

When an Auto Industry Disappears: Australia's Experience and Lessons for Canada

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Les trois constructeurs mondiaux d'automobiles actuellement présents en Australie ont annoncé qu'ils mettront fin à toutes leurs opérations dans ce pays en 2017. Ces fermetures annoncées ont fait naître la crainte que le secteur de la construction automobile suive la même voie au Canada. Dans cet article, je décris les facteurs qui ont amené les constructeurs automobiles à fermer leurs usines en Australie, et j'analyse les différences importantes, sur le plan structurel, économique et des politiques publiques, qui existent entre ce pays et le Canada. J'explique entre autres que le Canada, par rapport à l'Australie, profite de nombreux avantages structurels, au premier rang desquels se trouve l'importante relation commerciale bilatérale que le pays entretient avec les États-Unis. Ces points forts me permettent d'affirmer que l'industrie automobile canadienne a un meilleur avenir au Canada.

Mots clés : construction automobile, Canada, Australie, désindustrialisation

All three global automakers currently manufacturing vehicles in Australia have announced their total shutdown of operations there by 2017. This shutdown has sparked some fears that Canadian auto manufacturing may follow a similar trajectory. This article reviews the factors contributing to the closures in Australia and considers key structural, economic, and policy differences between the Australian and Canadian cases. The Canadian industry enjoys several structural advantages compared with Australia, chief among them its large and bilateral trade relationship with the United States. These advantages suggest that the Canadian industry has a better prognosis.

Keywords: automotive manufacturing, Canada, Australia, deindustrialization

Introduction

Canada and Australia share many fundamental economic similarities: large geography, a relatively sparse population, and a traditional economic reliance on resource extraction. They also share a long-standing policy preoccupation with fostering a more diversified, less resource-dependent economic structure. As part of broader industrial policy and industrialization initiatives during the postwar decades, both countries invoked active measures to promote domestic automotive manufacturing. In both cases, the automotive industry became an important source of investment, innovation, well-paying jobs, and exports. Since the turn of the century, however, in the face of intense global competition, exchange rate fluctuations, and an evolution in policy thinking, the automotive industries in both countries have experienced stress and contraction.

In the Australian case, this recent contraction was ultimately fatal. A long-term decline in production, combined with unfavourable changes in cost competitiveness and domestic market share, has culminated in the impending and complete closure of the domestic motor vehicle assembly industry. All three of the global original equipment manufacturers (OEMs) still producing in the country (Ford, Holden/General Motors [GM], and Toyota) have announced they will cease Australian assembly by 2017. The resulting shock waves through automotive parts manufacturers and the broader automotive supply chain will be severe; some estimates suggest as many as 200,000 jobs in total may be affected by the shutdown (counting direct, indirect, and induced effects; Barbaro and Spoehr 2014, National Institute of Economic and Industry Research 2014). The final impact on the national labour market, gross domestic product (GDP), and Australia's international balance of payments

will be significant, all the more so because the industry's shutdown occurs at a time of generalized macroeconomic uncertainty for that country.

These dramatic events sparked worried comparisons with the Canadian automotive industry. Some observers predict that because Canada's automotive industry faces similar pressures, it is only a matter of time until Canadian automotive manufacturing encounters a similar fate. For example, one of Canada's top automotive analysts stated this concern bluntly, suggesting that "somewhere between 2030 and 2040 we'll be Australia" (Tencer 2015; see also Owrarn 2014).

Is this pessimism justified? It is true that the two countries share important structural and policy similarities. However, there are important differences in geography, in international trade patterns, in industry performance, and in policy context. For these reasons, it cannot be assumed that Australia's automotive downfall is necessarily a harbinger of a similar trend for Canada. This article reviews and evaluates the Australian experience, describes its similarities to and differences from the Canadian case, and critically considers whether Australia's negative trajectory is likely to be replicated in Canada. Policy lessons for Canada's efforts to sustain domestic production are also developed.

The article is organized as follows. After this introduction, the second section summarizes the history of Australia's automotive manufacturing industry, including the context for the recent decisions to close down mass vehicle assembly there.¹ The third section describes key structural and economic differences between the automotive industries in the two countries; these underlying differences help to explain the greater demonstrated resilience of automotive production and employment in Canada. The fourth section provides a similar comparison of the policy actions taken in the two countries to foster their respective automotive industries. Finally, the conclusion summarizes the implications of Australia's experience for Canada. The two countries' automotive sectors have many fundamental differences, and Canadian manufacturers continue to benefit from several advantages not available to their Australian counterparts. At the same time, there are enough worrisome similarities in the evolution of the two industries that Canadian policy-makers should take care to learn from the Australian experience in formulating their own response to the industry's challenges.

History of Australia's Automotive Industry

As in other countries characterized by large geography and relatively scarce population, the automobile has played a central role in Australian economy and culture. Australia has a high incidence of motor vehicle ownership, with more than 700 registered vehicles per 1,000 inhabitants (one of the highest rates in the world: higher

than Canada, and not far behind the United States; World Bank 2014). Australian cities are among the least densely populated (and hence car reliant) in the world (Loader 2016), and the country's transportation infrastructure is largely oriented around road vehicles. The purchase and operation of motor vehicles accounts for a large proportion of total consumer spending: about 13 percent, more than any other category of consumer spending except housing and food (author's calculations from Australian Bureau of Statistics 2011). Australians' traditional love of vehicles (Milman 2013), especially larger ones, is reminiscent of North American automobile culture. However, both the nature of vehicles and their use has evolved in ways that reflect some uniquely Australian characteristics.

Automotive manufacturing in Australia began in the 1890s (not long after motor vehicles debuted in North America and Europe). The first motor vehicles (initially steam powered, then gasoline powered) were custom produced in small, locally owned shops.² Gradually, the industry consolidated and increased its scale; the first global manufacturers (led by the Ford Motor Company) commenced Australian production in the 1920s. At first, this production consisted solely of the domestic final assembly of premanufactured kits imported from North America and elsewhere. During the Great Depression, the Australian government attempted to foster a more comprehensive domestic automotive manufacturing industry through higher tariffs on imports and subsidies for domestic production. Those initial efforts had a modest effect, however, and were further interrupted by world war.

A turning point in Australia's automotive history occurred under the leadership of a Labor Party government immediately after the Second World War. The government committed to developing a more self-sufficient and well-rounded domestic automotive manufacturing sector (part of a broader strategy of industrial development and economic diversification). This vision was symbolized in the effort to develop and produce "Australia's own car": a vehicle designed and manufactured in Australia, using Australian-made components (rather than relying on imported kits). The first company to fully adopt this strategy was GM, through its Australian subsidiary Holden. It designed and manufactured a sedan, with somewhat unique Australian features, beginning in 1948. The Holden 48-215, based loosely on a Chevrolet design from the US market (Davis, Kennedy, and Kennedy 2007), was thus the first "Australian car." Its unveiling by Australian Prime Minister Ben Chifley was celebrated as a symbol of Australian independence and industrial maturity. Other global manufacturers (including Ford and British Motors) followed suit, establishing more comprehensive and vertically integrated Australian operations.

The Australian car strategy was supported with several policy levers, including

- An import licensing system that limited the flow of vehicle imports and protected the domestic market for Australian-based suppliers;³
- Local content rules on domestic manufacturing; and
- Tax and duty concessions for domestic vehicle manufacturers.

This strategy resulted in the development of a significant and largely self-sufficient automobile manufacturing sector. The policy levers supporting this strategy evolved over time, reflecting changing national and global realities. In the early 1960s, the import licensing scheme was eliminated and replaced with a system of quotas and tariffs on imported vehicles and parts, combined with tariff rebates for domestic manufacturing. Automakers producing in Australia could now receive rebates on duties paid on their imports (of both components and finished vehicles), so long as they produced sufficient quantities of vehicles in Australia and met domestic content thresholds. After some policy experimentation, in the mid-1970s that domestic content threshold was set at 85 percent: that is, domestic value added had to account for an average of 85 percent of the value of vehicles assembled in Australia under the program. This provided a strong stimulus to the establishment of automotive components production.⁴ High tariffs (above 50 percent on finished vehicles) and import quotas limited vehicle imports to around 20 percent of domestic sales. Later in the 1970s, the automotive strategy was amended to encourage greater exports; companies were granted incremental relief from the 85 percent domestic content threshold to reflect the value of any components and vehicles they sold into export markets (Pursell 2001).

The legacy of this activist strategy was the establishment of a vertically integrated and relatively well-rounded automotive manufacturing industry—an important and surprising accomplishment, given Australia's small population and remote location. By the 1970s, the industry produced almost as many vehicles (for both domestic and export use) as Australians purchased, and automotive manufacturing (including components) was the largest manufacturing sector in the country, employing more than 100,000 workers. The industry was concentrated in two major clusters (one in Victoria and one in South Australia), with supply chains reaching into other states as well.

Of course, there were downsides associated with this industrial achievement. The industry was highly fragmented: Five different OEMs assembled as many as 15 different models. The resulting small production runs

(as few as 25,000 units per model annually), combined with high tariff protection against imports, meant vehicles in Australia were considerably more expensive than in Europe or North America. One positive side effect of the Australian car strategy was the development of significant design, engineering, and research capacities within Australia, driven by the commitment to design and manufacture unique, Australia-specific vehicles. As a result, the Australian industry demonstrated a higher proportionate innovation effort than other countries (such as Canada) whose automotive industries were also dependent on incoming foreign investment by global OEMs.

Another Labor government in the mid-1980s pursued a different approach to international economic integration (Pursell 2001). It undertook a far-reaching and unilateral liberalization of trade and investment flows; the reform of automotive policy was one important part of this overarching change in economic direction. In 1985, a new Motor Industry Development Plan (commonly known as the Button Plan, after the industry minister of the day) was implemented. The main features of this strategy included

- The elimination of quantitative restrictions on imports, replaced by tariff quotas (which in turn were also phased out by 1992);
- Large reductions in tariffs on imported vehicles, falling immediately from 57.5 percent to 45 percent in 1988 and then by a further 2.5 percent per year for the next 12 years (reaching 15 percent by 2000; Figure 1);
- The implementation of direct subsidies and incentives to domestic automotive production, with the goal of assisting the transition to a more liberalized trade environment and encouraging greater efficiency and export orientation from those companies remaining in Australia; and
- Targeted government procurement (at both the federal and the state levels) to strengthen demand for Australian-made vehicles.

In the wake of the Button Plan, the industry consolidated to four OEMs, producing just five models in four assembly plants. Imports surged after the unilateral trade liberalization, providing Australian consumers with more choice and lower prices.⁵ The domestic industry's share of domestic sales fell steadily. Exports increased, but not nearly enough to offset the decline in domestic sales of Australian-made vehicles, and so overall production levels declined (see Figure 2), and a large and chronic automotive trade deficit emerged. Annual output declined by about 20 percent compared with pre-Button averages, even as Australia's economy and population continued to grow rapidly.

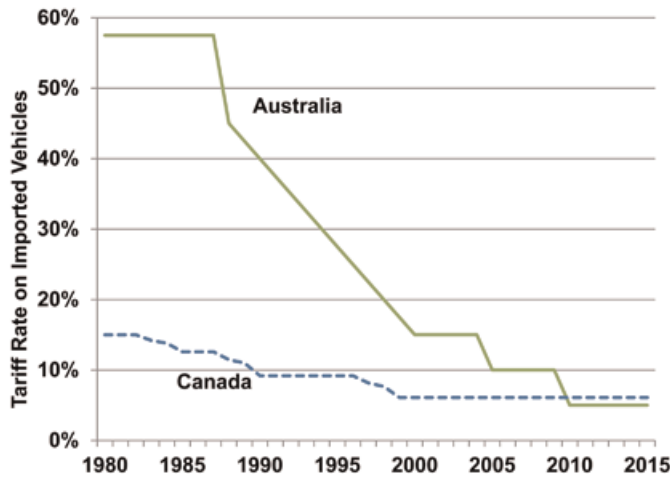


Figure 1: External Tariffs on Motor Vehicle Imports, Australia and Canada, 1980–2015
 Source: Anastakis (2005) and Automotive Review Secretariat (2008).

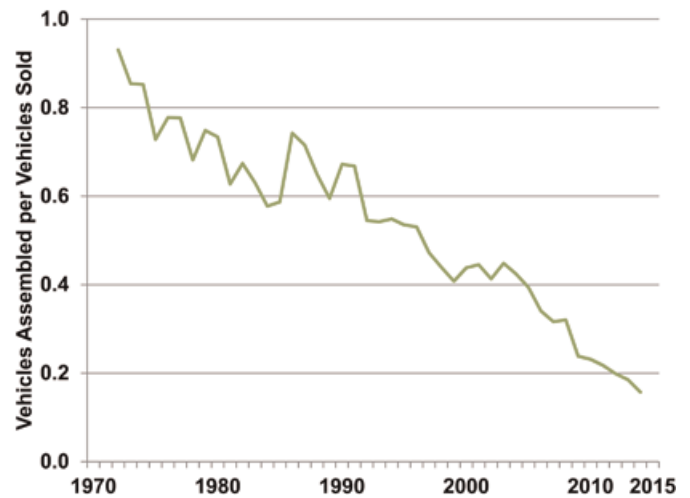


Figure 3: Automotive Production-to-Sales Ratio, Australia, 1972–2014
 Source: Author's calculations from Ward's Auto (2016).

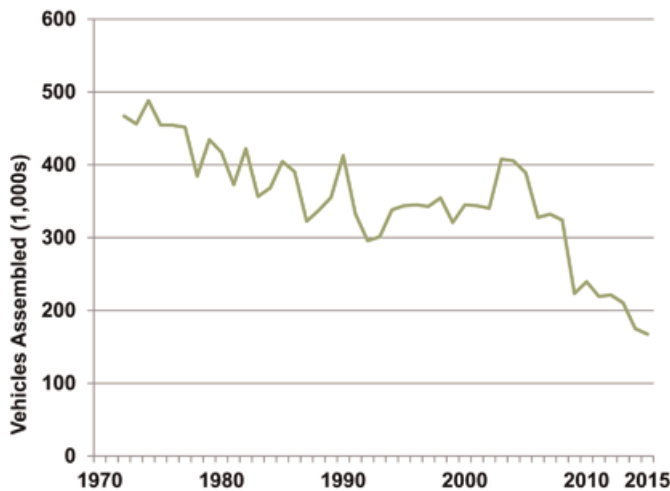


Figure 2: Australian Vehicle Assembly, 1972–2014
 Source: Ward's Auto (2016).

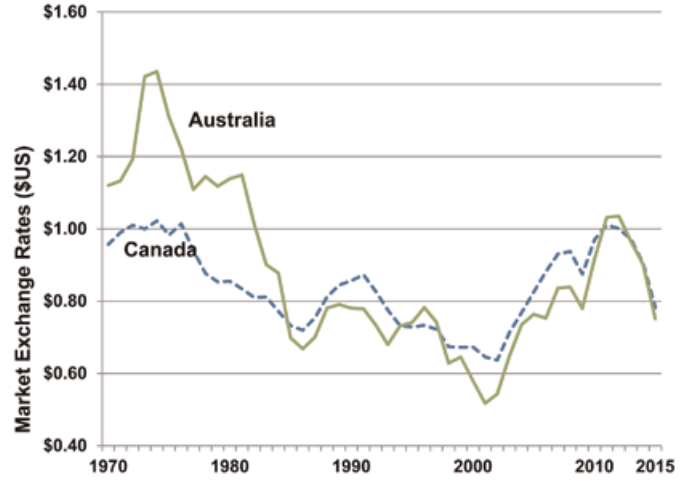


Figure 4: Market Exchange Rates, Australia and Canada, 1970–2015
 Source: Author's calculations from Statistics Canada (2016c).

Through the 1990s and the first half of the 2000s, total automotive assembly stabilized at around 350,000 units per year, and employment in automotive manufacturing actually expanded slightly. Continuing growth in exports supported production levels; by the mid-2000s, exports accounted for 40 percent of all vehicle output. Some of this expansion in exports reflected OEMs' allocation to Australian assembly plants of models with broader international sales potential.⁶ However, the industry's share of the domestic market shrank, and hence total production (including exports) lagged ongoing growth in domestic sales. This was reflected in a decrease in the ratio of Australian production to Australia-

lian sales, from near 1 in the early 1970s to below 0.5 by the late 1990s (see Figure 3).

In 2000, in response to this continuing relative decline in production, the Australian government (then led by a coalition of the right-leaning Liberal and National parties) consolidated automotive support programs within the Automotive Competitiveness and Investment Scheme (ACIS). This program provided about A\$500 million of annual support, delivered largely through duty remission credits. Described originally as a transition program to assist the industry's adaptation to a more globally exposed environment, the program was later extended to 2010.

By 2005, however, total Australian output was equivalent to less than one-third of domestic sales (Figure 3). Moreover, the take off of global mineral prices in the early 2000s ignited a boom in Australian mining investment and production, which had several macroeconomic side effects. The most damaging of these for the automotive industry was a dramatic appreciation in the Australian currency. From a historic low of around US\$0.50 reached during 2001, the Australian dollar doubled in value over the next decade, exceeding parity with the US dollar by 2011 (Figure 4). This dramatically increased the costs of Australian automotive production and contributed to chronic losses in the Australian assembly sector.⁷

However, the government's response to the emerging crisis in the industry was to embark on further unilateral trade liberalization. In 2005, the tariff on vehicle imports was cut by another 5 percentage points (to 10 percent). Imports were further liberalized as Australia signed several free-trade agreements (FTAs) with automotive-exporting jurisdictions, starting with the United States and Thailand in 2005.⁸ Imports grew rapidly (reaching close to 90 percent penetration of the domestic market), but automotive exports declined (reflecting Australia's high costs and inconsistent export marketing by OEMs). Hence, beginning in the mid-2000s, as a result of both growing import penetration and shrinking exports, domestic vehicle production commenced another and more dramatic decline, falling by another half between 2004 and the end of the decade.

Facing a pessimistic outlook for costs, domestic sales, and export opportunities, Mitsubishi shuttered its Adelaide engine and assembly plants (purchased years earlier from Chrysler) in 2006. In retrospect, this was the beginning of the end for Australian assembly. Downsizing at the other Australian OEMs accelerated the decline in automotive employment, which fell by 25,000 between 2003 and 2010. The 2008–2009 global financial crisis posed more challenges. The Labor party had returned to government and implemented a strong fiscal response to the crisis, including a “cash for clunkers” motor vehicle purchase incentive to help maintain consumer spending.⁹ Also, the government's export financing bank, the Export Finance and Insurance Corporation, provided a A\$200 million line of credit to Holden/GM to assist it through the liquidity crisis and bankruptcy restructuring of its parent company in 2009. Even after the global economy exited from recession and financial conditions stabilized, however, Australian automotive production continued to decline.

The Labor government initiated another inquiry into the future of automotive manufacturing, this one headed by former Victoria Premier Steve Bracks and hence known as the Bracks Report (Automotive Review Secretariat 2008). Its recommendations were largely accepted

by the Australian government in a subsequent “New Car Plan for a Greener Future,” promulgated in 2008 (Australian Department of Industry, Innovation, Science, and Research 2008). It included the following measures:

- Further reduction in the import tariff on vehicles to just 5 percent (one of the lowest most-favoured nation [MFN] rates among industrialized countries);
- A revised and expanded program to replace ACIS called the Automotive Transformation Scheme (ATS) that subsidized automotive investment, production, and research, with a focus on technologies and products to improve energy efficiency and reduce greenhouse gas pollution;
- A targeted subsidy program, called the Green Car Innovation Fund, to provide additional incentives for products and technologies with positive environmental features;¹⁰ and
- Special measures to support the consolidation of automotive components manufacturers and their integration into global supply chains.

However, this program was too little, too late. Domestic production continued to shrink in the face of overwhelming import penetration, flagging exports, and an overvalued currency. Ford was the next assembler to announce (in 2012) its departure from manufacturing in Australia.

Political dynamics contributed to the industry's final collapse. A new Liberal–National coalition government was elected in 2013 under the leadership of Prime Minister Tony Abbott. He and senior ministers consistently criticized interventionist industrial support programs, such as the ATS: “The government's role is not to prop up private business” (Taylor 2013). Both GM and Toyota were known to be actively considering the future of their respective Australian operations and had initiated discussions with stakeholders (including governments, unions, and suppliers) seeking policy and contractual changes that could support their continued presence in Australia. The federal government, however, did not respond positively; the Finance Minister, Joe Hockey, famously dismissed GM's appeals by stating, “Either you're here or you're not” (Hawthorne 2013). The government postponed any decisions about automotive policy pending the results of an economic review by the Productivity Commission of the Australian Government (2014). Given the imminent nature of the GM and Toyota decisions, this delay was interpreted as another sign of the government's lack of interest (Australian Manufacturing Workers Union 2014). In sum, it was apparent that traditional bipartisan support for active automotive industry measures had evaporated. This likely hastened the decisions by GM and Toyota to close their Australian operations (Hawthorne 2013; Senate Economics References Committee of Australia 2015). This experience

is consistent with Yates and Lewchuk's (2017) finding that global OEMs expect a stable, lasting commitment of government support for their operations as a precondition for incremental capital investment.

In its 2014 budget, dominated by efforts to reduce spending and close a deficit, the coalition government reduced the ATS subsidy program, with total phase-out planned for 2018 (saving the government A\$900 million in unspent funds; Janda 2014). With assembly plant closures appearing inevitable, the national and affected state governments shifted focus to facilitating adjustment after the closures (including transition support for laid-off autoworkers and modest funds to assist component makers in reorienting their businesses). Previously approved ATS grants to automotive suppliers will continue for as long as they maintain production.

It should be noted that Australia retains a modest truck and specialty vehicle manufacturing industry: Several companies assemble medium- and heavy-duty trucks in Australia (including Iveco, Volvo, and Kenworth, meeting a small share of total Australian demand for these vehicles), often with specifications reflecting Australia's unique geographical and environmental demands (Senate Economics References Committee of Australia 2015). Australia's automotive components manufacturers also supply a significant domestic aftermarket industry (producing replacement parts), and some of that work may also continue after the shutdown of automotive assembly. So automotive manufacturing will not completely disappear from Australia. An investigation initiated by the Australian Senate catalogued possibilities for retaining Australian capacities in certain research and production niches, such as alternative fuels, electrification, lightweight components, car sharing, telematics, and autonomous vehicles (Clibborn, Lansbury, and Wright 2016; Federal Chamber of Automotive Industries 2015; Senate Economics References Committee of Australia 2015). Nevertheless, there is no doubt that with the cessation of large-scale passenger vehicle assembly, Australia is abandoning its postwar aspiration to be a major automotive producer.

Comparing the Australian and Canadian Automotive Industries

Australia and Canada share many similarities of history, population, economic structure, and policy orientation. Yet they have key differences that have shaped the evolution of their respective automotive industries. Undoubtedly the most important is the fact that Canada is located next to the world's largest market, connected by the world's longest undefended border, whereas Australia is an island, located far from other industrial countries. That fundamental fact of geography has shaped Canada's automotive history and opened oppor-

tunities for scale and export that were unavailable to Australian producers.

In particular, the 1965 Canada-US Auto Pact oriented Canada's automotive industry firmly around that north-south axis (Anastakis 2005) and in retrospect created an industrial foundation better able to survive shifts in global trade and competitiveness. The Auto Pact eliminated tariffs on trade between the United States and Canada in passenger vehicles, heavy trucks, and automotive components, but conditions were attached to the liberalization: The Canadian industry was provided with safeguards to ensure it retained at least a proportionate share of total production even as the industry rationalized along north-south lines.¹¹ Companies that did not meet those safeguards risked losing their tariff preferences (which would snap back to MFN levels); this was not a hypothetical possibility, and the threat of tariff reimposition was successfully wielded by the federal government to leverage additional investment in Canadian assembly and components operations. The Canadian industry became a net exporter of vehicles by the early 1970s.

In the wake of the Auto Pact, Canada's automotive industry became proportionately larger than Australia's. Illustrations of this comparison are provided in Figures 5 and 6.¹² The first depicts automotive assembly relative to domestic population (vehicles assembled per 100 residents). By this measure, Canada's industry was about half again larger than Australia's in the 1970s; that advantage widened during the 1980s as Canada's industry grew (exploiting cost advantages and productivity improvements) and Australia's shrank. A similar divergence is indicated in Figure 6, which compares Australia's production-to-sales ratio with Canada's. Canada's ratio fluctuated above 1 through the 1970s;¹³ Australia's had begun the decade close to 1, but the ratio declined as import penetration grew (and exports did not keep up with lost domestic sales). By 1980, Canada was assembling more vehicles than it consumed, and Australia's production-to-sales ratio fell further in the wake of unilateral trade liberalization. Even after the downsizing of the past decade, Canada's industry still assembles more vehicles than it purchases, and by 2013 Australia assembled fewer than one vehicle for every five it consumed.¹⁴

Table 1 summarizes several key structural comparisons between the automotive industries in the two countries. Canada's vehicle output is larger than Australia's (assembling more than 10 times as many vehicles) and less fragmented. With only 11 assembly plants (compared with Australia's 3), average output per plant is 3 times as high in Canada. Indeed, a single Canadian assembly plant on average now produces more vehicles per year than Australia's entire industry. Minimum efficient scale

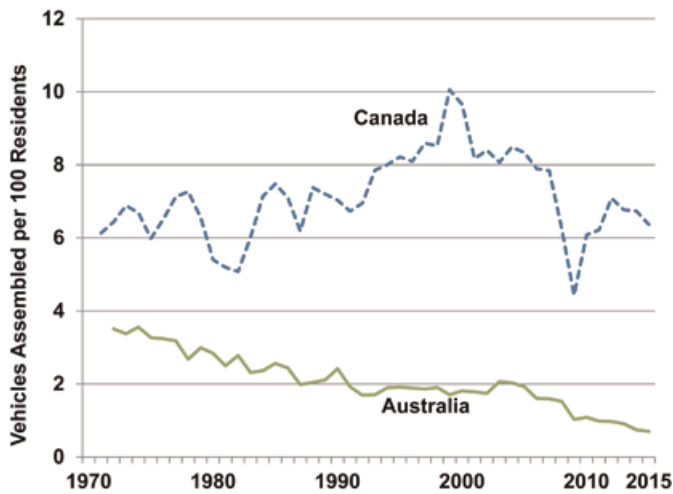


Figure 5: Vehicle Assembly per Capita, Australia and Canada, 1971–2015

Source: Author's calculations from Australian Bureau of Statistics (2016b), Statistics Canada (2016b), and Ward's Auto (2016).

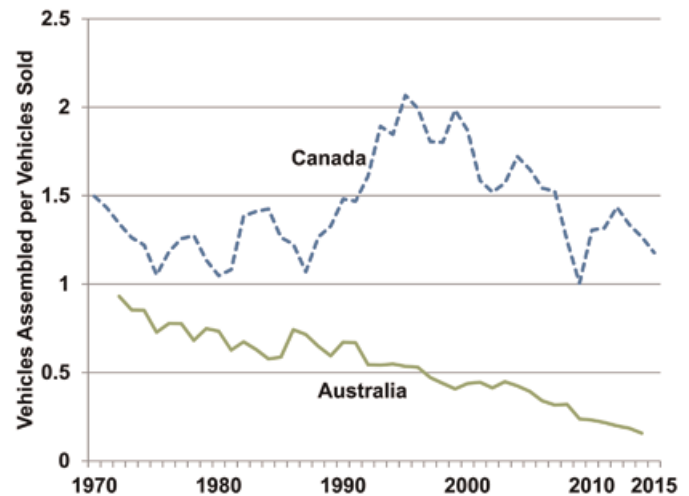


Figure 6: Production-to-Sales Ratio, Australia and Canada, 1971–2015

Source: Author's calculations from Ward's Auto (2016).

for a modern vehicle assembly plant is typically considered to be at least 200,000 units per year (to attain sufficient amortization of overhead, capital, and tooling costs; see, e.g., Shank and Govindarajan 1993, 165); Canadian plants attain that scale, but Australian plants (even before the current closures) did not. The fragmentation of the industry is heightened in Australia's case by its division between two significant clusters (around Adelaide and around Melbourne). Canada's industry, although larger, is more geographically concentrated, facilitating further efficiencies in supply chain, logistics, and transportation.

Vehicle assembly in both countries is entirely dependent on foreign direct investment by a handful of OEMs: Five global firms assemble vehicles in Canada, and three assemble vehicles in Australia.¹⁵ The two countries thus share the obvious structural challenge of retaining and attracting new investments and product allocations by those firms, competing against other host jurisdictions on the basis of cost and other criteria. Moreover, production, engineering, technology, and trade patterns in both countries depend on decisions made at corporate headquarters, not by national decision makers, and this imposes similar constraints on the effectiveness of national policy. In the components sector, in contrast, domestically owned firms play an important role in both countries; in Canada's case, the largest domestic firms (such as Magna, Linamar, and Martinrea) have become important global suppliers, whereas Australian firms have remained more oriented around the domestic supply chain.

Both countries rely overwhelmingly on imports to serve domestic consumers; neither country, in this sense,

is "autarchic." Imports account for 89 percent of Australian sales and 84 percent of Canadian sales. This comparison, however, is somewhat misleading because about 60 percent of Canada's imports come from the United States, which in turn receives most (more than 95 percent) of Canada's vehicle exports. So Canada's automotive trade, although open, is still dominated by the powerful gravity exerted by its large neighbour and the structural legacy of the Auto Pact.¹⁶ The resulting bilateral trade flow is more balanced (and mutually beneficial) than the one-way flows that typify Australia's automotive trade partnerships (and which also describe Canada's automotive trade with countries other than the United States). Canada's opportunity to export mass quantities of finished vehicles to the United States thus offsets some (but not all) of the imbalances resulting from large net import flows arising from Asia, Europe, and Mexico. Australia's vehicle exports, in contrast, are more modest (accounting for around 40 percent of a much smaller base of production) and do not significantly offset large import flows. Similarly, automotive exports loom much larger in Canada's total export portfolio (accounting for 14 percent of merchandise exports compared with just 1 percent for Australia), reinforcing the perceived economic (and political) influence of the industry in Canada. Both countries have experienced large deficits in automotive trade, although Australia's is bigger in both absolute and relative terms.¹⁷

Several additional structural differences are important in explaining the subsequent trajectories of the two industries. A legacy of the postwar Australian car strategy has been the manufacture of products that were designed in Australia, with unique features aimed

Table 1: Key Structural Features of the Automotive Industry in Australia and Canada, 2013

| Criteria | Australia | Canada |
|--|--|--|
| Vehicle assembly | 210,538 | 2,379,834 |
| No. of assembly plants | 3 | 11 |
| Average output per assembly plant | 70,000 | 216,000 |
| States/provinces with significant auto clusters | 2 | 1 |
| Import share of domestic sales (%) | 89 | 84 |
| Ratio of imports to exports | 9.5:1 | 1.25:1 |
| Assembly-to-sales ratio (%) | 19 | 134 |
| Proportion of domestic production exported (%) | 42 | 88 |
| Auto exports as share of total merchandise exports (%) | 1 | 14 |
| Automotive trade balance (\$b national) | -29.9 | -18.4 |
| Vehicles assembled | Unique to Australian market; iconic features | Harmonized with North American (increasingly global) product portfolio |
| Domestic components production per vehicle assembled (US\$ at PPP) | 5,700 | 2,400 |
| Automotive R&D as share sector GDP (%) | 12.1 ^a | 1.5 ^b |

Note: PPP = purchasing power parity; R&D = research and development; GDP = gross domestic product.

^a 2011–2012.

^b 2012.

Source: Author's calculations from data in Allen Consulting Group (2013); Australian Bureau of Statistics (2016c, 2016d, 2016e); Australian Department of Industry, Innovation, and Science (2014); OECD (2016), Statistics Canada (2016a, 2016d, 2016e, 2016f), and Ward's Auto (2016).

particularly at Australian consumers. These include iconic Australian-made models such as Holden's Commodore and Ford's Falcon, both of which are sold almost exclusively in Australia and are not integrated into the global design, engineering, and marketing strategies of their parent firms. The unit costs of designing and engineering unique models such as these for a small market—especially when both companies' market share was declining—are high. Another consequence of the continued emphasis on uniquely Australian models is that as consumers' tastes changed (shifting toward smaller and more fuel-efficient vehicles), the economic and cultural links between Australian consumers and Australian production were weakened. Australians came to associate the Australian industry with the particular vehicles (declining in popularity) that the industry produced rather than with a more generic capacity to manufacture motor vehicles. Canadian-made vehicles, in contrast, have no unique identity within the broader product line-ups offered by the respective global OEMs.

Australian production of automotive components is proportionately larger (relative to assembly levels) than Canadian production. Domestic components production per unit of domestic vehicle assembly is more than twice as large (although the components industry is nevertheless smaller in absolute size than Canada's). This likely reflects the geographic isolation of the Australian industry (which makes it more difficult and expensive to

import many components, especially those requiring just-in-time logistics), the lingering influence of previous policies to promote domestic components production, and the continuing importance of Australian-made components sales in the after-market sector (which sells replacement parts). This greater relative intensity of domestic components production has helped to maintain relative employment levels in Australian automotive manufacturing: In 2013, the Australian industry (including both assembly and parts) employed about one-third as many workers as Canada's, despite producing less than one-tenth as many finished vehicles.¹⁸

Another legacy of the Australian car strategy is Australia's strong automotive R&D activity: Relative to industry value added, the industry reinvested more than 10 percent of GDP into R&D, versus 1.5 percent in Canada. Canada's assembly industry remains almost totally dependent on research, design, and engineering activity conducted elsewhere by global OEMs (although a few Canadian components producers have a strong domestic R&D record).¹⁹ For those who believe that allocating more resources to innovation is a way to anchor domestic manufacturing in the face of fierce global competition, Australia's experience is sobering. Instead, the history of automotive R&D activity in Australia suggests that R&D spending tends to follow the allocation of global production mandates to a host jurisdiction, rather than causing it (Public Policy Forum 2011).

Table 2: Auto Industry Productivity Comparisons, Australia and Canada, 2013

| Variable | Australia | Canada |
|--|--------------------|-----------|
| Assembly output | 210,538 | 2,379,834 |
| Assembly employment | 13,294 | 38,880 |
| Vehicles per assembly workers | 15.8 | 61.2 |
| Assembly and parts employment ^a | 29,259 | 103,908 |
| Vehicles per total worker | 7.2 | 22.9 |
| GDP (\$b national) | 3.114 ^b | 15.706 |
| GDP (US\$b at PPP) | 2.046 | 12.548 |
| Value-added per total worker (\$US at PPP) | 69,922 | 120,760 |

Note: GDP = gross domestic product; PPP = purchasing power parity.

^a Excludes truck and bus bodies.

^b 2013–2014 financial year.

Source: Author's calculations from data published by Australian Bureau of Statistics (2016c), OECD (2016), Statistics Canada (2016d, 2016h), and Ward's Auto (2016).

Because Canada's industry produces at a much larger scale (at both the national and the plant level), it benefits from significant productivity advantages. Table 2 summarizes some aggregate productivity comparisons between the two industries.²⁰ Vehicle assembly per employed worker in the assembly sector is four times higher in Canada than in Australia. This is mostly because output per plant is three times higher in Canada (facilitating substantial reductions in unit cost and more optimal labour utilization); relatively new capital equipment and tooling, and intense robot use on Canadian assembly lines also helps. If one includes automotive parts employment in the calculation, average productivity (measured by vehicles per worker) is three times as high in Canada. Another index of productivity is value added per worker. Compared at purchasing power parity (PPP) exchange rates, value-added output per worker in Canada's industry is about 70 percent higher than in Australia. By any measure, therefore, Canada's strong productivity reduces unit costs and has helped protect Canadian competitiveness during the period of exchange rate appreciation. In Australia's case, however, the more the industry shrank after the mid-2000s, the worse productivity became, making it harder to defend domestic production.

Labour costs are a key factor in competitiveness, but on this score there is little to choose from between the two countries (see Table 3). Autoworkers in both countries are paid a premium of about 25 percent over and above average earnings in the economy as a whole (reflecting high industry productivity, trade union activity, the demanding nature of assembly line work, and employee retention strategies by employers). Wage trends in Australia's automotive industry matched economy-wide trends through most of the 1990s and 2000s, providing for incremental real wage gains; automotive

wages then lagged behind other sectors after 2008, as Australia's manufacturing sector confronted brutal international competition, an overvalued currency, and an uncertain outlook (Australian Manufacturing Workers Union 2014). In Canada's case, labour compensation in the automotive industry grew faster than economy-wide averages in the 1990s and early 2000s but then plateaued in nominal terms (and began to decline in real terms) in the mid-2000s.

Adjusted for PPP exchange rates, average earnings for autoworkers in Australia and Canada are almost identical: just less than US\$50,000 per year in each case. In both countries (again evaluated at PPP exchange rates), wages are lower than equivalent annual earnings in the United States. On an hourly basis, too, labour costs (in PPP terms) are not high in either country relative to other industrialized countries; hourly wages and benefits costs in Australia are 92 percent of US levels, and Canada's are 97 percent of US levels. Labour relations practices in both countries have become less conflictual in the wake of their respective industrial downturns. Canada has experienced no work stoppages at vehicle assembly plants since 1996, and employers and the autoworkers union have undertaken joint initiatives to boost productivity and enhance factory floor flexibility. The Australian industry has also demonstrated closer management–union cooperation in labour relations (Clibborn et al. 2016) and a series of flexibility-enhancing changes in work practice (Australian Manufacturing Workers Union 2014).

In sum, direct labour costs in Australia are not out of line with those of other industrialized countries and cannot explain the industry's collapse. More serious damage to competitiveness resulted from exchange rates. The dramatic currency realignments associated with the global commodities boom of 2002–2014 wreaked havoc

Table 3: Labour Cost Indicators

| Variable | Australia | Canada |
|---|-----------|-----------------|
| Average annual earnings ^a | | |
| Earnings per year (\$national) | 72,627 | 60,983 |
| Relative to national average (%) | 125 | 125 |
| Earnings per year (US\$ PPP) | 47,715 | 48,734 |
| International labor cost comparisons | | |
| Total compensation cost per hour ^b (US\$ market exchange rate) | 54 | 45 ^c |
| Relative to US (at market exchange rate; %) | 145 | 120 |
| Relative to US (at PPP exchange rate; %) | 92 | 97 |

Note: PPP = purchasing power parity.

^a All employees (hourly and salaried) in auto assembly and parts, 2013–14 for Australia, 2014 for Canada.

^b Includes non-wage benefit costs, 2012.

^c Author's estimate based on Statistics Canada and company data.

Source: Author's calculations from Australian Bureau of Statistics (2016c, 2016f), Bureau of Labor Statistics (2013), OECD (2016), and Statistics Canada (2016h).

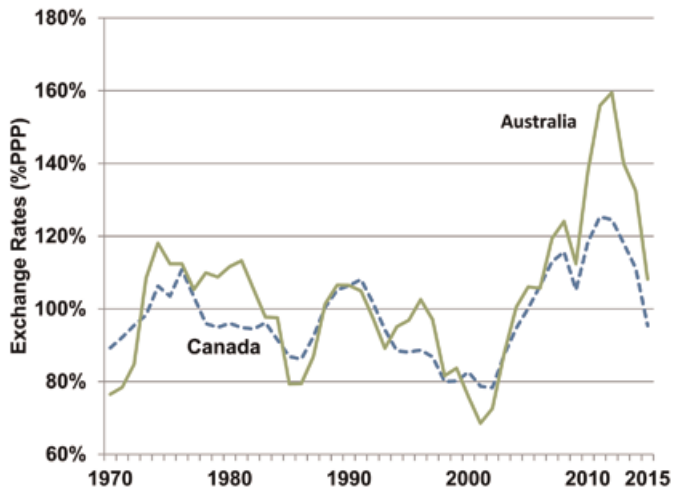


Figure 7: Measures of Exchange Rate Overvaluation, Australia and Canada, 1980–2015

Source: Author's calculations from OECD (2016) and Statistics Canada (2016h).

with relative cost competitiveness in both Canada and Australia, but the proportionate damage was greater in Australia (Figure 7). At peak (when it traded slightly above par with the US dollar), Australia's currency was more than 60 percent overvalued relative to its PPP value, meaning that average Australian domestic production costs appeared 60 percent too high in the eyes of global purchasers (and investors) than they should have, given nominal domestic costs.²¹ The corresponding peak overvaluation of the Canadian dollar was only 25 percent. Even after the depreciation that followed the global commodities downturn in 2013–2014, the Australian currency remained slightly above its PPP valuation (supported by high domestic interest rates, capital inflows, strong offshore demand for Australian real estate,

and other factors), whereas the Canadian dollar has been trading well below its PPP benchmark since 2014. When the Australian dollar traded at par with the US dollar, hourly labour costs in the Australian industry (including non-wage benefits) appeared 45 percent higher than hourly costs in the United States (even though the real consumption wage of Australian autoworkers was lower than in the United States); the equivalent disadvantage at the same time for Canada was 20 percent. To the extent, then, that unfavourable cost comparisons contributed to the decision by OEMs to close their Australian facilities, those comparisons were mostly driven by exchange rate overvaluation and by the productivity side effects of Australia's small (and shrinking) scale of production; the problem did not originate with labour costs (Clibborn et al. 2016). In Canada's case, currency depreciation combined with a decade-long wage freeze has combined to re-create a significant labour cost advantage relative to unionized factories in the United States; whether that is sufficient to retain the country's automotive assembly footprint (in light of very low wages in Mexico, e.g.) remains to be seen.

Comparing Australian and Canadian Automotive Policy

In addition to comparing and contrasting the underlying structural features of the Australian and Canadian automotive industries, it is instructive to review the automotive policy frameworks that have been pursued over time in the two countries. Has policy ameliorated the challenges facing the two countries' automotive sectors, or has it exacerbated them? Policy has evolved over the postwar era in both countries. Yet the strategies pursued in the two countries have some similar elements.

In the initial postwar years, mass production automotive assembly was attracted to both countries on

Table 4: Free-Trade Agreements with Auto-Exporting Countries, Australia and Canada

| Australia | | | Canada | | |
|---------------|------------------|--------------------------------------|---------------|------------------|--------------------------------------|
| Partner | Year Implemented | Automotive Trade Balance (\$b, 2015) | Partner | Year Implemented | Automotive Trade Balance (\$b, 2015) |
| US | 2005 | -3.2 | US | 1989 | +11.5 |
| Thailand | 2005 | -6.1 | Mexico | 1994 | -11.5 |
| Korea | 2014 | -2.5 | Korea | 2015 | -3.1 |
| Japan | 2015 | -8.2 | | | |
| China | 2015 | -0.6 | | | |
| All countries | | -29.0 | All countries | | -18.6 |

Source: Australian Department of Foreign Affairs and Trade (2016), Global Affairs Canada (2016), and Industry Canada (2016)

the basis of import-substituting tariffs combined with incentives for domestic production. This succeeded in motivating the establishment of a core assembly industry and associated parts production in both countries, although those industries were fragmented, oriented around their respective domestic markets, and relatively inefficient (with small production runs of numerous models).

From the 1960s through the 1980s, government in both countries promoted rationalization and greater export orientation on the part of domestic producers. Canada's strategy in this regard was dramatic and powerful: The 1965 Auto Pact eliminated tariffs for most of the industry, reoriented existing facilities around the much larger continental market, and attracted new investment through proportional domestic content rules. In Australia's case, in contrast, this reorientation was more incremental and piecemeal—and not ultimately successful. External tariffs were drastically reduced, but unlike the Canada-US Auto Pact, there was no corresponding requirement for OEMs to sustain or grow Australian production as imports (including imports by those same OEMs) were liberalized. Domestic producers were encouraged to export, including with export-linked fiscal credits; this had some effect in stimulating exports, but success was constrained by factors such as limited access to foreign markets, the global marketing strategies of parent OEMs, the unique product features of Australian-made vehicles, and (especially in the 2000s) Australia's seemingly high production costs. By 2013, exports of Australian-made vehicles offset barely 1 in 10 imported vehicles, and the resulting automotive trade deficit was about twice as large (relative to GDP) as Canada's (Table 1).

In addition to external tariff cuts (implemented unilaterally and dramatically by Australia and more gradually through WTO commitments by Canada), automotive trade in both countries was further liberalized through FTAs with several automotive-exporting countries. Table 4 summarizes the trade agreements reached by the two countries. With the exception of Canada-US trade (which

was effectively already tariff free thanks to the Auto Pact, long before the countries implemented an FTA in 1989), automotive trade in every one of these bilateral relationships is structurally defined by an overwhelming one-way flow: Australia and Canada import substantial volumes of automotive products from their FTA partners, with very little going in the other direction. The FTAs have enhanced access to domestic consumers for global OEMs (including those with no manufacturing presence in Australia or Canada), and consequently boosted import flows, but with little success in spurring outgoing automotive exports. Exports have been constrained by several factors, including unfavourable cost comparisons, the persistence of regulatory and non-tariff barriers to exports, and lack of interest by consumers in other countries in Australian- or Canadian-made vehicles. Control by parent OEMs over their global marketing strategies also constrained the extent to which exports could increase under an FTA; rarely were plants in either Australia or Canada granted global mandates by their parent firms, under which exports might grow to the new FTA partners. Moreover, the FTAs—with their widespread "national treatment" provisions and increasingly far-reaching dispute settlement mechanisms—effectively restricted or prohibited domestic content regulations of the sort that both countries had pursued in earlier decades, further reducing the motivation for domestic investment.²²

These FTAs have undermined the structural position of automotive manufacturing in both Canada and Australia. But the damage has been more noticeable in the Australian case, which does not have the benefit of any major countervailing export outlet (as does Canada with the US market).²³ In contrast, Canada's large automotive exports to the United States (which actually generate a bilateral automotive trade surplus) help to offset some of the trade deficits resulting from its more unbalanced automotive trade relationships with other FTA partners. Both Canada and Australia are participants in the proposed Trans-Pacific Partnership, and for both it seems

certain that this agreement would exacerbate automotive trade deficits (in Canada's case by eliminating tariffs on imports from Japan, and in both cases by allowing OEMs to source a larger portion of components purchases from non-TPP-member third countries; see Carey and Holmes 2017). Canada furthermore has negotiated a Comprehensive Economic and Trade Agreement with the European Union, which would also (if implemented) exacerbate the already lopsided bilateral automotive trade relationship with that jurisdiction (Stanford 2014). Therefore, because an increasing share of automotive trade for both countries falls under the terms of FTAs with other countries that do not import any significant volume of automotive exports from either Australia or Canada, the structural position of both these respective industries is likely to be undermined even further.

With trade-related industrial policy measures increasingly constrained by FTA commitments (as well as by multilateral WTO disciplines), both Canada and Australia have instead turned to financial incentives to support investment, production, and research activity in their respective domestic industries. Australia's efforts in this regard have been longer lasting and better funded than Canada's, perhaps because that country faced a bigger challenge in retaining and recruiting OEM investment, given its underlying structural and geographical features and its commitment to trade liberalization. In both countries, however, those subsidy programs have been inconsistent, subject to changing political imperatives, and not always well understood by the industry.

Australia's modern subsidy programs began in the wake of the trade liberalization of the 1980s and have gone through several incarnations. Each new subsidy scheme was typically described as a temporary transition measure (to facilitate adjustment to tariff reduction and encourage the export-oriented reorientation of domestic plants). However, the programs were invariably extended up until the industry's current terminal crisis, with the government announcing in 2014 that it would cancel the current subsidy program altogether.

In Canada, automotive investment subsidies were routinely granted on an ad hoc basis through the 1990s and early 2000s. The government also continued to use trade-related measures (such as tariff exemptions on imported components to attract new assembly investments from Japanese-based OEMs; see Mordue 2017). Later, beginning in the mid-2000s (as the industry retreated from peak production levels), Canada introduced more formal and standardized investment subsidies. Those, too, have gone through repeated incarnations; the current federal program, called the Automotive Innovation Fund, began in 2008, with its terms revised in 2015. Canada also provided fiscal supports to GM and Chrysler to assist them through bankruptcy restructuring in 2009 (totaling C\$14 billion).

It is important to note that in Canada, the Ontario provincial government has played an important and independent role in supporting investments in assembly and components plants, technology and innovation, and infrastructure (such as transportation linkages to manufacturing operations). Those provincial initiatives have amplified the impact of federal measures: Provincial investment subsidies often match or exceed federal incentives. In some cases, the Ontario initiatives also achieved unique outcomes. For example, beginning in the 1980s, the province provided important technology subsidies to domestic automotive parts manufacturers, and this policy was important to the viability and growth of key Canadian suppliers (including firms such as Magna and Linamar, which became globally successful on the strength of technological advantages). The regional concentration of the Canadian automotive industry, which is almost entirely located within Ontario, helps explain this relatively stronger level of engagement by the sub-national government, as does the greater fiscal capacity of Canadian provinces (compared with Australian states).²⁴ The state governments in Victoria and South Australia have implemented some policies to support technology, skills, and training and (more recently) adjustment for displaced workers, but those state-level interventions have not been as large or influential as Ontario's.

Table 5 compares the key dimensions of current automotive subsidy programs in the two countries. The Australian program has more money allocated to it (both absolutely and in relative terms, given the smaller starting size of the industry there). In neither country, however, have the respective programs been able to fully disburse authorized funds because producers lack the willingness (even with the subsidy) to invest. Indeed, at the time of this writing, neither fund has allocated even half of its authorized funds. As noted, further disbursements from the Australian ATS have been cancelled in the wake of the shutdown announcements by Ford, GM, and Toyota. In the Canadian case, some unspent subsidy funds were reallocated to other programs (including a specialized automotive parts investment subsidy). In both countries, the main subsidy program is supplemented by a raft of smaller programs, sponsored by both national and state-provincial governments. In short, automotive subsidies in both countries have reflected a rather piecemeal, inconsistent strategy, often motivated by political as well as economic circumstances.

Incentive programs in both countries are purportedly aimed at fostering innovation, domestic research and engineering work, and the design and production of more fuel-efficient vehicles. These common selling points are used to justify the incentive programs (before an often-skeptical public) as a tool for modernizing and restructuring automotive production (rather than simply

Table 5: Automotive Subsidy Schemes, Australia and Canada

| | Australia: Automotive Transformation Scheme | Canada: Automotive Innovation Fund |
|----------------------------|---|--|
| Program time | 2011–2020 | 2008–2015 |
| Budgeted funding | A\$2.83 billion over 10 y | C\$900 million over 8 y; extension likely |
| Proportion funds allocated | \$1.2 billion by 2015 (when cancellation was announced) | \$426 million by 2015 |
| State/provincial matching | None | Usually matched |
| Funding formula | Specified | Negotiated case by case |
| Supported activity | Qualifying R&D (50%), investment in plant and equipment (15%), subsidies for vehicles or powertrain production | Specified capital, tooling, and research commitments |
| Qualifying firms | Vehicle assemblers (min. 30,000 vehicles/y); components manufacturers (supplying min. 30,000 vehicles or \$500,000 per y); automotive toolers or service suppliers (min. \$500,000 per y); firms that otherwise promote “national interest” | Vehicle and powertrain assembly projects embodying significant innovation and involving at least \$75 million private capital spending over 5 y |
| Strategic goals | Attract new investment, green the automotive industry, strengthen the local supply chain and boost skills, increase international engagement | New product development; engineering, design, and prototype development; advanced product testing; new production methods and process technologies; energy-efficient vehicles and powertrains; flexible or transformative manufacturing processes and technologies |
| Complementary programs | Manufacturing Transition Programme (\$50m); Automotive New Markets Program (\$42m); Automotive Diversification Programme (\$20m); Automotive Supplier Diversification Program (South Australia, \$11.65m); R&D tax concessions | Automotive Supplier Innovation Program (\$100m ^a); R&D tax credits; infrastructure funding. |

Note: R&D = research and development; ASIP = Automotive Supplier Innovation Program; AIF = Automotive Innovation Fund.

^a Half of the ASIP funding consisted of diverted unspent funds from the AIF.

Source: Author’s compilation from Australian Department of Industry, Innovation, and Science (2014); ISED (2016); and Unifor (2015).

subsidizing it). However, the extent to which the subsidies have altered the nature of products and processes in each country toward more innovative, environmentally friendly goals is unclear, especially considering the degree to which product and technology decisions continue to be made by OEMs at the global level.²⁵ OEM efforts to develop and sell more sustainable vehicles seem to be driven more by regulatory constraints introduced at the demand side than by production incentives—and even that progress has been inconsistent and politically contingent (Goods 2014; Mikler 2010).

Even as Australia’s automotive manufacturing footprint shrank, with the ultimate cessation of mass market assembly now imminent, Australian R&D performance in vehicles and components has remained strong. This reflects the continuing influence of previous fiscal incentives (through the ATS, the Green Car Innovation Fund, and generous R&D tax concessions), as well as the inertial effect (dating back to the postwar Australian car strategy) of possessing a significant automotive research capacity. Whether that activity will continue after the

coming cessation of mass market assembly remains to be seen.

In sum, it is interesting to note numerous similarities between the automotive policy strategies of Australia and Canada. In the initial postwar decades, both countries initially aimed to stimulate assembly and components production through a combination of stiff protection against imports and fiscal and regulatory encouragements for domestic investment. Over time, both countries shifted their policy interventions to encourage production for export (not just for domestic consumption); that effort was fundamentally more successful in Canada’s case (as much because of geography as because of the foresight of policy-makers). In the face of unilateral, bilateral, and multilateral trade liberalization, production levels in both countries have come under pressure from a series of unbalanced trade relationships with other automotive exporters. In Canada’s case, however, the inertial effect of its strong and bilateral automotive trade relationship with the United States has buffered automotive trade imbalances with other jurisdictions (including Mexico, Europe, and Asia). In Australia’s case, in contrast, no

such buffer is available. Hence, the domestic industry's plummeting share of the Australian market translated directly into falling domestic production, contributing to a vicious circle of falling output, falling productivity, and rising unit costs; this culminated in the end of mass-market vehicle assembly in Australia altogether. In both Canada and Australia, government attempts to shore up domestic production with investment and production subsidies have been inconsistent and politicized.

Conclusions

From a Canadian perspective, there are both sources of comfort and sources of worry suggested by this comparison of the recent experiences of the automotive manufacturing industries in the two countries. On one hand, it is clear that several fundamental structural parameters could support a more successful future for automotive manufacturing in Canada. Canada's industry is more concentrated and productive, with virtually all assembly plants operating above minimum efficient scale. This generates strong productivity and quality results that underscore the continued viability of Canadian operations (despite challenges such as intensifying global competition and exchange rate fluctuations). Closely related is the fact that most Canadian output is exported to a single, accessible, and dominant market: the United States. Canada's net exports to the United States have buffered the negative consequences of the broader globalization of automotive trade and investment. It should also be kept in mind that there are also risks associated with the overwhelming reliance of Canadian producers on the US market, including vulnerability to swings in the Canada-US exchange rate, disruptions or congestion in cross-border transportation, macroeconomic swings in the US market, and occasional political pressures on US-based OEMs to keep their investments at home.

In this more favourable context, Canada's industry—although certainly facing daunting structural and competitive challenges—has a better chance of finding a stable, sustainable footing, and policy-makers and stakeholders can be realistically hopeful that improvements in policy and practice might help, at the margin, to solidify the industry's footprint. Discussions about more effective investment attraction programs, boosting productivity, improving transportation infrastructure, and other incremental initiatives are attracting rightful attention from all industry stakeholders.

Australia's industry, in contrast, confronts the unforgiving global logic of cost minimization and trade imbalances, with no such silver lining. Trade liberalization (largely implemented unilaterally) eliminated much of the rationale for OEMs to manufacture vehicles there. Hopes that new export opportunities (facilitated by

preferential market access through FTAs) could backfill the resulting void in demand have not been realized. OEMs, even those present in Australia in the first place, are free to supply Australia's market with no expectation of offsetting domestic production; this policy context has permitted an unsustainable combination of rising imports with stagnant or falling exports. The Australian currency's extreme overvaluation in the 2000s, combined with an inconsistent and politicized approach to automotive industry policy, hastened the industry's demise. It is not inconceivable that some portions of the Australian industry could be saved and revitalized in the future (including specific subsectors such as specialized components, niche vehicles and accessories, and some higher technology engineering and programming activities). However, this will certainly require a fundamental change in approach by domestic policy-makers to re-create a motivation for domestic production.

This dramatic contrast between the two nations' automotive trajectories, however, should not justify any complacency on the part of Canadian policy-makers. It is surprising how the evolution of Canadian automotive policy has exhibited many similarities to the Australian policy framework. In particular, both countries abandoned protectionist support for domestic manufacturing in favour of liberalized trade relationships in which the ability of government to leverage domestic value-added commitments was limited or prohibited entirely. Both countries tolerated the erosion in manufacturing competitiveness that accompanied trade liberalization and the resource boom of the 2000s. And both countries responded to subsequent industrial decline with an inconsistent hodgepodge of subsidies and other stop-gap measures, the terms of which have been contested in a partisan political context. In this light, it is hard to credit superior Canadian policy-making for the better chances of survival facing Canada's automotive manufacturing sector today.

The one crucial difference in policy history between the two countries was the 1965 Canada-US Auto Pact. This strategy allowed Canada to achieve an enviable combination of export-driven productivity gains together with an assured proportional domestic manufacturing presence. The Auto Pact created an integrated, export-oriented, and highly productive manufacturing system: Canadian factories were completely dependent on access to the US market but were anchored in Canada by domestic content protections. These protections ensured truly bilateral and mutually beneficial flows of both vehicles and components. No other automotive trade relationship involving either Canada or Australia possesses any similar degree of mutuality; in contrast, they are all highly unbalanced flows through which foreign producers have conquered significant domestic market

shares, with no significant automotive exports going the other way. The structural legacy of the Auto Pact, and the two-way integrated continental industry that it produced, continues to benefit Canada's industry, long after the Auto Pact itself was dismantled. However, that structural inertia is not permanent. The more that Canada's automotive trade and investment relationships depart from the bilateral Auto Pact template and instead come to resemble Australia's (much import, little export), the more difficult it will be for Canada to sustain its industry. Automotive trade patterns under Canada's most recent trade deals (the Comprehensive Economic and Trade Agreement and the TPP, both concluded but not yet implemented at time of writing) will certainly be more typical of Australia's unbalanced FTAs than of the more bilateral structure of Canada-US trade.

In sum, the pessimistic fatalism of some observers that Canada's automotive manufacturing industry will inevitably follow Australia's into extinction ignores numerous structural advantages that continue to support Canadian investment and production. At the same time, however, Canada's present automotive policy is inconsistent and contradictory, and the structural legacy of the one uniquely Canadian policy success (the Canada-US Auto Pact) continues to erode. In this regard, Canadian policy-makers would do well to carefully study, and learn from, the painful experience of Australia's industry.

Notes

- 1 I do not provide a comparable synopsis of the history of Canadian automotive manufacturing, on the assumption that most readers of this journal are familiar with broad features of that history; a comprehensive history of the Canadian industry is provided by Anastakis (2005, 2013).
- 2 The discussion of the history of Australian auto manufacturing in this section draws on Adil (2010), Allen Consulting Group (2013), and Pursell (2001).
- 3 The licensing scheme was based on the grandfathering of strict import control measures that had been established during the war.
- 4 These provisions are reminiscent of domestic content requirements in the Canada-US Auto Pact, discussed later.
- 5 Nissan closed its Australian operations in 1992, leaving Mitsubishi, Ford, Holden/GM, and Toyota assembling vehicles in Australia.
- 6 Only a couple of Australian-made models, however, were built on truly global product platforms, facilitating more export opportunities; most notable has been the Toyota Camry, produced in Australia since 1987. Toyota's global marketing strategy has facilitated substantial offshore exports of that vehicle (largely to the Middle East). Another short-lived global platform was the Cruze, produced, including for export, by Holden from 2011 through 2016 (when the company cancelled the program in advance of its upcoming closure of all vehicle assembly). Most other models produced in Australia continued to reflect unique Australian design features.
- 7 Australian subsidiaries of global manufacturers do not release full financial statements; however, media reports indicate that Ford Australia lost A\$1.3 billion in 10 years ending in 2014, and Holden was profitable in just 2 of the past 10 years (Dowling 2015). Of course, reported profits for wholly owned subsidiaries of global OEMs are highly sensitive to internal accounting and pricing practices.
- 8 Once the most recent spate of Australian free-trade agreements with auto-exporting countries is fully implemented, including Korea (2014), Japan (2015), and China (2015), three-quarters of Australian automotive imports will be sourced tariff free (author's calculations from Australian Department of Industry 2013, 36).
- 9 The incentive was available for both domestically produced and imported vehicles.
- 10 The Green Car Innovation Fund was cancelled after less than 2 years of operation by the same government that implemented it, as part of a subsequent deficit-reduction effort.
- 11 Those safeguards included separate requirements that participating OEMs produce as many cars and light trucks in Canada as they sell here and that total value added in Canadian manufacturing (including purchased components) would represent at least 60 percent of total value added sold in Canada.
- 12 In the following discussion, explicit comparisons between Canada and Australia are made using data from 2013 or earlier, so as to better capture the state of the Australian industry before the recent closure announcements began to further reduce production and employment levels.
- 13 A production-to-sales ratio above 1 signifies that a country produces more finished vehicles than it consumes.
- 14 Canada exports more finished vehicles than it imports; however, it is a large net importer of automotive parts (most of which are assembled into finished vehicles and then subsequently reexported), which explains Canada's overall trade deficit in automotive products despite its surplus in finished vehicles.
- 15 Toyota, Ford, and Holden/GM operate assembly plants in both countries; Fiat-Chrysler and Honda also assemble vehicles in Canada.
- 16 The Auto Pact lost most of its economic impact after the 1994 North American Free-Trade Agreement (after which time tariff-free access to the Canadian market was guaranteed to all North American production, not just for Auto Pact member companies). The Auto Pact was subsequently abolished entirely in 2001 after a 1999 World Trade Organization (WTO) ruling on a complaint from Japanese OEMs.
- 17 Australia's automotive trade deficit is 50 percent larger than Canada's in nominal terms but has twice as large a share of GDP.
- 18 Of course, the flip side of higher proportional employment is lower observed productivity, discussed later.
- 19 Australia's automotive R&D will almost certainly decline dramatically with the cessation of most manufacturing there.

- 20 Again, these comparisons use data from before the most recent decline in Australian output that followed the closure decisions of the three OEMs. Australia's productivity performance has, predictably, become worse because of the continuing decline in output.
- 21 PPP is an exchange rate that equalizes costs between two jurisdictions, typically measured across a broad index of consumer or production prices.
- 22 In fact, the domestic value-added requirements of the former Canada-US Auto Pact had already been overruled by the decision of a WTO dispute panel in 1999.
- 23 Australia does have tariff-free access to the US market under the 2005 bilateral FTA, but for various structural reasons this agreement has not sparked any sustained increase in the small flow of automotive exports from Australia to the United States. As a result, Australia imported nine times as much value in automotive products from the United States in 2015 as it exported back to the United States.
- 24 Own-source revenue of Canadian provinces constitutes 17 percent of GDP, almost twice the corresponding level (9 percent) for Australian states (author's calculations from Australian Bureau of Statistics 2016a and Statistics Canada 2016g,).
- 25 Of course, the whole global auto industry is embodying more innovation and environmental progress in its research and product design, so the extent to which national subsidy programs could elicit more progress in that direction by tying grants to specific innovation or environmental outcomes is questionable.

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