

Beyond the production line – advanced manufacturing, innovation and industry policy

Speech delivered by CEDA Chief Executive, Professor
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Check against delivery.

Thank you for the opportunity to be with you today.

I am truly excited by the content and quality of presenters at this conference. Advanced manufacturing does and will increasingly provide an important element in Australia's economic sustainability.

As noted, I represented the manufacturing centre of Wollongong in the Parliament of Australia during the massive economic and accompanying social restructuring that occurred with the downsizing of the steel and coal industries.

Watching the emergence of high-tech, high-skilled, global supply chain-linked new generation industries, particularly in association with the University of Wollongong, has underscored what your conference seeks to highlight.

Advanced manufacturing

Rumours of the death of manufacturing in Australia are greatly exaggerated.

In fact, provided we focus on the right type of manufacturing and the right type of support, it will continue to be a significant contributor to our economy.

However, for this to happen Australia's mindset about manufacturing must change.

While many associate advanced manufacturing with niche products such as biopharmaceuticals or defence technology, that is only one part of the picture.

The high-cost advanced economies that have had the most success in advanced manufacturing, such as Germany, Sweden and Switzerland, are those that recognise that it is not just about products – advanced manufacturing includes the full suite of activities from concept, research and development and design stage all the way through to post-sales services.

It is about adding value to the production line.

Today's successful manufacturers are enjoying a life very different to what has been known in the past.

Rather than the mass production and assembly of final products (traditional manufacturing such as steel and automobiles), successful Australian manufacturers typically engage in activities that are about variability, complexity and extensive customisation with high value add.

This usually involves low-volume, high-value manufacturing with a customer and export focus and nimbleness that allows manufacturers to provide a customised and responsive solution to the market.

There are many successful Australian advanced manufacturers and they typically have similar characteristics of being export-focused, customer-driven, innovative and technologically cognisant.

They are also generally good managers of global value chains (GVCs) - the complex and cross-border chain of activities from the conceptual stages to the post-sales stages of production – typically positioning themselves at the pre-production stage (e.g. research and development services) and engaging in high value-add activities.

Further, they tend to be small and medium sized enterprises (SMEs) and also have the distinction of rarely being profiled or discussed in the media.

And while on the subject, the perception of manufacturing in Australia has to a large extent been shaped by media reports about struggling manufacturers, who are more often than not subsidiaries of large multinational companies involved in high-volume manufacturing, and often poorly integrated within GVCs.

Compounding this is an ongoing debate about traditional industry assistance, which is typically aimed at luring large multinationals to Australia to engage in traditional manufacturing, an area where Australian manufacturers struggle to compete.

CEDA's report

With these comments then, let me turn to [CEDA](#)'s research report released in April entitled [*Advanced Manufacturing: Beyond the Production Line*](#).

The report specifically had as its focus an examination of how Australia can transition from traditional manufacturing to advanced manufacturing. The report clearly noted that knowledge-intensive manufacturing services such as research and development (R&D), after-sales maintenance for high tech products and the development of customised solutions for specific consumers points to where our future lies.

In reality, this transition to advanced manufacturing will most likely mean less overall jobs in manufacturing (although this has been the trend for some time now anyway). However, the jobs will be higher skill, higher paying and therefore make a bigger contribution to the economy.

The importance then to integrate education and training policies with industry and employer requirements for the future is vital.

Specifically, the report made a number of recommendations:

- Implementation of an Advanced Manufacturing Industry Plan to enhance the sources of comparative advantage for manufacturers and addressing structural weaknesses. This means government needs to take responsibility for ensuring the right macroeconomic and industry-specific conditions exist for manufacturers to take advantage of new and emerging opportunities to succeed. Industry must also play a pivotal role in enabling the transition, including sourcing capital for investment.
- To incentivise innovation among manufacturing SMEs, government should ensure that its innovation policy includes services innovation and that as part of this, collaboration policy includes service firms operating within a manufacturing context as well as manufacturing firms that provide services.
- To facilitate value adding innovative activities, government should foster collaboration by facilitating closer links between technical training institutions, universities and industry, which would help to overcome the cultural and other barriers that keep industry and research institutions from working effectively together. These measures could include tax incentives that foster R&D and commercialisation of research, or the creation of research funds dedicated to applied research.
- To enable advanced manufacturers to specialise in value adding R&D activities within GVCs and address the market failure in the uptake of innovation, government should introduce public procurement policies (consistent with our World Trade Organization obligations) for manufacturing SMEs aimed at innovative new-to-the-world products or solutions that will have the ability to add value.
- Industry should foster value adding innovative activities by improving collaboration:
 - Between industry and research institutions, including universities and CSIRO, with a view to increase applied research and innovation that can be commercialised; and
 - Among industry participants by introducing a system of restricting the benefits of innovation to those who participate to create, stimulate and grow industry clusters that drive innovation.
- To support a more complex manufacturing environment and address Australia's manufacturing skills weaknesses, government should:
 - Through its education, immigration and workplace relations policies ensure Australians are equipped with the skills conducive to an advanced manufacturing career, such as science, technology, engineering and mathematics (STEM) skills as well as management and service industry skills.
- To assist in the uptake of technologies that will enable manufacturers to compete globally, government should:
 - Ensure that its innovation and technology policies include incentives to improve technology literacy within the manufacturing sector, particularly for SME employees, with a view to boosting rapid adoption of KET and modern production systems for high-cost economies.

- On the supply side, government should ensure communications infrastructure is affordable and upgraded to provide the quality of service and security required by advanced manufacturers.
- To facilitate Australian manufacturers to successfully integrate in GVCs and take advantage of growing potential of knowledge-intensive services in manufacturing GVCs, industry should:
 - Develop a roadmap that embraces a high degree of export focus as well as customer responsiveness and service (providing a customised solution), with knowledge-intensive, high-value services (e.g. R&D) being a core competency either through developing in-house expertise in those services or partnering with professional services firms; and
 - Pursue cultural change within organisations through improved leadership of management teams.
- Government should provide a clear indication of its support for new and emerging high-value manufacturing, specifically by prioritising its trade policy negotiations towards services and its export promotion mission away from the sale of finished products to the sale of manufacturing services and solutions.
- Government and industry bodies should improve the perception of manufacturing by re-positioning the debate with the view to:
 - Highlight the achievements of successful advanced manufacturers who have capitalised on Australia's comparative advantage and move the debate towards benchmarking Australia against the rest of the world;
 - Promote Australian advanced manufacturers as increasingly successful players in GVCs; and
 - Attract and retain workers to a manufacturing career, particularly highly skilled workers and management.

Government industry policy

That then was the nub of our recommendations.

My contention is that government can and should adopt policies that actively facilitate the emergence and success of competitive, viable and sustainable advanced manufacturing industries.

If we are to make this transition successfully, there is a vital role for government, but they must be careful about how they support the manufacturing sector.

In a sense it is a little of 'on one hand this, on the other hand that'.

Cuts to funding that drive R&D and innovation, such as those to organisations such as CSIRO and the knock-on effects of massive changes proposed in higher education are potentially biting the hand that will feed our economy in the future.

Universities should be given incentives for research that reaches commercialisation to help forge stronger collaborations with industry, in the same way academics are rewarded for their work being published in peer reviewed journals.

We also need to see further industry collaboration, even among competitors, through research cooperatives, a model that has proven successful in agriculture.

Government public procurement contracts serves as a great example. Support should be prioritised for tenders that include Australian made new-to-world technology to drive innovation rather than accepting off-the-shelf products. This could range from new technology for road surfaces to healthcare equipment for our hospitals or submarines.

In respect to the latter, I was somewhat staggered to read a couple of weeks ago Prime Minister Abbott has refused to commit to allowing Australian companies to publicly compete to build the next generation of submarines, saying the last thing the navy wants "is a substandard submarine".

The point that has to be made here, particularly with respect to submarines, is that frontier research is undertaken in Australia in defence where a customised solution is required for a unique and complex problem.

What does a decision such as this say about the Australian Government's commitment to industry, advanced manufacturing, technology, R&D and growing industrial know-how? Not bloody much!

By cultivating new technology domestically it means better technology and infrastructure for Australians but also means we can then export and market this technology overseas. This also adds to the knowledge base/capacity of Australia that can have wider application, particularly with respect to the proposed innovation hubs.

Just as importantly it will drive a cultural shift.

Governments need to get smarter about how they support manufacturing and at the same time change what has been described as 'the handout culture' that has permeated parts of the industry.

Successive governments have put their hand in their pocket every time an industry has faced difficulty. If this is to change dramatically then governments need to drive a culture of innovation that will help deliver productive and sustainable industries.

It is critically important that governments take a long-term view of what our future industries will be when deciding how to balance the books.

Significantly then, CEDA's research report highlighted that we need to find a new manufacturing sweet spot and advanced manufacturing is without a doubt where that focus should be.

This view has now been reflected to some extent in the current debate among senior Australian economists and academics with respect to industry policy.

Popularly referred to as 'picking winners', anathema to the policy championed in the 1980s and 90s, this approach to economic policy, including industry policy, is now being championed as the only way for Australia to become economically competitive and to drive productivity.

On one hand people like Dr Ken Henry are criticising the obsession with an outdated concept of international competitiveness pervading Australia's policymaking circles. He claims what he calls an outdated narrative "Australian mercantilism" – which has been used to support Australia's major economic policy reforms for the past 30 years – is now crippling serious attempts to deal with some of our biggest challenges.

Peter Harris, Productivity Commission Chairman, has taken a more traditionalist view. While he concedes that some effort in previous economic reform, including industry policy, did indeed go into identifying potential winners, governments put much less effort than in previous decades into selecting them. Identifying winners was about populating the reform story with examples of opportunity, not skewing policy to support them.

In the light of this discourse it was therefore interesting that the Government recently announced an *Industry, Innovation and Competitiveness Agenda* – a business-focused element of its Economic Action Strategy – saying the policy was designed to lower business costs and encourage entrepreneurship while boosting skills and infrastructure.

One of its key initiatives proposes the creation of five new not-for-profit Industry Growth Centres to promote Australia's expertise and competitiveness in food and agribusiness; mining, equipment and technology services; oil, gas and energy resources; medical technology and pharmaceuticals; and advanced manufacturing sectors.

Another established a Commonwealth Science Council to improve engagement between industry, the public sector and research institutions.

Picking winners?

In my view this is an attempt at a comprehensive policy approach that tackles the very issues that are inhibiting Australia's international competitiveness and future prosperity. It is comprehensive in outlook and direction; recognises current deficiencies in STEM and vocational education and training; encourages innovation, R&D; and seeks to reduce regulatory burdens on business.

Conclusion

Notwithstanding the announcement of this agenda (policy) there is no doubt that Australia's prosperity will become increasingly subject to the pressures of the international marketplace. This will occur in an environment of heightened human and financial capital mobility and fast paced technological advances that can rapidly undermine sources of traditional comparative advantage.

Advanced manufacturing is alive and well. It does however need support, support that the Government appears to have identified, but has also risked through unwise budgetary decisions and potentially others as in the case of the next generation of submarines.

Thank you.