Manufacturing (Still) Matters:

Why the Decline of Australian Manufacturing is NOT Inevitable, and What Government Can Do About It

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BRIEFING PAPER

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Summary: Manufacturing (Still) Matters ... and Australians Know It

Australian manufacturing has endured hard times for several years. So long, in fact, that Australians could be forgiven for concluding that industrial decline is a "normal" state of affairs. The manufacturing sector has been in broad decline since 2008, and real output has now contracted every single quarter since September 2011. Over 200,000 manufacturing jobs have disappeared since 2008, and the rate of job loss is accelerating: employment fell 6 percent in 2015 alone. Announcements of factory closures and redundancies add to the gloom.

Perversely, some analysts and economists have tried to justify and even celebrate this industrial carnage. Manufacturing is portrayed as an old, dying industry. Something that Australia shouldn't worry about. Free market forces will ensure we automatically specialize in other industries, in accordance with our "comparative advantage." Manufacturing is in decline everywhere, it is argued: the problem isn't unique to Australia. And at any rate, government certainly shouldn't interfere with this natural, inevitable, even beneficial process. It's best to let markets do what they will.

This complacent view is wrong on several important grounds:

- Australians are buying more manufactured goods over time, not less. And manufacturing output is growing around the world, not shrinking.
- Manufacturing is not an "old" industry. It is in fact the most innovation-intensive sector in the whole economy — and no country can be an innovation leader without the ability to apply innovation in manufacturing.
- Manufactured goods account for over two-thirds of world merchandise trade. A country that cannot successfully export manufactures will be shut out of most trade.
- Many countries around the world (including high-wage industrial countries) are expanding manufacturing output, creating new manufacturing jobs, and boosting manufactured exports. Australia's experience is not at all representative of the experience of other industrialized countries. Even small remote countries (like Korea, Ireland, New Zealand, and Israel) are growing manufacturing output, and preserving and creating manufacturing jobs — so we can't blame geographic isolation for the problem.

Instead of tolerating and trying to "explain away" industrial decline, Australia needs to join the global manufacturing resurgence. If not, even more of this high-value work will move to other jurisdictions, and Australia's status as an advanced industrial economy will be in jeopardy.

Australia's manufacturing downturn is partly the result of major policy errors by government — which accepted too readily the idea that Australia doesn't really need manufacturing. The costs of those errors will be long-lasting and broad (felt not just by displaced manufacturing workers, but by the whole national economy). And in the near term, sadly, things will get worse, not better: with the coming closure of automobile assembly plants, and the continuing crisis in the steel industry. But it is never too late to learn from past mistakes. At this particular moment in history, given the contraction in resource industries and the correction in exchange rates, Australia has a golden opportunity to revitalize its manufacturing capacities. And to prove that it can contribute more to world trade than just extracting unprocessed natural resources.

This report will first review the recent decline in manufacturing in Australia, and its many and varied consequences. The current downturn in manufacturing began in earnest in 2011 – ironically, *after* the global economy stabilized from the Global Financial Crisis. Output, employment, and investment have all declined steadily since then. An exploding trade deficit in manufactured goods with the rest of the world (reaching almost $150 billion last year, over 9 percent of GDP) is one major consequence of the manufacturing meltdown – and is driving a dangerous escalation in Australia's foreign debt.

Section II of the report reviews several key reasons why manufacturing, though smaller, retains a disproportionate strategic importance to Australia's national economy. Manufacturing is the most important source of innovation in the economy. It supports higher-than-average productivity growth and good jobs. It contributes disproportionately to Australia's exports. And it anchors far-reaching supply chains spreading throughout the domestic economy that support hundreds of thousands of jobs in other sectors (including resources and services). For all these reasons, the benefits of strong manufacturing are felt throughout the national economy. And these broader benefits justify the focused policy measures required to restore stability and growth in the sector.

Section III challenges some commonly-held myths about manufacturing and its future here. Specifically it is shown that:

- The decline in Australian manufacturing output and employment is *not* typical of other industrial countries. In fact, Australia is an outlier among its peers – and now reports the smallest share of manufacturing in total employment of *any* OECD country.
- Production costs in Australia are *not* expensive relative to other industrial countries, so long as the exchange rate for the Australian dollar is maintained at a normal level (in the low 70-cents U.S. or lower). At that exchange rate, costs are fully comparable to other industrialised economies.
- The decline in Australian manufacturing *cannot* be blamed on geographical remoteness. The report identifies five other geographically isolated economies with small domestic markets, but where manufacturing output and employment are growing, not shrinking.

Section IV of the report provides a summary of policy options to support manufacturing. It lists ten key policy levers that could be engaged by government to stabilize and

rebuild Australian manufacturing. By invoking these tools in a comprehensive and consistent effort to enhance the economic and business case for Australian production, there is no doubt that Australia could rebuild and retain a fair share of manufacturing work, incomes, and exports. The successful manufacturing experience of so many other industrial countries proves it.

Finally, Section V reports public opinion data confirming that a very strong majority of Australians sees manufacturing as essential to future national economic success. ***A total of 88 percent of respondents rated manufacturing as "very important" (53 percent) or "important" (35 percent) to the economy. Similarly, 79 percent of respondents agreed that the health of manufacturing should be a "national priority."***

Around 80 percent agreed that manufacturing jobs offer good wages, rewarding careers, and high living standards for workers and their families. And very strong majorities supported far-reaching government engagement to strengthen and nurture specific manufacturing sectors (such as automobile assembly).

These findings are timely and important, in the midst of an election campaign where the future of Australian manufacturing deserves priority attention. They show that Australians understand, perhaps better than many economists, that a nation that doesn't "make things," can never fulfil its economic potential.

I. Australia's Manufacturing Meltdown

The painful contraction in Australian manufacturing over the past several years has had a multitude of consequences for the national economy: including labour markets, incomes, productivity, and international trade. The relative importance of manufacturing in Australia's economy has been declining gradually since the 1960s, and until recently for predictable reasons (explored further in the next section): since services industries tend to grow rapidly as national income rises, manufacturing will naturally shrink as a share of total output and employment. But something much worse has been happening since the Global Financial Crisis in 2008-09, and the subsequent global recession. Since then, Australian manufacturing has been contracting in absolute terms: with fewer jobs, and producing less real output. This decline is evident in a number of indicators:

Figure 1. Manufacturing Employment in Australia

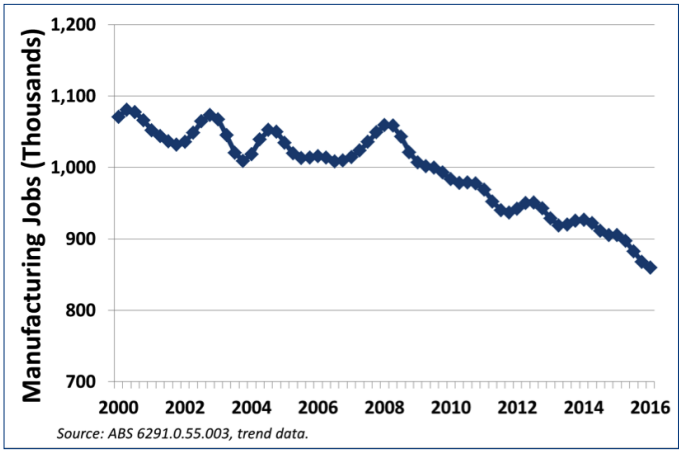
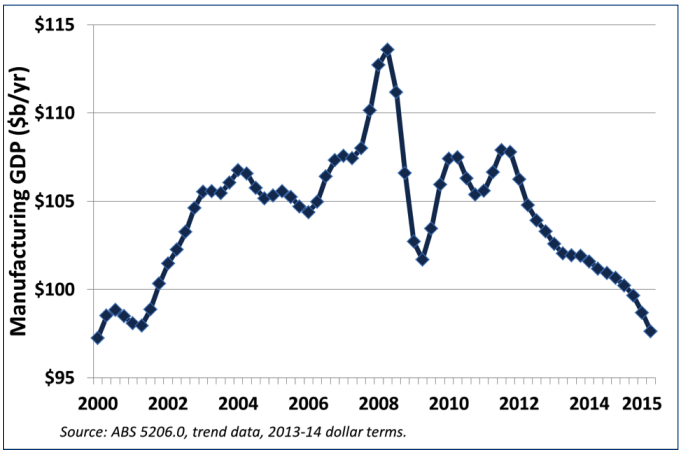


Figure 1 illustrates the decline of manufacturing employment in Australia. Through most of the 2000s, employment was relatively stable, fluctuating within a relatively narrow range of 1 to 1.1 million positions. After the GFC, however, payrolls began to shrink — and the pace of decline has accelerated since then. Over 200,000 positions were lost between the peak employment level of 2008 and the end of 2015 (a decline of over 20 percent). And the pace of job loss has accelerated, with a 6 percent decline recorded in 2015 alone. Since the Liberal-National Coalition government was elected in September 2013 (in part on a pledge to create a million good jobs in five years), employment in manufacturing has declined by over 50,000 positions.[1] The continuing loss of manufacturing work considerably outstrips the loss of jobs in the mining sector: manufacturing lost ten times as many jobs during 2015, as did the mining sector[2] — yet the erosion of manufacturing has attracted much less attention from government.

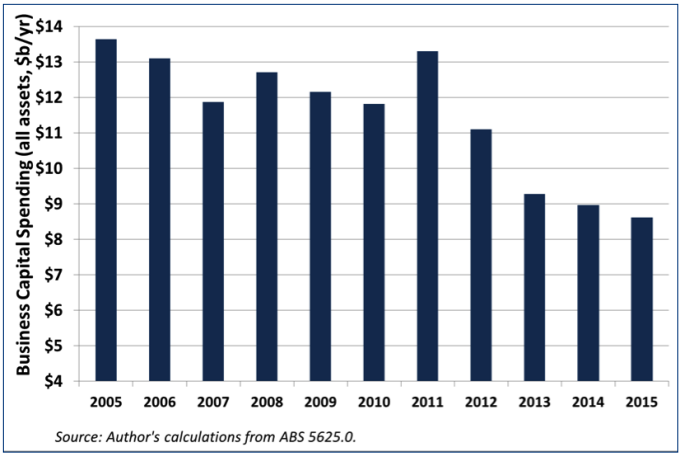
Not surprisingly, with the industry's employment contracting so rapidly, manufacturing output is shrinking as well.[3] Real output rose steadily for decades, but peaked in mid-2008, at close to $115 billion (annual rates), illustrated in Figure 2. It fell steeply during the crisis (by over 10 percent in a single frightening year), but then rebounded partially when the global economy stabilized. What has happened beginning in late 2011, however, is even more worrisome than the GFC itself: manufacturing output entered a sustained contraction, the longest in Australia's postwar history.

Figure 2. Real Manufacturing Output in Australia



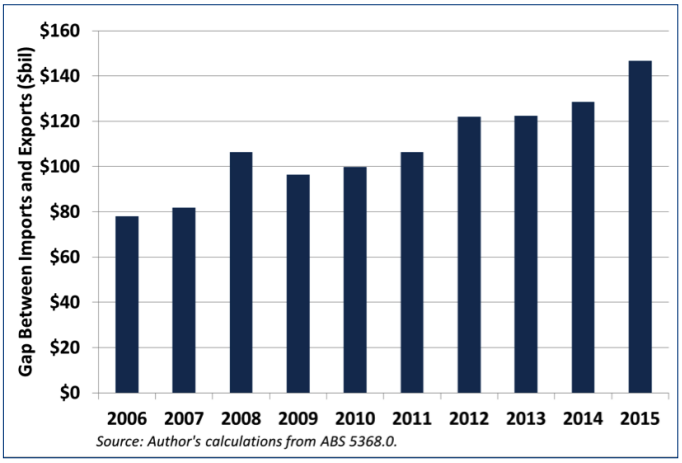
Real output has fallen every single quarter since September 2011 (17 straight quarters at time of writing). Including the lost output from the GFC, the cumulative decline in GDP since 2008 is 14 percent. Worse yet, that decline seems to be accelerating: output shrank at an annual rate of over 4 percent in the second half of 2015, the fastest decline since the GFC. Output is poised for further contraction, of course, with the looming shutdown of auto assembly operations, the continuing crisis in the steel industry, and major factory closures in smelting, appliances, and other sectors.

Figure 3. Manufacturing Investment



Unfortunately, trends in capital spending do not suggest that this downturn will reverse of its own accord. Investments by manufacturing firms in new plant, equipment, and technology are a key indicator of their future plans. Capital spending in manufacturing remained relatively healthy and consistent through most of the 2000s, typically averaging between $12 and $13 billion per year (Figure 3). Investment remained relatively robust even during the GFC, despite the temporary slump in manufacturing output and sales. After 2011, however, capital spending began a sustained and continuing contraction which is clearly related to the downturn in output and employment. Last year, manufacturers spent just $8.6 billion on new capital projects — 35 percent less than in 2011.

Figure 4. Australian Trade Deficit in Manufactures



This is a very worrisome sign that many companies are ready to abandon manufacturing in Australia altogether (as the auto assembly sector has done), without a convincing signal from governments that the viability of industry will be maintained.

Australian output of manufactured goods has been declining steadily for the last five years. However, as discussed above, Australian *purchases* of manufactured goods have continued to grow — reaching about one-half trillion dollars in total national demand last year.[4] The combination of rising domestic demand, with shrinking domestic production, must inevitably translate into a large and growing trade deficit in manufactured goods. In effect, Australia is relying on foreign producers to supply a growing share of our continuing needs for manufactures, yet our capacity to export manufactured goods back in the other direction is declining. Figure 4 illustrates the resulting surge in net imports to Australia. And as with the previous indicators, things got much worse after 2011. In 2015, Australia exported just under $100 billion in total value of manufactured products, but imported $246 billion. The bottom-line balance is a trade deficit in manufactures of almost $150 billion (or an incredible 9 percent of national GDP), constituting an enormous drain on the national balance of payments. The manufacturing deficit grew by almost 40 percent in the four years from 2011 through 2015, as domestic production shrank and imports steadily swelled.

This massive trade deficit in manufactured products even overwhelms the export revenues generated by Australia's exports of minerals and petroleum (which generated a trade surplus in minerals of $110 billion in 2015). Extracting and selling an ever-greater quantity of non-renewable resources to foreign countries, is still insufficient to pay for the growing flood of manufactured goods coming into Australia. The deficit in manufactures is the biggest single contributor to Australia's recent trade and current account deficits. In 2015, Australia incurred a $36 billion deficit in all trade (including services), and a $75 billion deficit on all payments (including outflows of investment income).[5] The total net payments deficit (called the current account balance) must be reflected in rising international debt, which now exceeds $1 trillion. Financial analysts have identified Australia's foreign debt as one of the biggest economic risks facing the country (more serious than the budget deficit)[6], and there is no doubt that the decline of manufacturing has been the biggest factor behind this accumulation of foreign obligations.

Table 1. Trade Deals and Trade Balances 2004 –2015

FTA Partner	Growth Australian Exports ($b)	Growth Australian Imports ($b)	Ratio: Change imports/ Change exports	2015 Trade Balance ($b)
Thailand	$1.3	$9.8	7.69	-$9.2
USA	$4.7	$12.5	2.67	-$18.8

Source: Author's calculations from Australian Dept. of Foreign Affairs and Trade data; includes merchandise trade only.

The Coalition government claims that by signing a new spate of "free trade" agreements with major manufacturing exporters (including Korea, Japan, China, and 11 other countries through the Trans Pacific Partnership), this poor trade record can be turned around. The experience of Australia's past trade agreements, however, suggests that if anything the new deals are likely to exacerbate the challenges facing manufacturing. Consider Australia's first modern FTAs, implemented over a decade ago with Thailand and the U.S. (see Table 1). Both deals have clearly been associated with a marked deterioration of bilateral trade balances generally, and in manufactured products specifically. The case of Thailand has been particularly damaging: there has been little growth in Australian merchandise exports to Thailand since 2004 (the last year before the FTA was implemented), but a $10 billion surge in merchandise imports from Thailand. One sector experiencing especially rapid import penetration from Thailand has been the vehicle sector (Australia imported over $6 billion in automotive products from Thailand last year, and exported almost nothing — just $37 million — the other way).[7] The surge in automotive imports from Thailand undeniably contributed to the decisions by global automakers to stop operations in Australia. Australia's bilateral merchandise trade deficit with Thailand has swelled 13-fold under the FTA, adding over $9 billion to Australia's global deficit. The situation with the U.S. has been only slightly less one-sided: imports grew almost three times as much as exports under the bilateral FTA (also implemented in 2005), and the merchandise trade deficit almost doubled. Australia's trade deficit with the U.S. (equal to $23 billion in 2014, including goods and services) accounts for over half of the national trade deficit. Australia also experiences a deficit in manufacturing trade with most of its other new "free trade" partners (including Japan, Korea, China, Malaysia, Vietnam, and Mexico); it is hard to envision that this latest spate of trade deals will have effects any different from the negative outcomes of the earlier deals with Thailand and the U.S.

In sum, it is apparent that Australia's manufacturing industry experienced a significant and dangerous turning point sometime around 2011. It is no longer experiencing the gradual reduction in *relative* economic significance expected in a mature industrial economy — as the faster expansion of services outstrips slower growth in manufacturing. Instead, the sector has entered a damaging and sustained *absolute* contraction: 17 straight quarters of declining GDP, accelerating job loss, shrinking investment, and an exploding trade deficit. If Australia is going to maintain a viable manufacturing base, and the capacity to be more than just a "buyer" in world manufacturing trade, this trend needs to be reversed — and quickly. The next section of this paper will explore the key structural and strategic reasons why Australians should indeed be concerned with improving the future outlook for manufacturing.

II. Manufacturing's Strategic Importance

Broadly defined, manufacturing refers to the transformation of a tangible, material product (initially harvested from the natural environment) into something more complex and useful. With this in mind, it is impossible to imagine an economy *without* manufacturing: human beings will always have material needs and wants that can only be met through the production and transformation of material goods. Of course, those tangible products also require many kinds of inputs and activities, not just manufacturing. They need initial work to collect or harvest necessary raw materials from nature (primary production), hopefully in a sustainable manner. And they also require inputs of services (or tertiary production), to ensure that manufactured products are useful and workable — including functions such as transportation, retail, business, and repair services. But manufacturing (secondary production) is inherently an important and essential link in the chain of value-added activity. Manufacturing is essential to provide us with buildings to live and work in, clothes to wear, food to eat, vehicles to get around in, information networks to learn from, equipment to be entertained with … and all the other "stuff" that is crucial to modern life.

In this practical understanding, terms like "post-industrial economy" or "information economy" or "knowledge economy" are extremely misleading. Humans cannot eat information or knowledge, wear it, or live in it. To be sure, all work we perform involves more and faster flows of information and knowledge, thanks to digital technology, communications capacities, and more advanced skills and education. But this does not imply that the work associated with transforming materials into more useful end products disappears — only that it is done differently. Changes in the organization of work, business models, and technology have affected the process of manufacturing, and even how we measure it. But they haven't eliminated the need for manufacturing.

For example, many service functions that used to be performed in-house by major manufacturers (ranging from accounting to cleaning) are now commonly outsourced to independent providers. As a result, the jobs associated with those functions are no longer defined as "manufacturing" jobs. Instead, they show up in ABS statistics as "services" jobs. Around one-third of the total value of final manufacturing products in developed countries can be accounted for by services inputs,[8] and an important market for the services sector (especially higher-productivity business services) is tied to the nearby presence of manufacturing. Australian manufacturers purchased $66 billion worth of domestic services in 2012-13.[9]

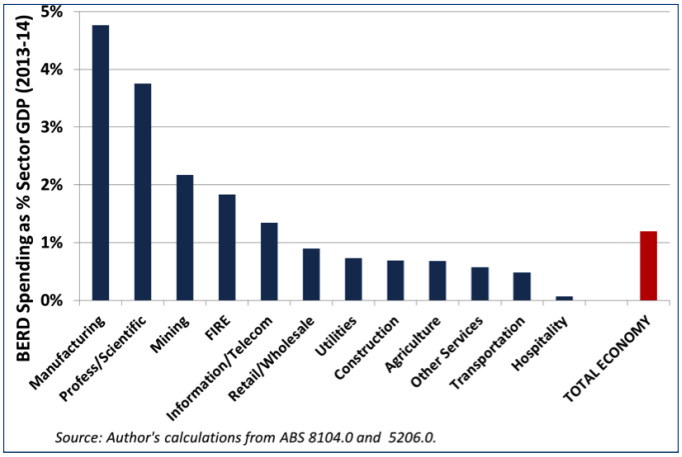
So the boundary line between manufacturing and services is very fuzzy indeed.

Over time, it is normal that manufacturing declines as a *relative* share of total value-added activity, and total employment, for a number of complex reasons. But there is no reason to expect manufacturing to decline in *absolute* terms: to the contrary, it should normally grow (along with incomes and population). As noted earlier, as income levels rise consumers tend to spend a rising proportion of additional income on services (including private services, like transportation and restaurant meals, and public services, like education and health care). This partly explains why manufacturing shrinks gradually as a relative share of total output. Furthermore, since productivity growth in manufacturing tends to be higher than in other sectors (for reasons explained below), manufacturing products tend to become cheaper over time (compared to services). Thus manufactured products make up a smaller share of total expenditure.[10] But neither of these factors imply that manufacturing must inevitably decline – only that it will likely *grow more slowly* than other sectors. The evidence above, however, indicates that something much worse is happening in Australia: the industry is shrinking in absolute terms, and that decline is accelerating.

Therefore, the common assumption that manufacturing must naturally "wither away" is quite wrong. And in addition to its "staying power" in quantitative terms (measured by real output, employment, and expenditure which should grow over time, not shrink), there are several other reasons why manufacturing carries a strategic economic importance out of proportion to its absolute size. In other words, there are many qualitative and structural reasons why "manufacturing matters":

a) Innovation: There is a crucial structural link between manufacturing and innovation, which explains why manufacturing is the most innovation-intensive part of the economy — and why innovation is inevitably manufacturing-oriented. First, the manipulation and transformation of material things is a generic task that is especially amenable to technological improvement, mechanization, and other forms of innovation. Therefore, no other sector of the economy utilizes as much innovation, technology, robotics, and other advanced knowledge as manufacturing. Many services jobs are much harder to automate than goods production: just imagine how you would feel having your hair cut by a robot, for example! And even when innovations are applied to services production, they almost always require the use of new machinery and equipment — which, of course, are manufactured products. For both reasons, countries which succeed in manufacturing are also more likely to be successful innovators. Korea is a good example: it has one of the largest manufacturing industries in the world (accounting for almost one-third of total national GDP), and also one of the strongest innovation records (allocating 4.3 percent of GDP to research and development in 2014, higher than any other OECD country).[11]

Figure 5. Business R&D Spending by Sector



Source: Author's calculations from ABS 8104.0 and 5206.0.

Within Australia, the importance of manufacturing to national innovation performance is also readily apparent. Despite recent challenges, manufacturing spends more on innovation than does any other part of the economy: $4.8 billion on research and development in 2013-14 (most recent data). And relative to its (shrinking) GDP, the commitment of manufacturers to innovation is even more dramatic (see Figure 5). Almost 5 percent of manufacturing GDP is ploughed back into innovation: four times the economy-wide average, and higher than any other sector (even higher than innovation-intensive professional and scientific services). The decline of manufacturing in Australia has thus been a major reason for Australia's flagging innovation performance;[12] as the most innovation-intensive part of the economy contracts, it is inevitable that overall innovation activity deteriorates. For this reason, recent Coalition jargon about innovation rings hollow, unless and until it puts forward a concrete strategy for rebuilding this most innovative part of the economy.

b) Productivity: Thanks to greater potential for applying automation, technology, and other forms of innovation to manufacturing production, the sector tends to demonstrate higher ongoing rates of productivity growth than other parts of the economy. This has been true in Australia, with manufacturing productivity growth exceeding economy-wide rates by about one-fifth since the late 1990s.[13] And productivity performance would be even stronger if the industry were growing, rather than shrinking. Internationally, Korea again serves as an exemplar: thanks to its manufacturing focus, Korea has recorded average annual labour productivity growth of 3.9 percent since 2001, faster than any other major country, and more than three times faster than Australia. That productivity performance has underpinned a huge advance in living standards there. Moreover, strong manufacturing productivity growth can spill over into stronger national productivity performance via several channels: by a simple composition effect (lifting the average of all sectors, especially if manufacturing itself is growing), by contributing to stronger exports (thanks to greater competitiveness), and by pioneering productivity-improving technology and machinery that can also be applied in other sectors.

c) Incomes: Higher productivity and faster productivity growth create a sustainable economic foundation for high and growing incomes. Average incomes in manufacturing (especially "advanced manufacturing" sub-sectors, which demonstrate particular reliance on technology, skill, and export markets) are superior to other jobs. By the same token (but in a negative direction), the loss of full-time, high-wage jobs in Australian manufacturing in recent years has clearly contributed to the unprecedented slowdown in national wage growth. Average weekly earnings in the private sector have been growing at an annual rate under 1 percent according to most recent data,[14] the slowest on record, and this in turn undermines consumer spending, household finances, and growth.

d) International trade: International trade allows various countries to specialize in differing types and varieties of manufactured goods. This allows them to capture the strong efficiency benefits that come with producing at greater scale – so long, of course, as all countries retain a fair share of manufacturing output in the end. (Unfortunately, as we have seen, this balance condition does not remotely apply to Australia's international trade in manufactures, which is mired in a huge and growing deficit.) These "economies of scale," along with the physical properties of most manufactures (tangible, durable, and transportable), explain why manufacturing remains the dominant component of international trade. Manufactured products account for two-thirds of global merchandise trade, worth a total of over $12 trillion in 2015.[15] And again, despite recent challenges, Australian manufacturers still make a disproportionate contribution to national exports. Manufactured products accounted for $100 billion in export sales in 2015, or about 40 percent of total Australian exports[16] — far in excess of manufacturing's 6 percent share of national GDP.

The disproportionate orientation of manufacturing to export markets creates several spillover benefits for the rest of the economy. A larger manufacturing sector automatically boosts exports (and therefore translates into a stronger balance of payments). A better structural capacity to export can also underpin stronger overall GDP growth, ensuring that a country (as it grows) earns enough export revenues to cover rising import costs.[17] Economic evidence also indicates that export-oriented industries demonstrate higher productivity growth and higher average incomes.

e) Supply chains and multipliers: Another channel through which a strong manufacturing presence translates into broader economic activity and employment is through its impact on domestic supply chains. Most manufacturers rely disproportionately on inputs of all kinds (primary, secondary, and tertiary) purchased from outside companies. Those intermediate purchases totaled almost $250 billion in 2012-13, according to the input-output tables published by the Australian Bureau of Statistics.[18] As business models have become more sophisticated and specialized, supply chains have become more complex and interconnected. But they still rely on the domestic presence of a key manufacturing customer, which acts as an economic "anchor" stabilizing the whole supply chain. These supply chain relationships explain why, when a major manufacturing facility opens (or, unfortunately, closes), the impact on regional and national labor markets is magnified. Jobs in supply industries (some of which may be several steps removed from that final manufacturing customer) are also ultimately affected. These "multiplier effects" are stronger in manufacturing than in other sectors, because of the more developed and elongated supply chain. In specialized, high-technology manufacturing operations like automotive assembly or ICT, final jobs multipliers can be as high as ten-to-one.[19]

III. Busting Some Manufacturing Myths:

Let us critically consider some of the common arguments invoked to discourage Australians from demanding concrete action to sustain manufacturing. Three myths in particular are evaluated: that Australia's deindustrialisation is predictable and inevitable; that Australia is too expensive to succeed in manufacturing; and that Australia's geographical remoteness and small domestic market make manufacturing unviable. None of these claims is supported by economic evidence.

a) Australia's not "typical": The decline in manufacturing output and employment in Australia has been painful, as shown above, but is not at all typical of the experience of other industrial countries. To the contrary, Australia's rapid deindustrialisation is an outlier among its peers. Consider the data summarized in Table 2. It reports, for a sample of 30 OECD countries,[20] three indicators of recent manufacturing performance: the relative share of manufacturing employment in 2014, the change in absolute manufacturing employment in the last five years, and the change in real manufacturing output over the same period. Australia now has the distinction of the smallest relative manufacturing employment (measured as a percentage of total employment) in the entire sample – recently falling below Luxembourg.[21] Australia also falls within the lowest quartile of the 30 countries for continuing loss of manufacturing jobs since the trough of the GFC in 2009. It is worth noting that roughly one-third of the countries in the table actually *expanded* manufacturing employment in this period (including Germany, the United States, and Korea). Finally, Australia ranks fourth worst in the sample (behind only Greece, Finland, and Spain) for fastest decline in manufacturing GDP since 2009. Most countries in the sample have once again expanded manufacturing output since the end of the 2009 recession (and global supply and demand of manufactures continues to grow); Australia's continuing manufacturing recession is thus highly unusual. By all these indicators, Australia's manufacturing crisis has been uniquely negative, qualifying Australia as a statistical outlier in the sample of industrialized economies. It is not credible to argue that what is happening in Australia is happening "everywhere."

b) Australia's not "too expensive": In an era of globalization, with store shelves overflowing with inexpensive (and often low-quality) goods from China and other low-wage countries, it is commonly assumed that high-wage countries cannot succeed in modern manufacturing.

Table 2. International Comparisons of Manufacturing Performance
OECD Countries

	Share Mfctrg. in Total Employment 2014	*Change Mfctrg. Employment, 2009 — 14*	*Change Mfctrg. Real GDP, 2009 — 14*
Czech Republic	26.1%	3.1%	21.7%
Slovak Republic	21.6%	-0.1%	47.5%
Slovenia	20.3%	-9.7%	12.1%
Hungary	19.2%	-1.0%	15.1%
Poland	19.1%	-1.3%	33.7%
Estonia	18.4%	0.8%	45.9%
Germany	17.5%	2.9%	30.6%
Korea	16.9%	12.9%	28.9%
Italy	16.2%	-9.0%	4.2%
Japan	15.0%	-5.9%	21.1%
Austria	14.7%	0.5%	18.9%
Switzerland	14.0%	0.0%	18.1%
Finland	13.7%	-10.7%	-6.3%
Sweden	12.3%	-5.8%	17.7%
Chile	11.3%	19.0%	15.1%
Belgium	11.3%	-8.6%	11.6%
Spain	11.1%	-17.0%	-5.8%
Ireland	11.1%	-7.4%	4.5%
New Zealand	10.6%	-5.7%	1.8%
Israel	10.6%	6.5%	17.7%
Denmark	10.3%	-10.4%	15.1%
United States	10.2%	6.3%	9.6%
France	9.9%	-8.4%	5.9%
Canada	9.6%	-2.0%	13.2%
Norway	9.2%	-1.6%	13.2%
Netherlands	8.8%	-6.4%	8.7%
Greece	8.4%	-30.2%	-30.7%
United Kingdom	8.1%	-3.1%	6.5%
Luxembourg	8.1%	-3.3%	16.8%
Australia *(rank out of 30)*	*8.0%* *(ranked 30)*	*-8.4%* *(ranked 23)*	*-5.1%* *(ranked 27)*

Source: Author's calculations from OECD.stat and national statistical agencies.

Yet statistical evidence confirms that when they properly orient their economic, trade, and technology policies, high-wage countries can indeed find a prosperous, lasting place in the global manufacturing system. Several developed, high-wage countries such as Germany, the Netherlands, Japan, and Korea have all successfully expanded their participation in global manufacturing trade. Their success is based on innovation, quality, and productivity — not trying fruitlessly to catch low-wage exporters in a race to the bottom in labour costs and standards. Australia can do the same: but only if we are similarly ambitious and focused in our manufacturing policy interventions.

To be sure, Australia is a "high-wage" economy. But Australia's labour costs are not high compared to other industrialized countries – especially when we compare those costs at appropriate exchange rates. Table 3 summarizes Australia's hourly labour costs in manufacturing (including social contributions and the hourly cost of paid leaves) relative to the U.S., the Euro zone, and Japan, in selected years from 1996 through 2015. In 2015, with an average exchange rate of 75 cents (U.S.), Australian costs were almost identical to those in the U.S. and Europe.[22] Of course, Australia's relative cost position is affected by changes in the exchange rate, as illustrated in Figure 6. When the Aussie dollar was very strong (driven up by the global mining boom), Australian costs "looked" high by international standards (even though Australian workers didn't get a "raise" just because the dollar was shooting up!). Similarly, when the dollar was below 70 cents (U.S.) at the turn of the century, Australia's labour costs looked very competitive. Swings in the exchange rate are thus by far the dominant determinant of Australian cost competitiveness. In fact, there is a 98 percent correlation between relative labour costs (comparing Australia to the U.S.) and the exchange rate over the past two decades;[23] without exchange rate fluctuations, Australia's cost competitiveness would have remained stable throughout that period.

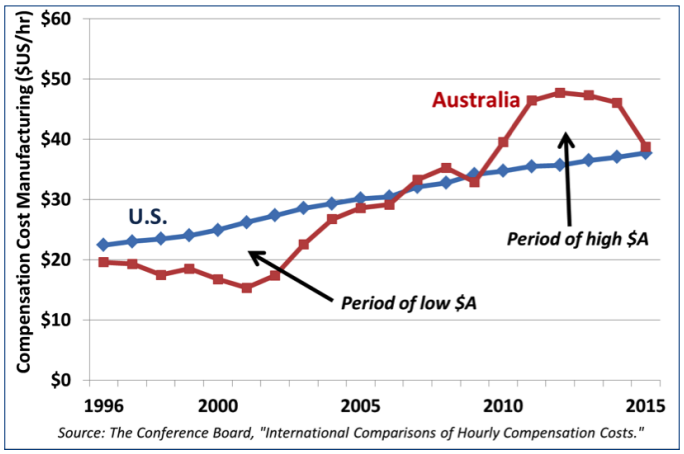
Table 3. Manufacturing Labour Costs
Selected OECD Countries ($US per hour)

	1996	*2001*	*2005*	*2012*	*2015*
USA	22.46	26.21	30.13	35.7	37.71
Euro Area	23.83[1]	20.94	32.54	40.49	37.06
Japan	17.77	20.69	25.23	35.25	23.60
Australia	19.58	15.35	28.59	47.74	38.75
Australia-US Exchange Rate	*$0.78*	*$0.52*	*$0.76*	*$1.04*	*$0.75*

Source: Author's calculations from Conference Board "International Comparisons of Hourly Compensation Costs in Manufacturing," and Reserve Bank of Australia "Statistical Tables, Exchange Rates."
1. 1997 data.

Even at current levels, Australia's exchange rate is still somewhat "too high" according to fundamental economic determinants. The OECD estimates the long-run fair value of the Australian dollar to be about 65 cents U.S., measured on the basis of purchasing power parity (or PPP);[24]

Figure 6. Manufacturing Labour Costs



Source: The Conference Board, "International Comparisons of Hourly Compensation Costs."

that's about 10 percent less than current market exchange rates. If evaluated at this PPP benchmark, therefore, Australia's "true" labour costs would actually be up to 10 percent lower than in Europe and the U.S. Understanding the destructive, lasting effects of currency overvaluation, and acting appropriately to stabilize the exchange rate at competitive levels (offsetting the effects of roller-coaster cycles in commodity prices), must be an important dimension of future manufacturing strategy for Australia. In this context, it is important to acknowledge the active efforts of other jurisdictions to maintain exchange rates at competitive levels, through diverse techniques including direct market interventions (Korea, Switzerland, and Japan), quantitative easing (Japan, the Euro zone, and the U.S.), and direct regulation of financial flows (China). Australian authorities (in both government and the RBA) need to learn from these experiences, and take appropriate measures to ensure that future currency swings do not further damage Australia's long-run manufacturing capacity.

c) Australia's not "too remote": A related form of fatalism is the assumption that since Australia is located far from major global markets, and has a domestic market (24 million people) too small to justify large-scale production in many manufacturing sectors, the fundamental economics of manufacturing here are simply unfeasible. Again, this conclusion flies in the face of hard international data. The sample of OECD countries included in Table 1 includes several small, remote economies which have outperformed Australia in manufacturing activity by a wide margin. Perhaps their geography and size sparked a spirit of pro-active resilience — rather than pessimistic inaction — to ensure that manufacturing remained central to their economic well-being. Four comparators are worthy of particular note here: Ireland, Israel, Korea, and New Zealand. Like Australia, none of these countries enjoys land access to a market of 50 million or more, and hence all must rely on exports transported by sea or air to access the economies of scale endemic in manufacturing. Chile is a fifth comparator with broadly similar circumstances: it is connected by land, of course, to other Latin American countries, but with daunting physical barriers (mountain and jungle), hence most of its manufacturing exports must be transported offshore. Yet all of these small, remote countries have outperformed Australia on every one

of the three criteria reported in Table 1: relative manufacturing employment, change in absolute manufacturing employment, and growth in real manufacturing GDP. In three of the cases (Israel, Korea, and Chile), both employment and real output have grown strongly since 2009. For Ireland and New Zealand, manufacturing employment has declined (less severely than in Australia),[25] but real output continues to grow – driven by strong productivity improvements. If these countries can successfully maintain and grow domestic manufacturing, so can Australia – but only if and when policy-makers here acknowledge that manufacturing is worthy of their active attention.

IV. Governments are NOT Powerless

The successful manufacturing experience of so many of Australia's peers (both large and small) is proof positive that manufacturing can remain a vital, dynamic part of a prosperous national economy. But in none of those cases did success happen automatically — created magically through the forces of supply and demand and "trickle-down" economics. To the contrary, international experience confirms the essential role of pro-active, hands-on, innovative government policy in getting the conditions right for manufacturing innovation, productivity, and exports. Effective governments do not sit back and wait for private market decisions to determine whether their countries will, or will not, participate in high-tech, high-productivity industrial production. Instead, they take matters into their own hands: with industrial policies and development strategies to nurture private companies and private investment, while channelling them to produce maximum benefits for the domestic economy. The continuing relevance of active manufacturing policy is confirmed by international academic and policy research.[26] But Australia's government, unfortunately, has not kept abreast of this knowledge. It has remained guided by the conviction that free trade agreements, low taxes, and business-friendly regulation are all that's needed to spur economic success – and whether that success includes manufacturing or not, is largely irrelevant.

This section provides a summary catalogue of ten major manufacturing policy ideas and levers. All have been successfully implemented in other countries (and most have been engaged at various times in Australia's history). Together they could reverse the current contraction in manufacturing, and usher in a more promising and prosperous era for Australia manufacturing:

a) Sector Strategies: Government needs to actively identify manufacturing sectors and sub-sectors with the right criteria for modern success, and then organize multi-faceted strategies to facilitate investment and growth. These sector strategies must engage all relevant sector stakeholders (including business, unions, educational institutions, research organizations, all levels of government, and others) to work jointly toward key goals. Criteria for identifying high-potential sectors include reliance on innovation, export orientation, productivity and technology characteristics, and strong supply chain linkages. This roster will include industries already present in Australia but which need renewed focus and momentum: like automotive components (which can still be successfully produced here even after assembly operations close), high-quality and specialist steel, forestry and building products, and mining equipment. They also include new industries with strong potential to grow here: like alternative energy systems and components, other environmental technologies, medical implements, and public transit equipment. Government supports many other industries with targeted policies and incentives (like property development, private health insurance, and mining). It must do the same for manufacturing, instead of abandoning it to its fates (as it did with auto assembly).

b) Innovation: Government speaks about innovation like it's a disembodied process of "thinking up new ideas." In reality, successful innovation must be embodied in the hands-on process of "learning by doing." International evidence shows that direct government participation in "mission-oriented" research and innovation is far more effective than hands-off tax credits.[27] And as we have seen, there is no other sector more directly connected to the innovation process than manufacturing. Government needs to provide tangible, direct support to innovation in key manufacturing sub-sectors, including public participation in specific projects and product programs. We need better systems for linking public innovation activity with commercial and export applications. We can emulate successful public equity investments in innovation-intensive businesses in other countries (like effective methods for financing innovative firms used in Israel, Finland, and Ireland). And we need to better target R&D incentives toward sectors with maximum potential for industrial and export success (not big banks).

c) Networks, Eco-Systems, and Clusters: Successful modern industrial policy relies centrally on the connections and collaboration among players from different firms, agencies, and stakeholders. Research has shown that spillovers among these diverse sector participants, and the formal and informal sharing of knowledge that occurs between them, is crucial to the development of "critical mass" in any high-tech industry.[28] Often, the resulting networks and clusters are geographically concentrated (in particular cities or regions). Government cannot simply "create" clusters, but it can facilitate their emergence: through initiatives like public-private networks and industrial institutes, support for sector-wide research and skills investments, and measures to better connect public research assets (like universities, CSIRO, and others) with industrial applications. Successful examples of this approach from other countries include the U.S. National Network for Manufacturing Innovation (which supports public-private networks in several targeted sectors), the U.K. Catapult Centres, and the "Top Sectors" strategy in the Netherlands. In Australia, in contrast, the Coalition government de-funded most previous work in this area (including industry innovation precincts and National ICT Australia) in its 2014 austerity budget – ignoring the growing consensus in international research that these kinds of networks are vital to the development of healthy, innovative business eco-systems.

d) Tax Incentives that Matter: Australia's government claims no-strings-attached tax cuts for corporations will stimulate investment, innovation, and employment. There is little evidence, however, that across-the-board tax cuts elicit more business investment; to the contrary, the historical correlation between the two is opposite (perversely, investment was stronger when business taxes were higher).[29] This should not be surprising: after all, conventional company tax cuts simply reinforce the after-tax profitability of existing operations, with no requirement that any of the proceeds be reinvested. Fiscal incentives for investment are more effective when they are linked directly to incremental investment spending. Examples include accelerated depreciation provisions (allowing companies to write off the cost of new investments faster), investment tax credits, and public co-investments in specific strategic projects.

e) New Investment Vehicles: International experience highlights promising avenues for utilising public financial assets to leverage greater investment (including by private firms and investors) in targeted industries. Many countries use state-owned development banks (like Japan and Korea) or other forms of sovereign wealth (like Singapore, the UAE, and Norway) to expand capital investment in key export industries. Several countries have established public financing institutions to support start-up ventures in promising sectors, help SMEs raise capital for growth, provide partial loan guarantees, and support a continued domestic presence by global companies. Australia could do the same. For example, a national manufacturing investment bank could partner with private investors to expand capital spending in promising ventures. Specialised investment funds could invest smaller placements in start-up or micro ventures. Industry super funds, consistent with their investment mandates, could also play a larger role in financing the development of strategic products and sectors.[30] Note that capitalising an investment bank or other financing vehicle does not constitute a current "expense" for government budget purposes; so long as those investments are managed to ensure an eventual net return, they constitute an investment by government (not a current outlay), and hence have no impact on government deficits. Public investment vehicles have been used successfully in numerous applications in Australia — including the CEFC to finance sustainable energy projects, funding arrangements for the National Broadband Network, and others — without adding to the deficit. The same principles can apply in manufacturing investment.

f) Leveraging Procurement: Australian governments, public service providers, and infrastructure projects are themselves massive purchasers of manufactured goods. So an obvious way to support domestic manufacturing is to ensure that those taxpayer-financed expenditures generate the maximum possible boost to domestic industry. Not only does this stimulate more manufacturing activity at home; it also helps to reduce the final net cost of the government program. This is because the government collects additional revenues through the new work and production spurred by domestic procurement decisions, which help to offset the cost of the initial public spending.[31] Australia's government has been very inconsistent in utilising the power of procurement to support domestic manufacturing. On one hand, with new submarines the government (pressed by public opinion) required high level of domestic content in the new purchase; in other cases (such as structural steel for public construction) they have been passive, often invoking supposed trade commitments to justify their inaction. This inconsistency is not justified. Other countries (including the U.S. with its strong "Buy America" provisions, China, and the EU) regularly utilize domestic content targets in procurement to support domestic producers. Australia can certainly do the same: both by taking maximum advantage of safeguards in existing trade agreements (which allow significant interventions in cases of national interest or industrial distress; the latter criterion clearly applies to the Australian steel industry), and/or by reforming trade agreements to make them more symmetrical.[32]

g) Trade that Goes Both Ways: International trade is essential to the viability of most manufacturing due to the importance of economies of scale in production; and the export-orientation of manufacturing is one key reason for its strategic importance to the rest of the economy. However, trade does not strengthen manufacturing unless it is mutual and broadly balanced — and, as described above, Australia's trade in manufactured goods badly fails those tests. Australian trade negotiators need to be more realistic about the uphill struggle Australian manufacturers currently face in trying to win a fair share of world trade — and understand that it will take far more than mutual tariff reduction to stimulate Australian exports. Trade agreements need to be mutual and consistent with broadly balanced trade. And Australian agencies (like Austrade) can be much more pro-active in promoting Australia's exports, through initiatives like expanded credit financing, initiatives to leverage Australian participation in global supply chains, and government support for international marketing.

h) Getting Real About Currency: The destructive and obviously unsustainable flight of the Australian dollar through most of the last decade was a key factor contributing to the unprecedented contraction in Australian manufacturing that began after 2011. The dollar has returned to more reasonable levels (though still trades around 10 percent above its purchasing power parity fair value), and this (if sustained) will significantly help Australian manufacturing in the years to come. However, policy-makers (within both government and the RBA) need to learn from this destructive episode, and ensure that it doesn't happen again. They should make an explicit commitment that maintaining the competitiveness of Australian industry will be a key goal of monetary and financial policies in the future. Without this signal, manufacturers will have no assurance that the recent down cycle in the currency is anything more than a temporary respite, and hence its benefits for future investment and production will be muted. Rules against currency manipulation and imbalances should also be included in trade deals.

i) Industrial Infrastructure: Most economists and policy-makers acknowledge that heavy government investments in public capital assets of all kinds will play a crucial role in fostering growth and job-creation in coming years. Infrastructure investments will help to offset the sustained weakness of private investment, and improve weak macroeconomic conditions.[33] One key focus of infrastructure investment should include facilities and services which support manufacturing: ranging from transportation infrastructure (like rail links, ports, and roads to accelerate supply logistics and exports), to utility connections (and other measures to ensure the supply of stably-priced, sustainable energy), to modern training facilities (to help better integrate TAFE and university training with industry). Of course, maximizing the use of Australian-made manufacturing content in those (and all other) infrastructure projects is another way to link these two economic priorities.

An especially important dimension of infrastructure for the manufacturing sector is the provision of reliable, affordable, sustainable energy supply. Therefore, energy policy and planning must take into account the specific needs of manufacturing. An important current example of this is the looming impact of Australian LNG exports on the price and supply of natural gas for domestic manufacturing. Exports should be regulated to protect domestic manufacturing from disruptions in gas supply and pricing (both as an energy source and a feedstock), given Australia's national interest in sustaining value-added industry.

j) Skills and Capacities: Merely training workers does not in itself create the jobs to use those skills. In some specialized manufacturing sectors, however, enhancing the future skills and capacities of workers must be a vital component of future sector strategies. Consistent funding for skills training at all levels (including STEM and technical skills in schools, stable and accessible TAFE and VET programs, and support for lifelong learning by adult workers) is essential, as are efforts to more closely link training programs with future workforce needs in strategic sectors. Germany's vaunted apprenticeship system is perhaps the most outstanding international role model in this area. But many other industrial countries manage the challenge of matching eager, well-prepared workers with future jobs much better than Australia does.

In sum, the claim that government is somehow powerless to do anything about the erosion of Australia's manufacturing base, because we now live in a "global economy," is nonsense. There is abundant international evidence that smart, pro-active government engagement, aimed at deliberately enhancing strategic, high-value, export-oriented manufacturing, is not only possible — it is essential for modern industrial success. We have catalogued ten key policy areas, and there are many more to explore. What is lacking is not ideas and the space to implement them. All that is lacking is a recognition that policy intervention is necessary, and a commitment to making it happen.

V. Australians Agree: Manufacturing *Does* Matter

The Australia Institute contracted Research Now, a national opinion research firm, to poll over 1,400 Australians regarding their attitudes toward manufacturing and government policy. The poll was conducted last September and October, and was designed to ensure a nationally representative sample on grounds of gender, age, household income, and state or territory. The results confirm that Australians are far ahead of their government in recognizing the lasting economic and social importance of a healthy manufacturing sector. They reject the fatalism of some economists that manufacturing is "just another sector," and that we shouldn't worry about its decline (since comparative advantage market forces will ensure those jobs are replaced with other, better ones). Most importantly, they indicate that Australians expect their government to act decisively and powerfully to sustain manufacturing in this country.

The key poll results are summarized in Tables 4 through 6. Table 4 provides a detailed breakdown of responses to the poll's core question: "How important do you think the manufacturing industry is to the Australian economy?" This question generated an overwhelmingly positive response: a striking 88 percent of respondents indicated manufacturing is either very important (53 percent) or important (35 percent). Some 6 percent indicated it was "not so important," while under 1 percent of respondents indicated it was "not at all important." This dramatic endorsement of the strategic importance of manufacturing completely contradicts the biases of neoclassical economic theorists, and their view that Australia shouldn't worry about the disappearance of manufacturing since we will automatically find other industries in which to specialize. Either Australians don't understand economics, or — more likely — neoclassical economists do not understand the real world.[34] Table 4 indicates that agreement with the importance of manufacturing is very strong across all the dimensions of gender, age, and income. Men and women equally accept the importance of manufacturing. Support for manufacturing rises somewhat with age: but even for respondents under 25 years of age, 77 percent recognize manufacturing as very important or important. At the other extreme, a stunning 96 percent of those over 65 fell into the same two categories. There is no consistent correlation between income and support for manufacturing, which was very strong across all income groups.[35]

The poll included a broad complementary question about the importance of manufacturing to national policy-making: "Do you think a healthy manufacturing industry should be a national priority?" Here, too, the conviction that manufacturing should be a crucial priority for the country (and its government) is overwhelming (see Table 5). Almost four in five respondents answered yes, with just one in twelve saying no. Variations in the strength of this sentiment across gender, age, and income groupings were due primarily to variation in the proportion of respondents indicating that they

Table 4. General Importance of Manufacturing

"How important do you think the manufacturing industry is to the Australian economy?"

	Very Important	Important	Not So Important	Not At All Important	Not Sure/ Don't Know
Total	53.4%	35.0%	6.3%	0.5%	4.8%
By Gender					
Male	53.6%	34.1%	7.8%	0.7%	3.8%
Female	53.2%	35.8%	5.0%	0.3%	5.8%
By Age					
18–24	29.9%	46.9%	8.2%	1.4%	13.6%
25–34	39.8%	42.1%	10.4%	0.4%	7.3%
35–44	47.4%	36.7%	8.5%	0.7%	6.7%
45–54	62.8%	31.8%	3.5%	0.0%	1.9%
55–64	64.8%	28.2%	4.2%	0.5%	2.3%
Over 65	67.7%	28.1%	3.5%	0.4%	0.4%
By Annual Household Income					
Under $20k	53.8%	22.0%	6.6%	3.3%	14.3%
$20k–$40k	64.3%	29.2%	3.0%	0.0%	3.6%
$40k–$60k	61.3%	34.4%	1.2%	0.0%	3.1%
$60k–$80k	53.8%	33.8%	8.8%	0.0%	3.8%
$80k–$100k	54.3%	36.4%	8.0%	0.0%	1.2%
$100k–$150k	51.6%	36.6%	7.5%	0.0%	3.5%
$150k–$200k	42.1%	46.7%	7.5%	0.0%	3.7%
Over $200k	39.2%	46.8%	11.4%	1.3%	1.3%
Not sure	50.7%	33.2%	5.8%	0.4%	9.9%

Source: National survey of over 1400 respondents, sample adjusted for representative age, gender and region characteristics, conducted by Research Now for the Australia Institute.

weren't sure or didn't know. Women, younger Australians, and low-income Australians were more likely to be undecided or unsure, and this pulled down the share of those categories answering "yes." When measured as a share of decided respondents, around 90 percent of respondents in both genders, most age groups, and most income categories all agreed that maintaining a strong manufacturing industry should be a national priority.

Table 6 provides a summary of responses to several other questions in the poll.[36] Over three-quarters (77 percent) strongly agree or agree that Australia should add more value to its products and exports, rather than concentrating solely on exporting raw minerals. Overwhelming majorities also strongly agree or agree that manufacturing is essential to the future supply of skilled high-wage jobs (79 percent), rewarding careers (82 percent), and high living standards (75 percent). Hardly any respondents disagreed with these propositions. This is interesting counter-evidence to the oft-heard claim that Australians have a "white collar bias," according to which the value of manufacturing work (and other blue-collar occupations) as a career path is supposedly underestimated. To the contrary, it seems that Australians understand well that steady, decent manufacturing work can indeed provide a solid foundation for careers, family incomes, and high living standards. Perhaps more surprisingly, two-thirds of respondents (67 percent) strongly agree or agree that Australia should discourage imports if they damage domestic manufacturing jobs; they outweigh respondents disagreeing or strongly disagreeing with the same statement by a six-to-one margin. This attitude runs directly counter to the underlying assumption of conventional trade theory that job destruction in shrinking sectors is a necessary and indeed beneficial side-effect of the mutual specialization supposed to occur through free trade. It seems that Australians have a perhaps well-founded skepticism that those other, better jobs may never appear.

Finally, the poll also included questions dealing with two specific manufacturing sectors — two sectors which have experienced radically differing levels of support from the Coalition government. In the case of automobile manufacturing, 61 percent of Australians strongly agree or agree that the government should have done more to maintain assembly operations. They outnumber those who disagree or strongly disagree with the same proposition (18 percent) by a margin of more than three-to-one. Support for government requirements to enhance Australian

manufacturing content is even stronger in the case of defence procurement: almost 70 percent of respondents strongly agreed or agreed that the government should mandate an Australian build for future purchases of submarines, while just 6 percent disagreed or strongly disagreed. Given those overwhelming opinions, it is little surprise that the government, running for reelection, has indeed decided to mandate Australian final manufacture of the submarines. But exactly the same principle can easily be generalised to mandating strong levels of Australian content in other procurement projects (such as the use of Australian steel in infrastructure construction). And even in the case of automobiles (most of the demand for which arises from private households, not governments), opinion is very strong that government must play an active role to ensure that Australia retains a foothold in a strategic, high-value industry. The decision by the Coalition government to accept the closure of all auto assembly in Australia — even abetting it, with repeated statements explicitly rejecting industry assistance — thus runs sharply counter to the views of Australians that the industry should have been supported.

Table 5. Manufacturing as a National Priority
"Do you think a healthy manufacturing industry should be a national priority?"

	Yes	No	Not Sure/ Don't Know
Total	79.0%	8.2%	12.8%
By Gender			
Male	81.2%	9.0%	9.8%
Female	76.9%	7.6%	15.6%
By Age			
18–24	63.9%	10.9%	25.2%
25–34	68.7%	11.6%	19.7%
35–44	73.7%	11.5%	14.8%
45–54	84.1%	6.6%	9.3%
55–64	87.3%	5.6%	7.0%
Over 65	91.2%	3.8%	5.0%
By Annual Household Income			
Under $20k	74.7%	4.4%	20.9%
$20k–$40k	85.1%	3.6%	11.3%
$40k–$60k	88.3%	4.3%	7.4%
$60k–$80k	77.5%	8.8%	13.8%
$80k–$100k	77.2%	11.1%	11.7%
$100k–$150k	77.6%	8.7%	13.8%
$150k–$200k	79.4%	10.3%	10.3%
Over $200k	67.1%	22.8%	10.1%
Not sure	77.1%	7.2%	15.7%

Source: National survey of over 1400 respondents, sample adjusted for representative age, gender and region characteristics, conducted by Research Now for the Australia Institute.

In sum, these poll results are striking, and confirm that Australians reject the fatalism of those policy "experts" who have become resigned to the eventual disappearance of manufacturing from Australia altogether. Australian respondents have a deep appreciation of the continuing strategic importance of manufacturing to the prosperity of our society. Moreover, they demand by strong majorities that their government take far-reaching action to support the continuing presence of manufacturing. Whether those attitudes are informed by an actual understanding of real-world economics, or by a simple appreciation of the role of manufacturing jobs in sustaining families and living standards in their own communities, is irrelevant. Politicians ignore such bedrock levels of public sentiment at their peril.

Australia is now in a federal election campaign, in which concern over the future stability and quality of jobs is a top issue for voters. The campaign to date has featured some discussion of the challenges facing Australian manufacturing: for example, the Labor party has proposed incremental funding to support efforts by Australian auto components manufacturers to identify new products and customers (instead of allowing that important part of national industry to simply disappear). But much more attention to manufacturing by political leaders of all stripes is needed. That would validate the strong views of Australians regarding the future of manufacturing, and would help to flesh out the comprehensive policy actions that will be essential to restore stability and prosperity to this vital sector.

Table 6. Manufacturing and Prosperity — Other Poll Questions

	Strongly Agree	*Agree*	*Neutral*	*Disagree*	*Strongly Disagree*
Australia should do more processing and value adding of products instead of exporting raw materials	33.4%	43.6%	19.8%	2.8%	0.4%
A healthy manufacturing industry creates skilled jobs with high wages	28.9%	49.9%	17.0%	4.0%	0.3%
A healthy manufacturing industry provides rewarding careers	30.1%	51.6%	15.9%	2.1%	0.3%
A healthy manufacturing sector helps ensure high living standards	26.6%	48.0%	22.5%	2.6%	0.3%
Australia should discourage imports of products that undercut Australian manufacturing jobs	28.7%	38.1%	22.4%	9.0%	1.8%
The government should have done more to encourage car manufacturers to remain in Australia	28.9%	32.3%	21.4%	12.9%	4.5%
The government should ensure that any Australian owned submarines are built in Australia	34.3%	35.0%	24.9%	4.2%	1.6%

Source: National survey of over 1400 respondents, sample adjusted for representative age, gender and region characteristics, conducted by Research Now for the Australia Institute

Notes

The author thanks without implication David Richardson, Richard Denniss, and Tom Skladzien for helpful input.

[1] Comparing seasonally adjusted total manufacturing employment in November 2013 (first ABS report on industry employment after the election) to February 2016 (most recent at time of writing); author's calculations from ABS Catalogue 6291.0.55.003.

[2] Comparing seasonally adjusted employment levels in the two sectors for November 2015 (last ABS report of the year) with year-earlier levels; author's calculations from ABS Catalogue 6291.0.55.003.

[3] Output can grow even with fewer workers, in cases when productivity growth is especially strong. But Australia's manufacturing job loss has been too rapid for this to be true here.

[4] Apparent national demand equals the value of total domestic manufacturing shipments (about $350 billion in 2015), less the proportion exported (about $100 billion), plus the value of manufacturing imports ($250 billion); author's calculations from ABS Catalogues 5676.0 and 5368.0.

[5] Author's calculations from ABS Catalogue 5302.0.

[6] See, for example, David Uren, "Budget 2016: $1 trillion foreign debt a rating risk," *The Australian* (May 12, 2016).

[7] Department of Foreign Affairs and International Trade, "Australia's Merchandise Exports and Imports," Pivot Table.

[8] See, for example, Rainer Lanz and Andreas Maurer, "Services and Global Value Chains: Some Evidence on the Servification of Manufacturing and Services Networks," World Trade Organization Economic Research and Statistics Division, Working Paper RSD-2015-03, 2015.

[9] Author's calculations from ABS Catalogue 5209.0.55.001.

[10] Those lower prices, conversely, can stimulate greater demand for manufactured goods, thus offsetting some of the decline in the relative importance of manufacturing when measured in real terms.

[11] Author's calculations from OECD.stat, Organization for Economic Cooperation and Development.

[12] Business expenditure on R&D in Australia fell by 15 percent as a share of GDP between 2008-09 and 2013-14 (most recent data available); author's calculations from ABS Catalogues 5206.0 and 8104.0.

[13] Anthony Kryger, "Performance of manufacturing industry: a quick guide," Parliament of Australia, 2014.

[14] ABS Catalogue 6302.

[15] World Trade Organisation, International Trade Statistics 2015, Table II.1.

[16] Author's calculations from data in ABS Catalogue 5368.0.

[17] See, for example, J.S.L. McCombie and Anthony P. Thirlwall, eds, Essays on Balance of Payments Constrained Growth: Theory and Evidence (London: Routledge, 2004).

[18] Author's calculations from ABS Catalogue 5209.0.55.001. In aggregate, the manufacturing sector's GDP (slightly under $100 billion in 2015) is less than 30 percent of the value of total shipments.

[19] See, for example, Kim Hill, Debra Menk, and Adam Cooper, Contribution of the Automotive Industry to the Economies of all Fifty States and the United States (Ann Arbor: Center for Automotive Research, 2010), who estimate a final jobs multiplier for original equipment manufacturing in the automotive industry of 10-to-1.

[20] These are the 30 OECD countries for which complete data could be compiled for the 3 indicators reported.

[21] Note also that the share of manufacturing in total employment in Australia has fallen further since the 2014 average number reported in Table 2, to just above 7 percent of total jobs by early 2016.

[22] Japan's labour costs looked less expensive than Australia's in 2015, due solely to the one-third depreciation of the yen versus the U.S. dollar between 2013 and 2015. The yen has subsequently begun to appreciate again, and Japanese relative labour costs are again converging with other industrial countries.

[23] The simple correlation coefficient between the annual ratio of Australia and U.S. labour costs in manufacturing (from Conference Board data cited in Table 2) and the annual average Australia-U.S. exchange rate is 0.978.

[24] Purchasing power parity measures the exchange rate at which nominal price levels are equalized between two trading partners; it is held by many economists to be a long-run centre of gravity for exchange rates, which fluctuate dramatically on a day-to-day basis as a result of financial market behaviour. Data from OECD, "Purchasing power parities for gross domestic product," OECD.stat.

[25] Moreover, the data in Table 1, which compares 2014 to 2009, does not capture the recent impressive acceleration in Irish growth. Industrial employment expanded by 4 percent in Ireland in 2015, and if that growth continues will regain its 2009 levels within another year.

[26] For summaries of recent research in this field see Joseph Stiglitz and Justin Yifu Lin (eds.), The Industrial Policy Revolution: The Role of Government Beyond Ideology (New York: Palgrave Macmillan, 2013); Ha-Joon Chang, ""Institutions and economic development: theory, policy and history," Journal of Institutional Economics 7(04), 2011, pp. 473-498; and John Weiss, Industrial Policy in High-Income Economies (Geneva: International Centre for Trade and Sustainable Development, 2015).

[27] The OECD provides international comparisons regarding the split between direct support and tax credits; see OECD, "OECD Data and Statistics on R&D Tax Incentives," 2015, Table 3. Korea provides the most government support to business R&D, equal to over 0.4 percent of GDP in 2013, split roughly equally between direct subsidies and indirect tax credits. R&D support iin Germany, Spain, Sweden, and Israel consists overwhelmingly of direct support. Australia relies overwhelmingly on tax credits, with total government support equal to 0.15 percent of GDP. The importance of direct, "mission-oriented" government participation in public-private innovation activity has been highlighted by Mariana Mazzucato, *The Entrepreneurial State: Debunking Public vs. Private Sector Myths* (London: Anthem, 2013).

[28] See, for example, David A. Wolfe and Meric S. Gertler, "Clusters from the Inside and Out: Local Dynamics and Global Linkages," Urban Studies 41(5-6), 2004, pp. 1071-1093; Marian Negoita, "Globalization, State, and Innovation: An Appraisal of Networked Industrial Policy," Regulation and Governance 8(3) 2014, pp. 371-393; or Suzanne Berger, *Making in America: From Innovation to Market* (Cambridge: MIT Press, 2013).

[29] For a review of the Australian evidence see David Richardson, "Company Tax Cuts: What the Evidence Shows," The Australia Institute (March 2016).

[30] A successful example of this already in practice in Australia is the Medical Research Commercialisation Fund.

[31] Since the Commonwealth government collects taxes on incremental GDP at an aggregate rate of about 25 percent, at least one quarter of new GDP stimulated by the purchase of domestically-produced goods and services will be returned to government — and even more if the indirect "multiplier" impact of new manufacturing activity is considered.

[32] Australia's FTAs with both the U.S. and China are entirely lopsided on this score. With each partner, Australia has undertaken certain commitments regarding non-discrimination in procurement, but the other country has exempted procurement from such discipline. Why Australian negotiators would accept such asymmetry in the first place, let alone continue to approve its application despite the obvious negative effects, is hard to understand.

[33] The Coalition government's approach to the infrastructure challenge, however, is marred by its insistence on privatisation of existing public assets as a condition of new projects, and by its inadequate and inconsistent financial commitment to long-term investment levels.

[34] Since comparative advantage theory depends on strong but unrealistic assumptions regarding full employment, international capital immobility, and the sharing of national income gains within a single "representative household," the latter is much more likely.

[35] Support was only slightly lower in the lowest income group, annual household income under $20,000, where 76 percent agreed that manufacturing was very important or important. Perhaps fewer of these poor respondents can imagine ever attaining a job in manufacturing, and hence their interest in the sector is muted.

[36] A full breakdown of results to these questions by gender, age, and income is available on request to the Australia Institute.