21.5 billion. In the early years after the shock there is a significant negative impact on GDP and employment. Over time, the impact lessens and as the economy adjusts employment and GDP recover. In the discounted series, the early years make a relatively large contribution to the welfare outcome, while the later years, when current real consumption rises above forecast, make relatively small contributions.

Although falling real wages and the associated depreciation of the real exchange rate lead to an increase in export-oriented activity, and, after many years, an increase in employment and real GDP relative to forecast, the Australian economy suffers losses in income and real current consumption for a number of years after the motor vehicle industry closure.

While the consequences of an industry shutdown are significant at a national level, they are particularly acute for those regions where automotive manufacturing is most concentrated. The implications for Melbourne, Adelaide and the national economy are discussed in turn below.

Melbourne

Figure 4.1 illustrates the impact of industry shutdown on Melbourne's real Gross Regional Product (GRP), employment and capital levels (measured as a per cent deviation from baseline forecasts).

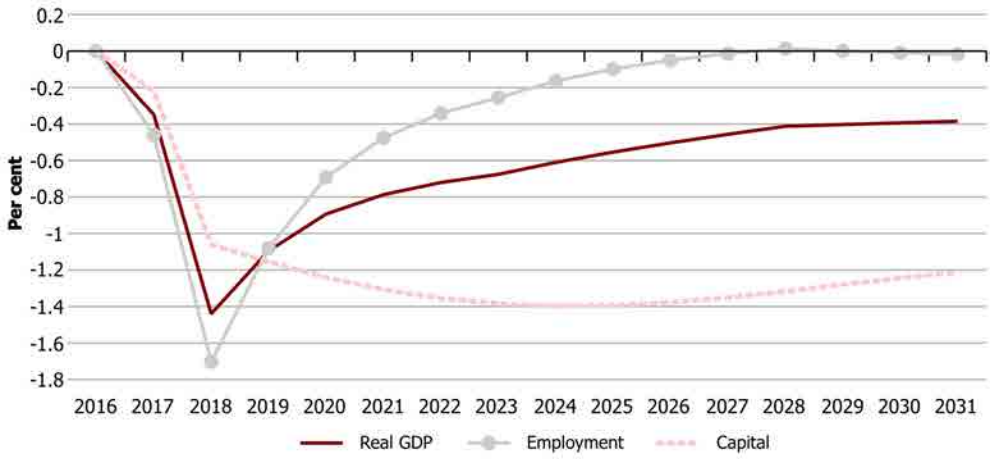
Clear from the figure is that the shutdown has a negative and sustained impact on Melbourne's economy. Capital leaves the economy in a seemingly permanent way — falling by around 1.4 per cent. Real GRP is 1.4 per cent lower in 2018 than it would have otherwise been and is unable to recover by the end of the evaluation period (2031). **Employment losses, which do recover in the longer run, equate to some 33,000 jobs in 2018**. Notably, despite the recovery in the labour market, real wages (not shown) fall by as much as 2 per cent and do not return to pre-closure levels.

[14] The *New Car Plan for a Greener Future* provides an average of more than $415 million in assistance per annum between 2008 and 2020. This does not include some additional assistance measures provided to the automotive industry. The Productivity Commission estimates total assistance to the automotive industry (including parts manufacturers) exceeded $1.1 billion in 2010-11 (PC 2011).

[15] Using a discount rate of five per cent (real).

Figure 4.1

MELBOURNE'S REAL GDP, EMPLOYMENT AND CAPITAL STOCKS (PER CENT DEVIATION FROM FORECAST)

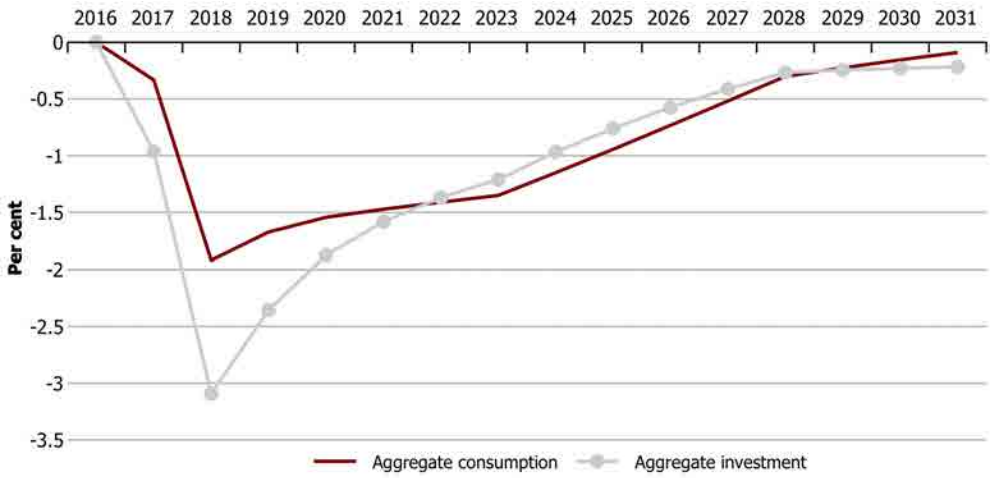


Source: COPS.

On the expenditure side, aggregate consumption is hit much harder in Melbourne than at the national level. Aggregate consumption falls to 1.9 per cent below forecast in Melbourne in 2018 (see Figure 4.2). Investment falls by some 3.1 per cent in 2018 and doesn't recover during the forecast period

Figure 4.2

MELBOURNE'S AGGREGATE CONSUMPTION AND INVESTMENT (PER CENT DEVIATION FROM FORECAST)



Source: COPS.

Adelaide

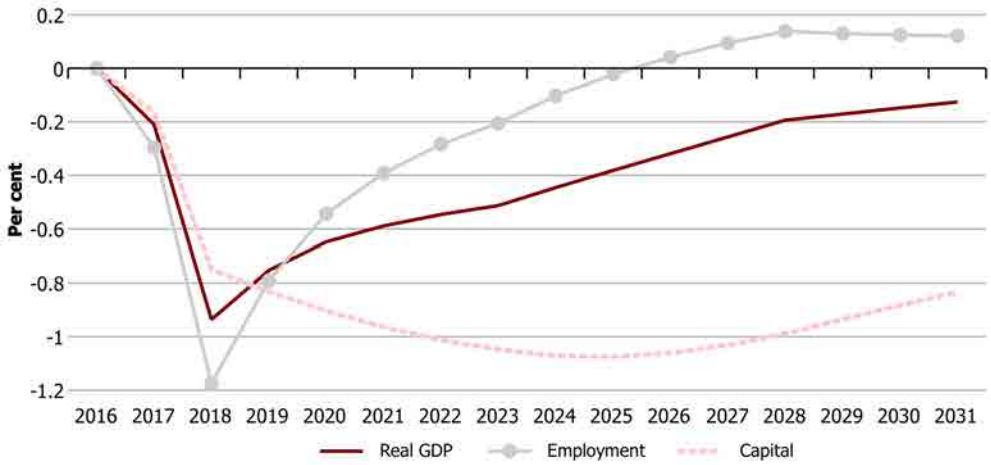
A similar picture is depicted in Figure 4.3 for Adelaide. As Adelaide's economy is less dependent on automotive manufacturing, the impacts are less severe than in Melbourne—but are still on the whole negative.

Adelaide's GRP is expected to fall by around 0.9 per cent in 2018. By 2031, Adelaide's output will remain below pre-closure forecasts. As with Melbourne, the impact on employment is most significant in the initial years—peaking at 6,600 lost jobs—before positive growth around 2026. Again, the increased employment is driven by a depreciation of the real wage.

Aggregate consumption falls to 1.3 per cent below forecast in 2018 (see Figure 4.4) and investment falls 2.3 per cent.

Figure 4.3

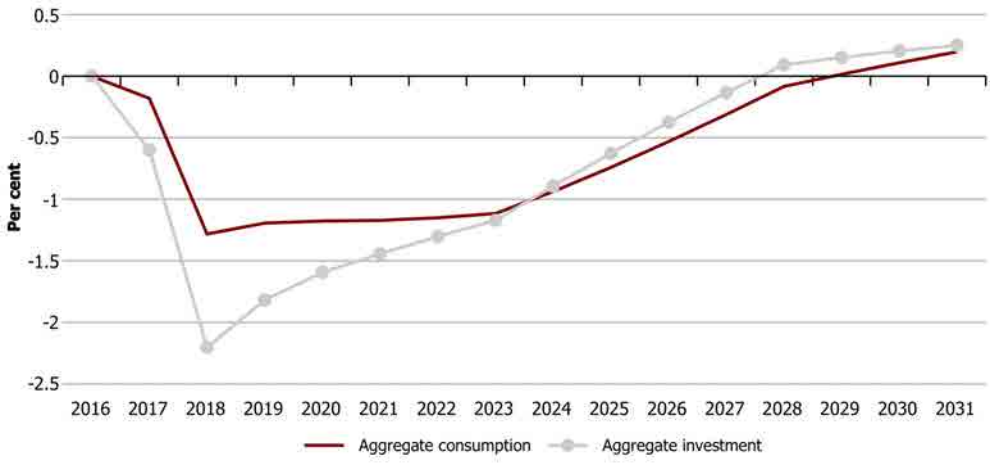
ADELAIDE'S REAL GDP, EMPLOYMENT AND CAPITAL STOCKS (PER CENT DEVIATION FROM FORECAST)



Source: COPS.

Figure 4.4

ADELAIDE'S AGGREGATE CONSUMPTION AND INVESTMENT (PER CENT DEVIATION FROM FORECAST)



Source: COPS.

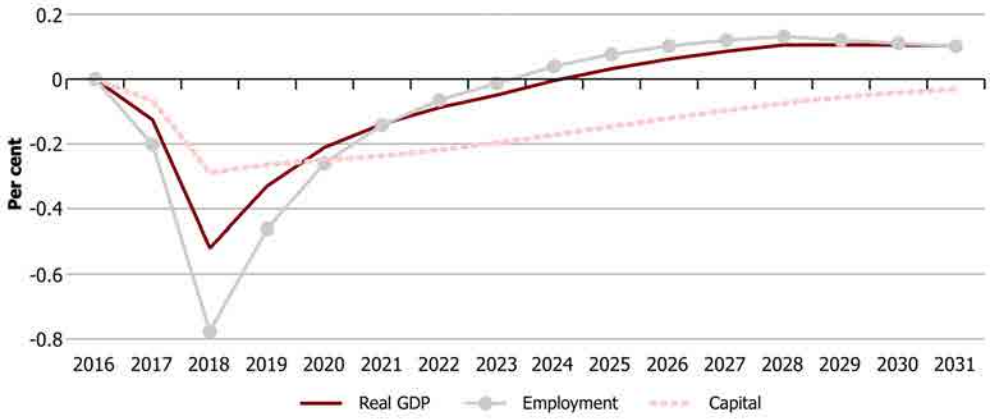
National impacts

As the national economy is more diverse than Melbourne and Adelaide, it can be expected that the impacts of industry closure will be proportionally less. What is perhaps surprising is the extent to which the national economy *is* affected by the closure.

Figure 4.5 reports the impact of the closure on national GDP, employment and capital stocks. In the short term, 'sticky' wages mean that both capital and labour make negative contributions to GDP. In 2018, by which time the motor vehicle industry has closed, national capital stocks have fallen by 0.29 per cent (relative to forecast) and employment by 0.78 per cent. The modelled GDP loss is 0.52 per cent.

Figure 4.5

NATIONAL GDP, EMPLOYMENT AND CAPITAL STOCKS (PER CENT DEVIATION FROM FORECAST)

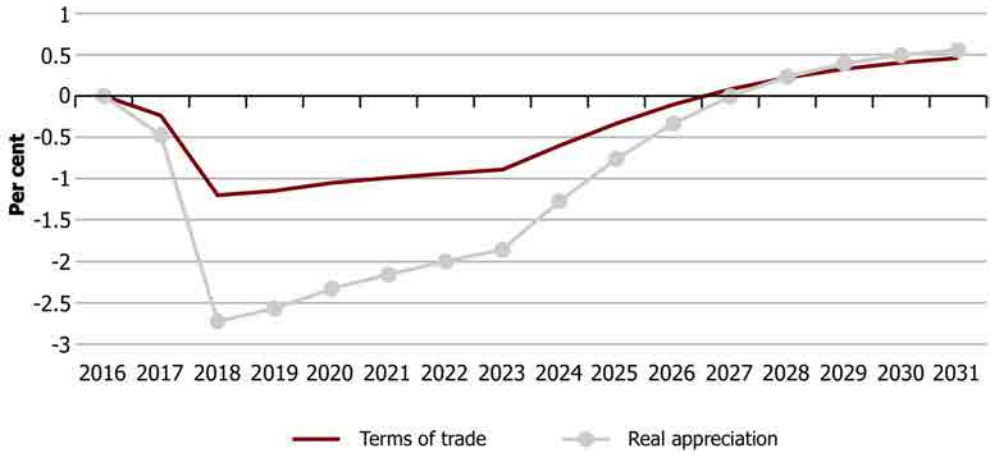


Source: COPS.

By 2018, the real exchange rate falls almost 3 per cent relative to forecast (Figure 4.6). Since the competitiveness of trade-exposed sectors other than the motor vehicle industry is enhanced in the scenario, there is a movement of labour in the short term and capital in the longer term into export-oriented sectors. This increases the volume of exports and results in a balance of trade surplus relative to forecast. Australia's imports are not of a sufficient volume to affect international prices, so that the price of imports is unchanged relative to forecast. Therefore, the terms-of-trade (i.e., the ratio of export to import prices) decline in the short to medium term.

Figure 4.6

NATIONAL REAL EXCHANGE RATE AND TERMS OF TRADE (% DEVIATION FROM FORECAST)

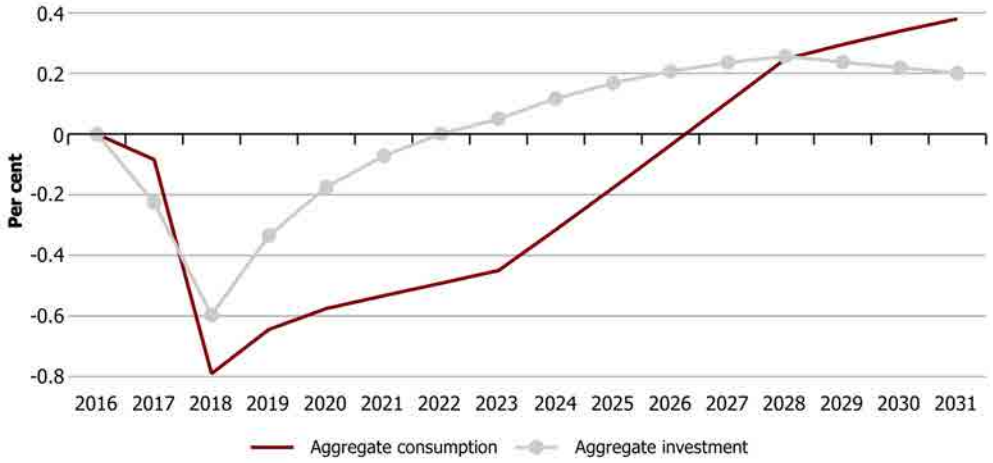


Source: COPS.

Figure 4.7 reports the impact of the closure on national investment and consumption. As at the regional levels, investment and consumption fall in the initial periods and then slowly rise in the medium and long terms. In 2018, aggregate private consumption is $9.6 billion below baseline forecasts and remains negative for nearly a decade thereafter.

Figure 4.7

NATIONAL AGGREGATE CONSUMPTION AND INVESTMENT (% DEVIATION FROM FORECAST)

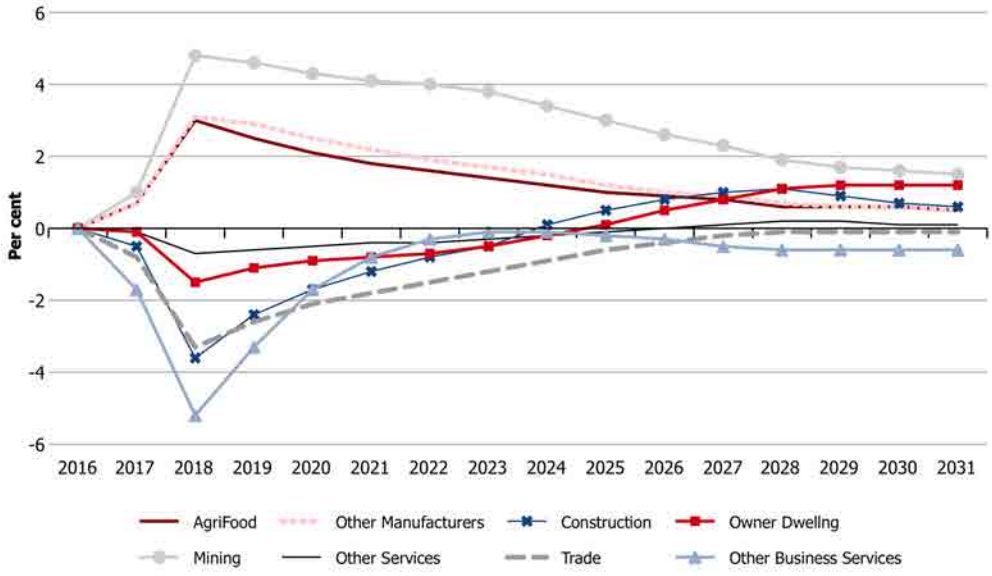


Source: COPS.

Various services sectors fare badly in the years during and after the motor vehicle industry closure. Other Business Services are relatively income elastic and suffer from the decline in aggregate consumption before a later recovery. In the short run, labour moves from the motor vehicle industry into export-oriented industries such as agricultural and food products and mining. Over time, capital also moves into export sectors, namely agriculture, food, mining and other manufactures. These sectors expand in the medium term (see Figure 4.8).

Figure 4.8

BROAD SECTOR NATIONAL INVESTMENT (PER CENT DEVIATION FROM FORECAST)



Source: COPS.

Chapter 5

An opportunity missed

The previous chapter demonstrated the importance of the industry to the economy *in its current form*.

As the major automotive manufacturing nations around the globe have recognised; however, there are substantial economic gains to be enjoyed from a lucrative export market. The general inability for Australian manufacturers to access these markets reflects a significant opportunity cost for the economy.

The scale and nature of this cost is again explored using a CGE model. The findings of which are discussed below.

5.1 Change scenario — industry shutdown

The change scenario describes a hypothetical scenario in which car exports return to 2008 levels by 2018 in real terms. All other factors are assumed constant.

5.2 Impact analysis

This section reports on the consequences of a recovery in automotive exports. While the consequences are significant at a national level, they are particularly strong for those regions where automotive manufacturing is most concentrated.

The implications for Melbourne, Adelaide and the national economy are discussed in turn below.

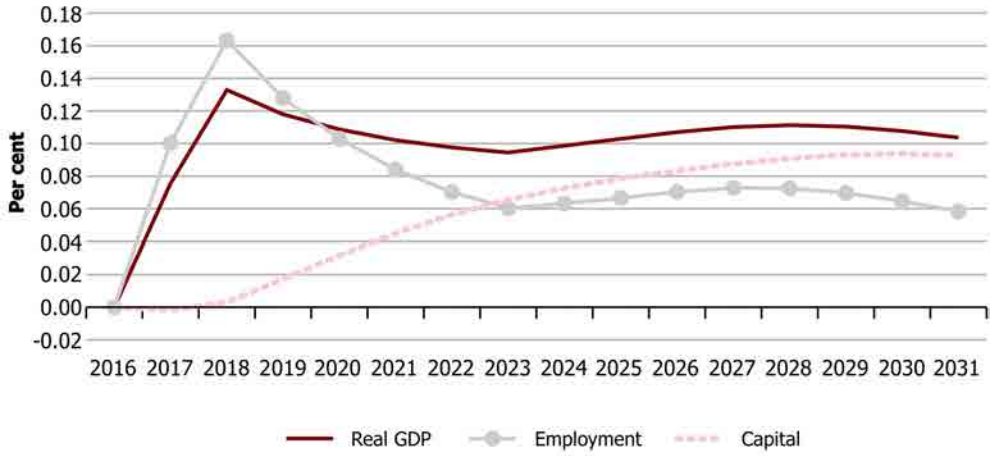
Melbourne

Figure 5.1 illustrates the impact of export recovery on Melbourne's real GRP, employment and capital levels (measured as a per cent deviation from baseline forecasts).

Clear from the figure is that the recovery has a positive and sustained impact on the city's economy. Capital grows steadily over time, increasing around 0.09 per cent by 2031. Real GRP increases sharply early on, peaking in 2018 at 0.13 per cent higher than it would otherwise have been. It then decreases slightly but remains more than 1 per cent higher than it otherwise would have been. Employment also increases sharply, peaking at 3,200 additional jobs in 2018. Employment then drops off somewhat due to structural adjustments, but remains nearly 0.06 per cent higher in 2031 than it would have been without an export recovery. The readjustment in employment is driven by an increase in the real wage.

Figure 5.1

MELBOURNE'S REAL GDP, EMPLOYMENT AND CAPITAL STOCKS (PER CENT DEVIATION FROM FORECAST)

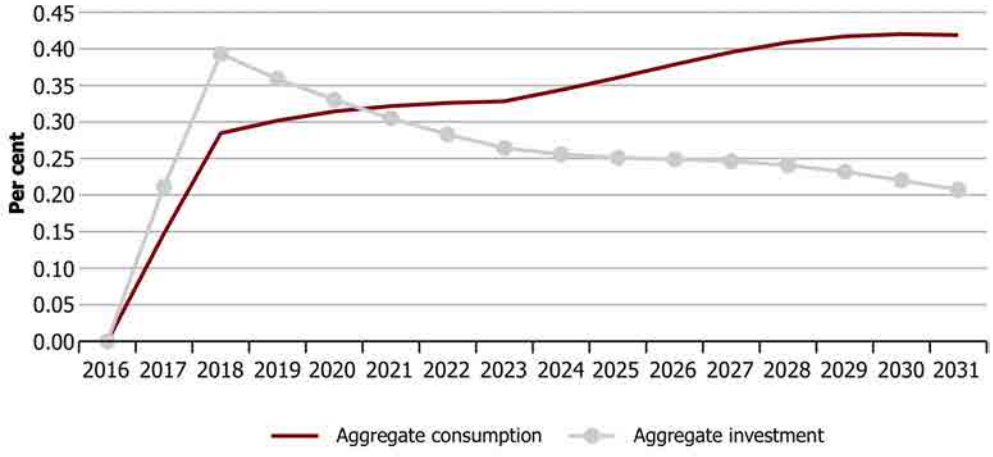


Source: COPS.

On the expenditure side, aggregate consumption increases much more in Melbourne than at the national level. Aggregate consumption increases to 0.28 per cent above forecast in Melbourne in 2018 (see Figure 5.2) and is expected to continue increasing. Investment increases by around 0.39 per cent in 2018 and can be expected to be above forecast until 2031.

Figure 5.2

MELBOURNE'S AGGREGATE CONSUMPTION AND INVESTMENT (PER CENT DEVIATION FROM FORECAST)



Source: COPS.

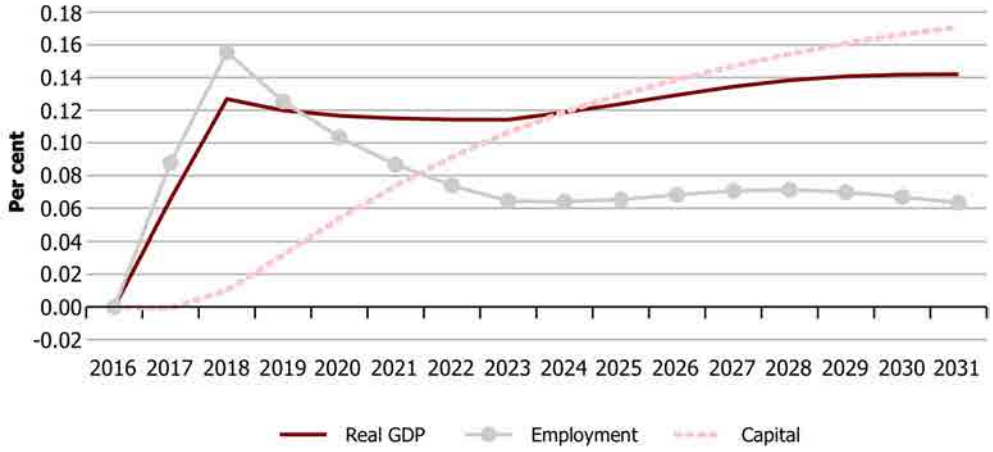
Adelaide

A similar picture is depicted in Figure 5.3 for Adelaide. As Adelaide's economy is less dependent on automotive manufacturing, the impacts are not as pronounced as in Melbourne—but are still on the whole positive.

Adelaide's GRP is expected to increase by 0.13 per cent by 2018, and 0.14 per cent by 2031. As with Melbourne, the impact on employment is most significant in the initial years, peaking at 900 additional jobs then dropping before levelling off around 2023. Again, the decrease in employment after the initial peak is driven by an increase in the real wage.

Figure 5.3

ADELAIDE'S REAL GDP, EMPLOYMENT AND CAPITAL STOCKS (PER CENT DEVIATION FROM FORECAST)

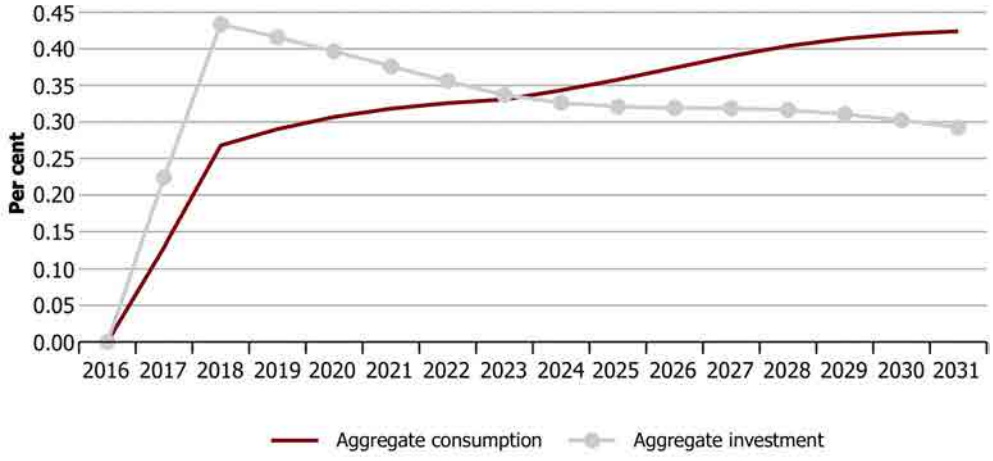


Source: COPS.

Aggregate consumption increases to 0.27 per cent above forecast in 2018 (see Figure 5.4) and investment 0.43 per cent.

Figure 5.4

ADELAIDE'S AGGREGATE CONSUMPTION AND INVESTMENT (PER CENT DEVIATION FROM FORECAST)



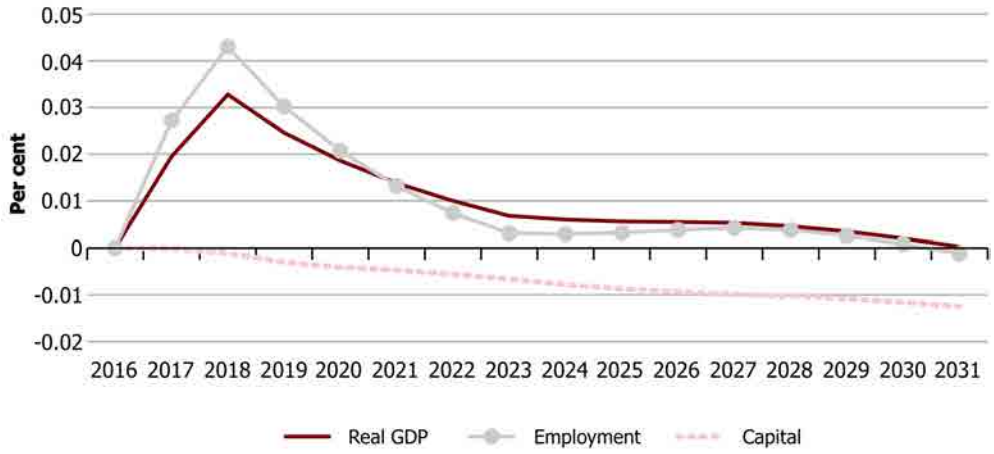
Source: COPS.

National impacts

Figure 5.5 reports the impact of the increase in exports on national GDP, employment and capital stocks. Employment and Real GDP both increase to 2018 (peaking at 0.04 and 0.03 per cent, respectively), then slowly return to forecast levels by 2031. Capital stocks decrease by 0.01 per cent relative to forecast by 2031.

Figure 5.5

NATIONAL GDP, EMPLOYMENT AND CAPITAL STOCKS (PER CENT DEVIATION FROM FORECAST)

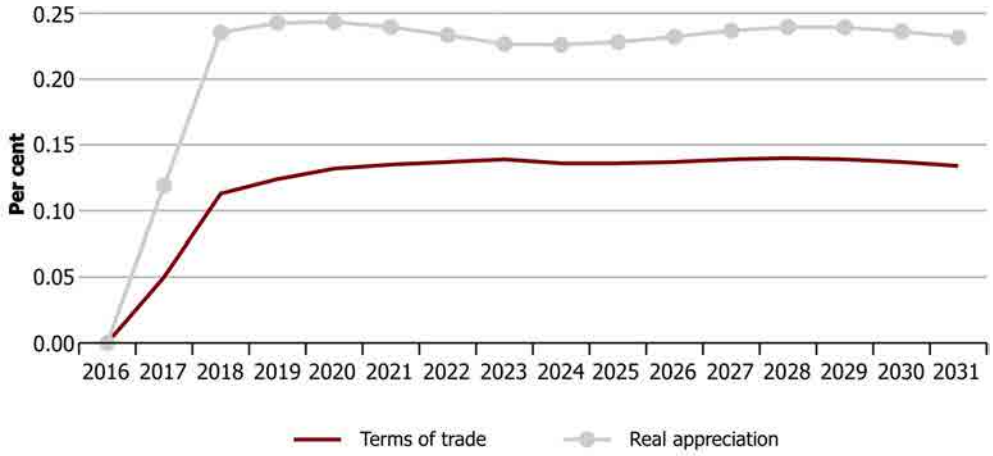


Source: COPS.

By 2018, the real exchange rate appreciates almost 0.25 per cent relative to forecast (Figure 5.6). The competitiveness of trade-exposed sectors other than the motor vehicle industry is reduced in this scenario. This leads to a movement of labour in the short term and capital in the longer term away from export-oriented sectors. This reduces the volume of exports and results in a balance of trade deficit relative to forecast. Because Australia's imports are not of a sufficient volume to affect international prices, the price of imports is unchanged relative to forecast. Therefore, the terms-of-trade (i.e., the ratio of export to import prices) improve in the short to medium term.

Figure 5.6

NATIONAL REAL EXCHANGE RATE AND TERMS OF TRADE (% DEVIATION FROM FORECAST)

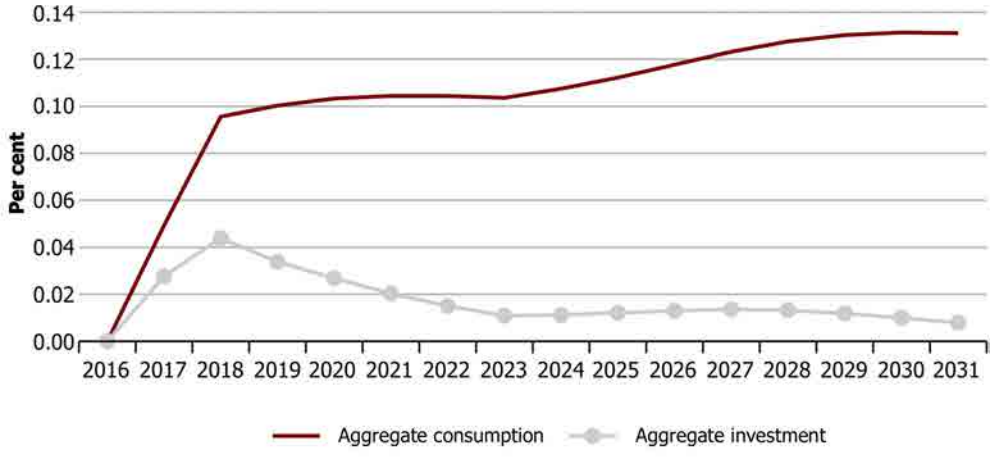


Source: COPS.

Figure 5.7 reports the impact of the export recovery on national investment and consumption. As at the regional levels, investment and consumption increase in the initial periods; investment then slowly decreases over the medium to long terms, while consumption continues to rise. In 2018, aggregate private consumption is nearly 0.1 per cent above baseline forecasts.

Figure 5.7

NATIONAL AGGREGATE CONSUMPTION AND INVESTMENT (PER CENT DEVIATION FROM FORECAST)

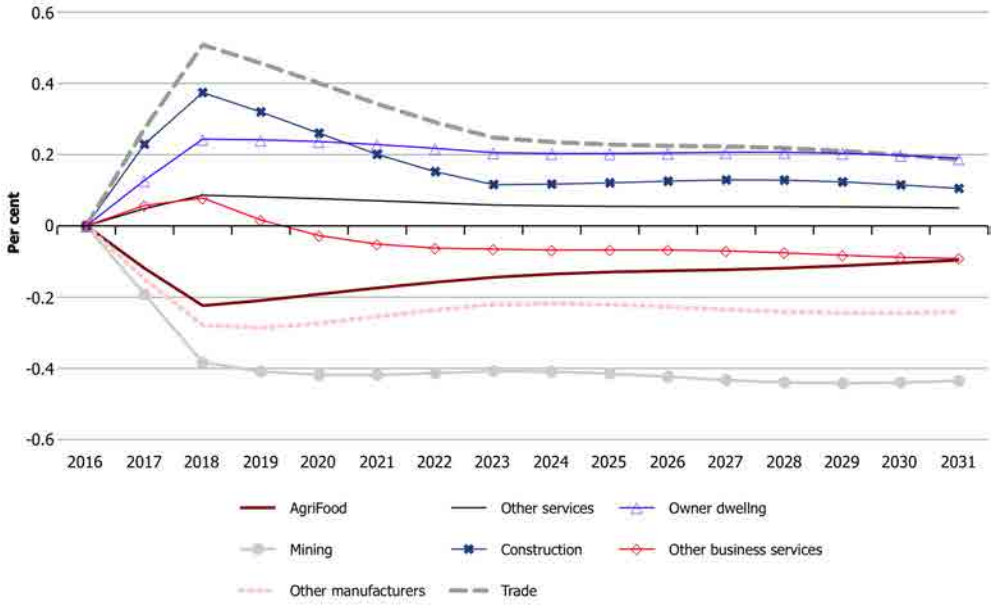


Source: COPS.

Some sectors perform better than others when automotive exports increase. Trade, construction, housing and other services all improve. Export sectors such as agriculture and food, other manufactures, and mining see a decrease in investment due to the appreciation of the Australian dollar (see Figure 5.8).

Figure 5.8

BROAD SECTOR NATIONAL INVESTMENT (PER CENT DEVIATION FROM FORECAST)



Source: COPS.

Rising real wages and the associated appreciation of the real exchange rate lead to an increase in imports. Over time, this leads to a decrease in employment and real GDP from their 2018 peaks, back to forecast levels without the shock. However, the Australian economy benefits from increased employment and real GDP during the adjustment period.

The discounted net present value of welfare gains arising in the scenario is $7.1 billion. In the discounted series, the early years make a relatively large contribution to the welfare outcome, while the later years make relatively small contributions.

Chapter 6

Conclusions and discussion

This report has examined the state of the Australian automotive manufacturing industry. This has included a discussion of the role and availability of industry assistance in Australia and in selected countries around the world, as well as a discussion of the challenges facing the industry in Australia. In addition, modelling was undertaken to examine the potential impacts on the Australian economy if assistance to the automotive industry were to cease entirely (resulting in the three vehicle manufacturers ceasing production in Australia); and if exports of Australian cars recovered to 2008 levels by 2018.

In summary, the findings of this report are:

- The Australian automotive manufacturing industry is one of Australia's most advanced industries in terms of manufacturing techniques and technologies employed, but it faces an uncertain future. Today Australia produces only around 225,000 motor vehicles per year. In an industry where economies of scale are very important in achieving cost competitiveness, this is a real disadvantage. The high value of the exchange rate has placed the industry under further competitive pressure, as have barriers to Australian exports.
- The automotive manufacturing companies have major decisions forthcoming on whether to invest in new models. If they do not make the investment, this will be likely to lead to the eventual shutting down of their Australian operations.
- At present, the automotive manufacturing industry receives around $500 million per year in government support. This is a small amount compared to the support given to automotive manufacturing in other countries and compared to when the industry in Australia was protected from import competition through tariffs. There is little or no doubt that, absent this support, the three major car companies will not invest in new models in Australia, and will instead make the investments elsewhere in the world.
- A shutdown of the Australian automotive manufacturing industry will lead to not just to a permanent loss of GDP, but a loss in economic welfare (measured as loss of consumption expenditure) as well, amounting to $21.5 billion, or $934 per person. The economic loss will be particularly severe in the automotive industry-intensive states of Victoria and South Australia, especially in Melbourne and Adelaide.
- In contrast, if the barriers to Australian exports of motor vehicles could be lowered, this would lead to significant positive economic effects.

  A shutdown of the Australian automotive manufacturing industry will also deplete the range of spill-over benefits the industry currently provides to the broader economy. This includes technology transfer, lean management techniques and applications, and advanced labour skills and manufacturing techniques.

6.1 Industry assistance and current challenges

The Australian, Victorian and South Australian Governments all provide some measure of assistance to the automotive manufacturing industry (including parts manufacturing). The Australian Government provides this assistance through the *New Car Plan for a Greener Future*, which provides an average of $415 million in assistance from 2008 to 2020.

Industry assistance, in recognition of the direct and indirect value of a domestic motor vehicle manufacturing industry, is the norm across the world, with most countries offering a range of assistance to their automotive industries, ranging from direct investment support and subsidies, to tariffs and non-tariff barriers, and various tax concessions. Competition for investment by automotive manufacturers is fierce, with many countries and regions willing to offer generous incentives to persuade manufacturers to either locate or remain in the area. This is due to the significant amounts of investment made, the number of jobs created directly by manufacturers as well as the flow-on effects to the wider community.

The level of support and policy certainty provided by government is not on the same scale in Australia as in other countries. This, combined with other challenges facing Australian manufacturers (including the strong Australian dollar, high wages, lack of scale and low tariffs compared to other countries), is causing car manufacturers to be reluctant to commit to further big investments in Australia. There is a serious risk that Australia's car manufacturers will cease production if globally competitive incentives are not offered.

This would have significant negative flow-on effects on the Australian economy. The motor vehicle manufacturing sector supports a wide range of other businesses including automotive parts manufacturers, which would struggle to survive without domestic vehicle production.

6.2 Economic impact of motor vehicle manufacturing

CGE modelling was used to estimate the impacts of two key scenarios:

- complete shutdown of the motor vehicle manufacturing industry; and
- export recovery back to 2008 levels.

The effects of an industry shut-down on the economy would be significant, both in Melbourne and Adelaide where automotive manufacturing is concentrated, and nationally. Real GDP is expected to fall by nearly 0.6 per cent by 2018 compared to the status quo. In today's dollars, that is approximately $7.3 billion. National employment is expected to fall by 0.8 per cent by 2018.

The effects are much stronger in Melbourne and Adelaide, with GRP expected to fall by 1.4 and 0.9 per cent, respectively (approximately $3.7 billion and $0.8 billion in today's dollars), and employment expected to fall by 1.7 per cent and 1.2 per cent, respectively. Employment would be expected to recover by around the middle of the 2020s in both regions; however, GRP is expected to be lower than the status quo until the end of the forecast period in 2031.

An export recovery is expected to have a smaller, opposite, effect to the industry shutdown.

The modelling clearly illustrates the importance of the automotive industry to the Australian economy. The net present value of the negative impact of an industry shutdown (calculated to 2031) is $21.5 billion, far in excess of the amount of industry assistance that would likely be provided over that time period.

Appendix A

Consultations

For this project the following organisations were consulted:

- Toyota Australia
- GM Holden
- Ford Australia
- Denso Automotive Systems
- FAPM
- AutoCRC
- Boeing Australia

Appendix B

The Dynamic TERM model

The economy-wide impacts of the automotive industry shutdown or export increase were estimated using a Computable General Equilibrium (CGE) model of the Australian economy, The Enormous Regional Model (TERM).

TERM is a multi-sector multi-regional CGE model of the Australian economy, containing up to 172 industrial sectors. Notably TERM is a bottom-up model from the statistical division (SD) level, and models each SD as an economy in its own right, with region-specific prices, region-specific consumers, region-specific industries, and so on. For this modelling exercise, Australia was broken up into five regions: Melbourne, Rest of Victoria, Adelaide, Rest of South Australia, and Rest of Australia.

The TERM model is a high-level representation of the Australian economy, facilitating measurement of the wider effects of changes in economic activity in key industries and regions. To the extent that economic activity is interlinked, the model captures any indirect effects that arise from direct measures.

Importantly, the TERM model is widely known and has been used for a wide range of policy studies particularly in the areas of agricultural economics and water trading.

Key assumptions

At the national level, total employment (which is determined by the total work force and the natural unemployment rate) is expected to remain unchanged from its baseline forecast level, while real wages will adjust according to changes in the demand of the sectors. Capital stock is expected to adjust at the new equilibrium level.

These are consistent with the classic long-run assumption where labour is fixed, while wages and capital are flexible. Policy changes would have a greater impact on investment as producers adjust their capital needs in view of changes in the demand and cost of their products.

Why a CGE model?

CGE models are different from and more conservative than a multiplier analysis. Whilst both are based on the Australian Bureau of Statistics (ABS) input-output tables, CGE analysis will be, by definition, more conservative in modelling exercises because:

- CGE modelling imposes supply side constraints — labour and capital are finite; and
- CGE models drive price responses — both input prices and output prices can vary.

TERM is a high-level representation of the Australian economy, facilitating measurement of the wider effects of changes in economic activity in key industries and regions. To the extent that economic activity is interlinked, the model captures any indirect effects that arise from direct measures.

Appendix C

Supplier case studies

This appendix provides a number of case studies from a range of suppliers in the automotive industry. The information in each case study was edited from information supplied by each supplier. The case studies cover the activities undertaken by suppliers as well as their contribution to research and development.

Composite Materials Engineering Pty Ltd

Locations: Bayswater and Dandenong (Vic) *Employees: 85*

Composite Materials Engineering Pty Ltd (CME) has production facilities in Bayswater and Dandenong in Victoria. It employs 85 people. CME is an expert in moulding composite materials, and can formulate and compound its own range of Sheet Moulding Compounds (SMC). Historically CME has had a strong emphasis on automotive products; however, in the last 15 years it has diversified into other non-automotive areas.

CME makes parts for the Holden VE/VF Commodore (e.g. spare wheel tub and cover, ute load floor), HSV Maloo Ute (composite tailgate), Ford Territory (load floor and third row seat), as well as painting parking sensors for a number of brands including Toyota, Holden and Mazda.

In addition to automotive parts, CME also makes non-automotive products including building materials, starch trays and seating for trains, buses and trams. SMC materials developed by CME are also sold to other moulders. A recent addition to the CME product range is a range of Akril products. CME produce Akril painted sheets for use in bathroom walls, showers, kitchen splashbacks and foyer walls. Akril is a cheaper alternative to glass splashbacks. In addition, CME produces Akril shower bases.

CME invests heavily in research and development. It is currently working with Technique Solar to manufacture a solar panel that generates electricity and as a by-product would provide all of a household's hot water requirement. The product has the backing of the government affordable housing scheme and could be an asset for remote housing, supporting the mining industry.

Diver Consolidated Industries

Locations: Reservoir and Thomastown (Vic) *Employees: 100*

Diver Consolidated Industries (DCI) is based in the northern suburbs of Melbourne and employs around 100 people across two sites. It has two divisions: the metal stamping division and the thermal and acoustic products division.

The metal stamping division uses presses ranging up to 400 tonnes to produce a wide range of metal pressings from washers to large complex forms and structures. In addition, MIG welding robotics and automated assembly techniques are used to produce more complex items. Automotive products produced by this division include instrument panel cross car beams, hinges, stampings and body hardware. Non-automotive products include woodworking equipment and retractable steps for trucks.

The thermal and acoustic products division has significant skills in the design and manufacture of materials and products to manage heat and sound in automobiles. DCI produces a range of embossed and laminated heat and sound shielding material configurations using raw materials such as aluminium foil and sheet. The range includes products for the automotive industry (e.g. exhaust shields, engine bay shields, under carpet insulation) and for the non-automotive sector (e.g. marine engine bay insulation, thermo/acoustic shields for buses and trucks, commercial plasma screen TV mounting assemblies).

DCI invests significantly in product innovation. Two recent examples of innovation include:

- DCI, in collaboration with Canada's Multimatic Inc, was invited to work with GM-Holden on the development of a new side door hinge system that would allow the use of bolt-on stamped hinges instead of welded-on hinges. This has facilitated the adoption of a 'doors-off' assembly process for the VE Commodore, which has allowed for significant cost and time efficiencies in the production process, especially during body painting.
- DCI will supply aluminium instrument panel cross car beams for the VF Commodore from May 2013. These are only the second aluminium instrument panel cross car beams sourced by GM in the world. The new beam's all aluminium construction will achieve weight savings of around 40 per cent compared to the current VE steel part.

Through diversification DCI has reduced its reliance on the Australian vehicle assembly industry. In 2005, 99 per cent of DCI's turnover came from the Australian OE automotive industry. Now this figure is 75 per cent, with around 10 per cent of turnover coming from non-OE automotive products.

Precision Components Australia Pty Ltd

Location: Beverley (SA) *Employees: 80*

Precision Components Australia (Precision) specialises in metal stamping. It is based in Beverley, South Australia and employs 80 people. It has the largest capacity and capability in metal stamping in Australia, as well as the only hot stamping facility in Australia. Hot stamping is a way of processing steel to make lightweight, high-strength parts that are commonly used in industry. It is also known as hot forming or press hardening.

Precision has entered into joint ventures to achieve major product advancements:

- Xiangtan TQM Transmission Company, located in Xiangtan China. Precision developed specialized metal stamping processes and tooling to produce clutch assembly cylinders for Chinese car maker Geely. This is used to produce 'China's first automatic transmission produced by a Chinese national car maker'.
- Precision GNS Hot Stamping Pty Ltd, which was formed with South Korean company GNS. This is Australia's first hot stamping facility, which was awarded contracts for the new MY14 Commodore. Precision received the GM Holden Supplier of the Year for 'Best investment in technology'.

L&L Products Australia Pty Ltd

Location: Dandenong South (Vic) *Employees: 35*

L&L Products bought the assets and intellectual property of INC Corporation in June 2012. They are based in Dandenong South, Victoria and employ 35 people. L&L Products specialises in acoustic solutions for interiors and trim shop applications. Their products are based on nonwoven vertically lapped mats realised with polyester fibres. Typical applications include door trim insulations, hushpanels, wheelhouse liners and dash inner insulations.

Around 70 per cent of L&L Products business is in automotive; however, their products are used in a wide variety of industries and applications including generator sets, marine, whitegoods, heavy trucks, construction equipment, air conditioning systems and air compressors.

Hirotec Australia Pty Ltd

Location: Elizabeth West (SA) *Employees: 160*

Hirotec Australia Pty Ltd (HTA) was established in 2004 and started production in May 2006. It employs around 160 people in Elizabeth West, South Australia. HTY supplies doors, engine hoods and deck lids for the Holden Commodore VE. HTA expanded its production in 2009 to supply small stamping panels for Toyota Australia OE and inner and outer panels of front doors, engine hoods and deck lids for Toyota Australia service parts. HTA now also supplies closures for the Holden Cruze.

ArcelorMittal Tailored Blanks

Location: Adelaide (SA) *Employees: 19*

ArcelorMittal Tailored Blanks (AMTB) is based in Adelaide and employs 19 people. AMTB welds flat sheets of steel into tailor made shapes. That means that if a customer is making an L shaped part they weld two rectangles together to make an L shaped blank, which the customer can stamp. AMTB Europe and their former owner Noble Metal Processing pioneered Tailor Welded blanks, which are a major technology in light weight vehicles for 'green' improvements and increased safety performance with reduced cost and performance consequences. Precision Components Australia is the main supplier to AMTB.

Astor Base Metals

Location: Sydney (NSW) *Employees: 90*

Astor Base Metals is based in Sydney and employs 90 people. They produce decorative plastic parts, predominantly badges. They were the first manufacturer in Australia to electroplate plastic. They developed the pouring of polyurethene to manufacture the Ford oval which they have supplied for nearly 30 years.

Blown Plastics Pty Ltd

Location: Elizabeth South (SA) *Employees: 96*

Blown Plastics are based in Elizabeth South, South Australia and employ 96 people. They make a range of products for the automotive and non-automotive markets. This includes air intake systems, water cooler bodies, dirt shields, wheel liners, springwater bottles, de-humidifier tubs, charge air ducts, traffic bollards and food packaging. Blown Plastics has a strong focus on innovation. Recent innovations include designing and developing CCA's first co-polyester springwater bottle, developing a swarfless cutter for MY14 HVAC parts and launching the first commercially viable insulated plastic container.

Blown Plastics have used their automotive learnings to diversify into both the medical and food packaging spheres. They have also developed a variety of proprietary lines that incorporate much of the technology and methodologies gained during the automotive development process.

Blown Plastics use inputs from 22 suppliers, of which 13 are Australian.

Futuris Automotive

Locations: Port Melbourne (Vic), Shanghai (China) and Long Beach (California) *Employees: 800 (Australia), 2000 (worldwide)*

Futuris Automotive is a multinational company that was established in Victoria in 1999. It still has its head office in Port Melbourne, with regional headquarters in Shanghai, China and Long Beach, California, USA. It has manufacturing facilities in Australia, China, Thailand, USA and South Africa. Futuris Automotive employ more than 2000 people worldwide, including 800 in Australia. Futuris Automotive is wholly owned by Elders Limited.

Futuris makes a range of automotive components including seat structures, seat assembly and integrated JIT supply, door trims, headliners, floor carpet, NVH systems, steering columns, pedal boxes and window regulators. They also make non-automotive products for the rail and tram sector along with the infrastructure and cleantech sectors.

Futuris focuses its R&D on real life applications which can be commercialised in mainstream automotive applications. In 2009 they won an Automotive Pace Award in the USA for their PET carpet solutions. They are continuing to develop state of the art technology in respect to the use of light weight composite seat frames and actuators utilising shape memory alloy.

Major customers include GM, Ford, Toyota, SAIC, AAT, Chery, JAC, Brilliance, Mercedes and Tesla.

Hella Australia Pty Ltd

Location: Mentone (Vic) *Employees: 360*

Hella Australia specialises in automotive lighting (including headlamps, daytime running lamps, rear lighting and interior lighting) and electronics. It employs 360 people in Mentone, Victoria.

Hella Australia has full R&D capability with an in-house prototype shop, ability to do environmental testing and a NATA approved photometric laboratory. Hella Australia has implemented the Toyota production system to improve efficiency, and has made investment into the one piece flow concept.

Hella Australia have diversified in the past ten years into specific mining lighting products. They are now globally responsible for mining products utilising automotive skills and technologies. Products include flood lighting for mining and other applications.

METT Pty Ltd

Location: Noble Park (Vic) *Employees: 210*

METT is based in Noble Park, Victoria and employs around 210 people. METT produces aluminium and zinc castings and sub-assemblies mainly for powertrain applications. METT supplies exclusively to the automotive industry. Seven out of its 35 suppliers are Australian based.

MHG Asia Pacific Pty Ltd

Locations: Melton (Vic) and Rayong (Thailand) *Employees: 280*

MHG Asia Pacific (MHG) is an Australian owned and operated company with locations in Melton, North Geelong and Rayong (Thailand). They employ 280 people. MHG specialises in automotive interior and exterior plastics, as well as automotive glass bending, toughening or laminating and assembly. The high tech plastics are engineered to replace metal parts for body or underbody, which provides significant weight savings.

MHG has a dedicated engineering group that has been responsible for the design of exterior parts for Toyota. MHG regularly works with Toyota, Holden and Ford on new model parts to ensure manufacturability and cost targets. They have developed injection moulding tooling plus robotic paint booths and product assembly. In addition, MHG works with innovative plastic material companies.

MTM Pty Ltd

Location: South Oakleigh (Vic) *Employees: 95*

MTM is a Victorian company based in South Oakleigh and employing 95 people. They specialise in automatic gearshift assemblies, doorchecks, park brakes, interior and exterior door handles, and bonnet release mechanisms. MTM engages in R&D which is focused on their two main export items: doorchecks and automatic gearshifts.

MTM was one of the first companies to introduce doorchecks incorporating a spring design. The spring introduction allowed the doorcheck to operate consistently in all weather temperatures (-40C to 80C). MTM has also worked on a specially formulated plastic compound on the doorcheck lever arm to eliminate noise in all environments whilst at the same time creating no additional noises. This makes MTM products suitable for the harshest environments including central Australia and Arabic countries. MTM has also been at the forefront of a plastic designed doorcheck which performs to the same specification as the metal counterparts but are lighter.

MTM was one of the first manufacturers to utilise a plastic base, a complete divergence from the metal fabricated base. It allowed precision in design and improved quality of components for manufacture. MTM has multiple design patents in automatic gearshift assemblies. One of these involves the replacement of a heavy metal arm in rear wheel drive vehicles with a plastic one, which has allowed significant weight savings.

MTM has been exporting since 1997, and exports account for around 30 per cent of sales. They export directly to seven countries, including China, India and the US (they supply all Cadillac vehicles manufactured in the US with doorchecks). Another three countries will be added in 2014.

In addition, MTM has diversified into non-automotive fields. This includes assembling the only Australian made All Terrain Utility Vehicle (the Tomcar), manufacturing a truck immobiliser that has the capability to slow down trucks or trailers while still managing control of the vehicle, and supporting the design and manufacture of water recycling pods.

TI Automotive Australia

Locations: Kilburn (SA) and Dandenong (Vic) *Employees: 94*

TI Automotive Australia is part of TI Automotive, a multi-national company. TI Automotive Australia is the core Australian supplier of brake and fuel lines to all three domestic manufacturers. TI Automotive Australia has facilities in Kilburn, South Australia and Dandenong, Victoria, employing 94 people.

Due to the nature of their products and TI Automotive's extensive international network, TI Automotive Australia is entirely reliant upon the domestic automotive industry. The company has diversified to remain sustainable, for example by establishing production of formed nylon fuel lines and steel filler necks to supplement their traditional steel brake and fuel line business.

Products include underfloor brake and fuel bundle assemblies, engine bay brake bundles, steel brake lines, steel fuel lies, plastic fuel lines, fuel filler necks, sunroof drain tubes, tubular engine and transmission components.

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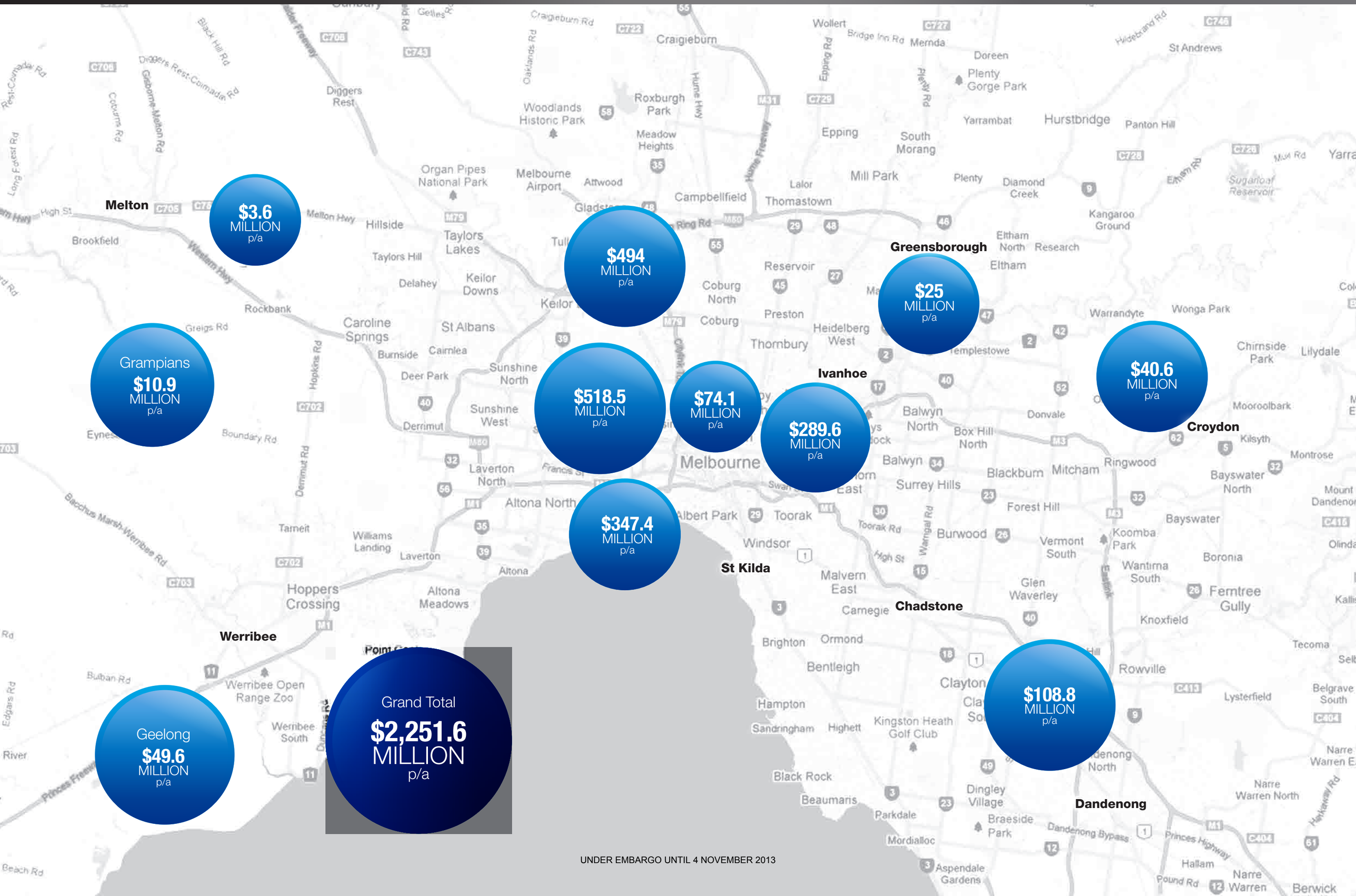
Attachment 1

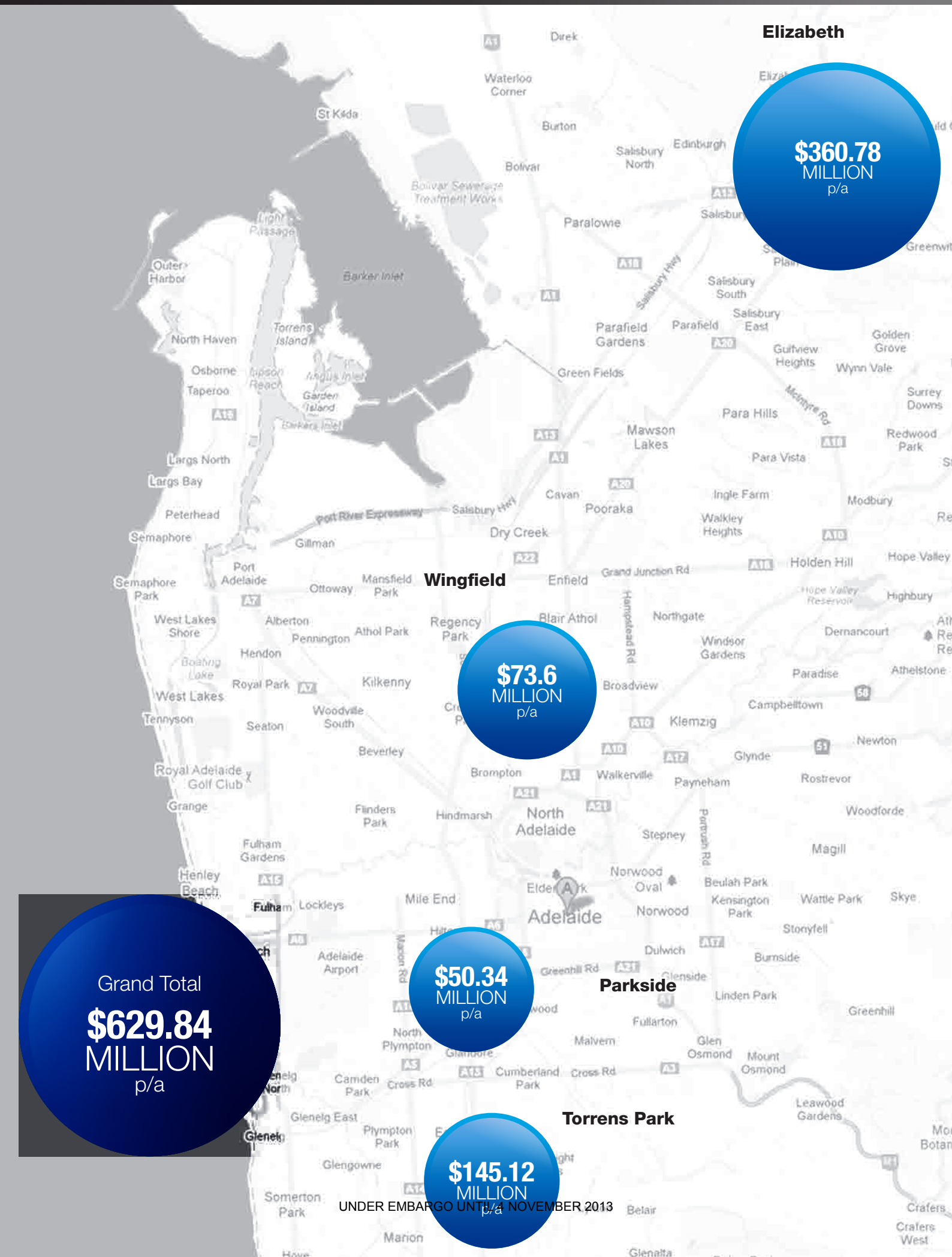
Maps of supplier locations and operational spend

Map of Victorian suppliers



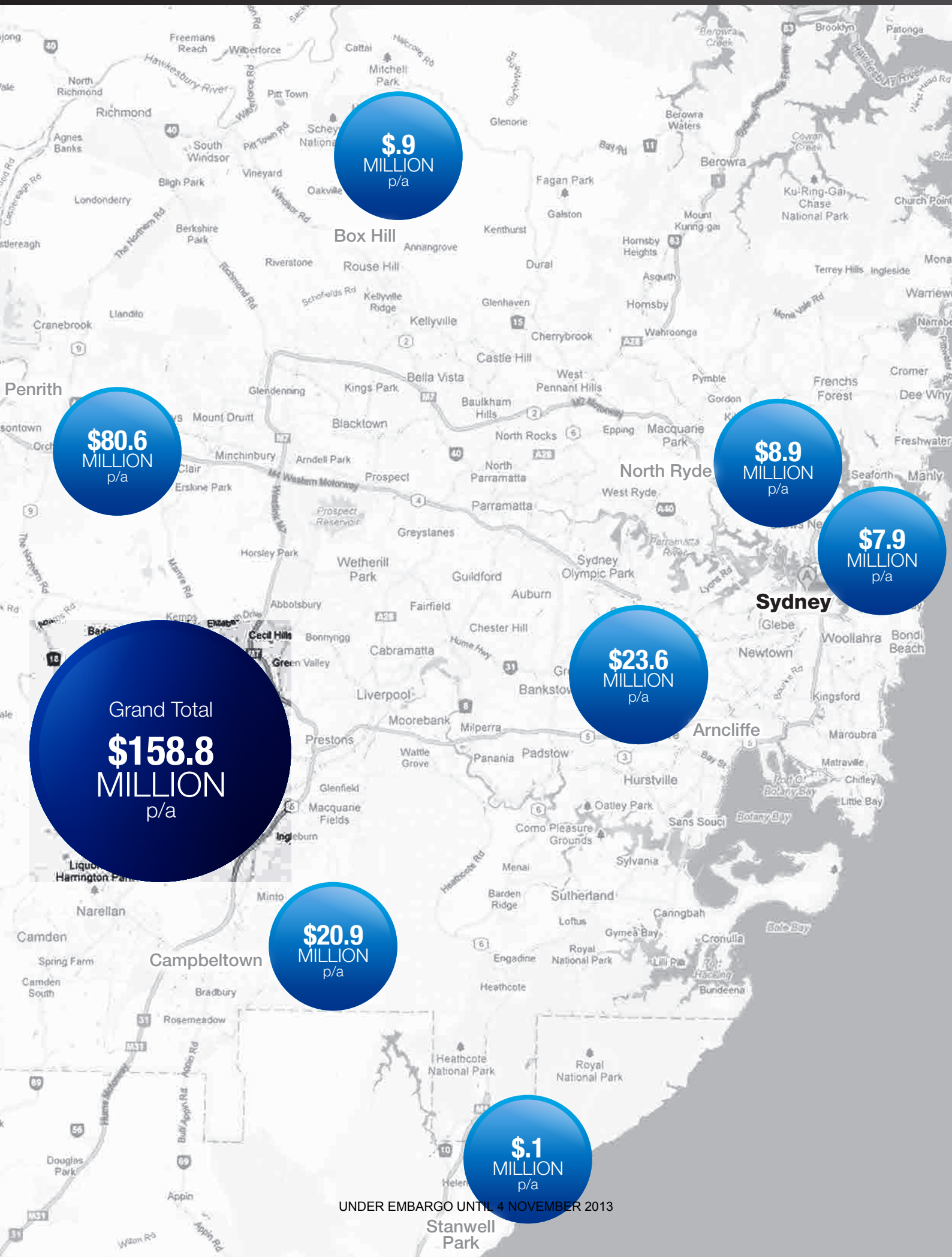
UNDER EMBARGO UNTIL 4 NOVEMBER 2013

Map of Adelaide suppliers

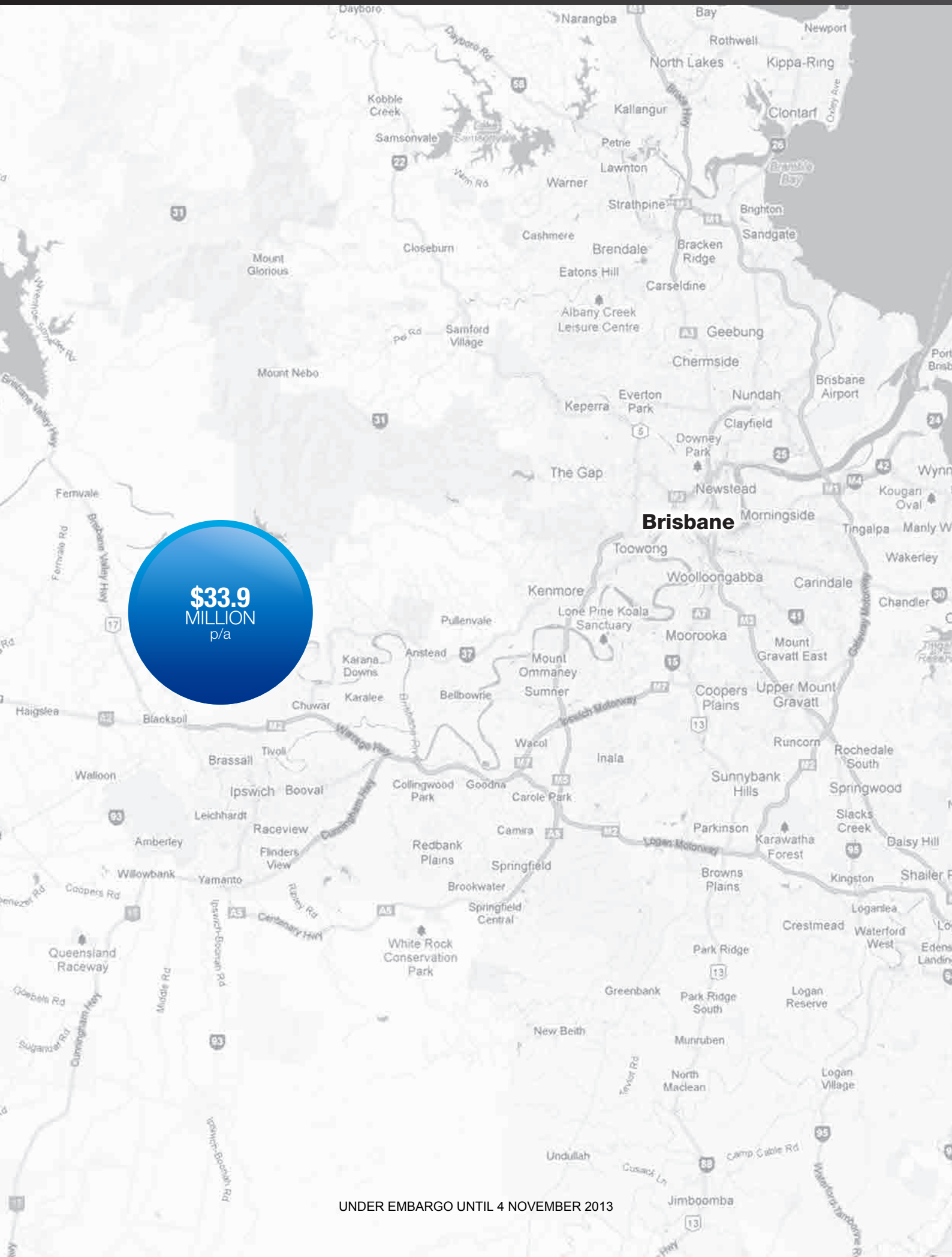


UNDER EMBARGO UNTIL 4 NOVEMBER 2013

Map of Sydney suppliers



Map of Brisbane suppliers



UNDER EMBARGO UNTIL 4 NOVEMBER 2013