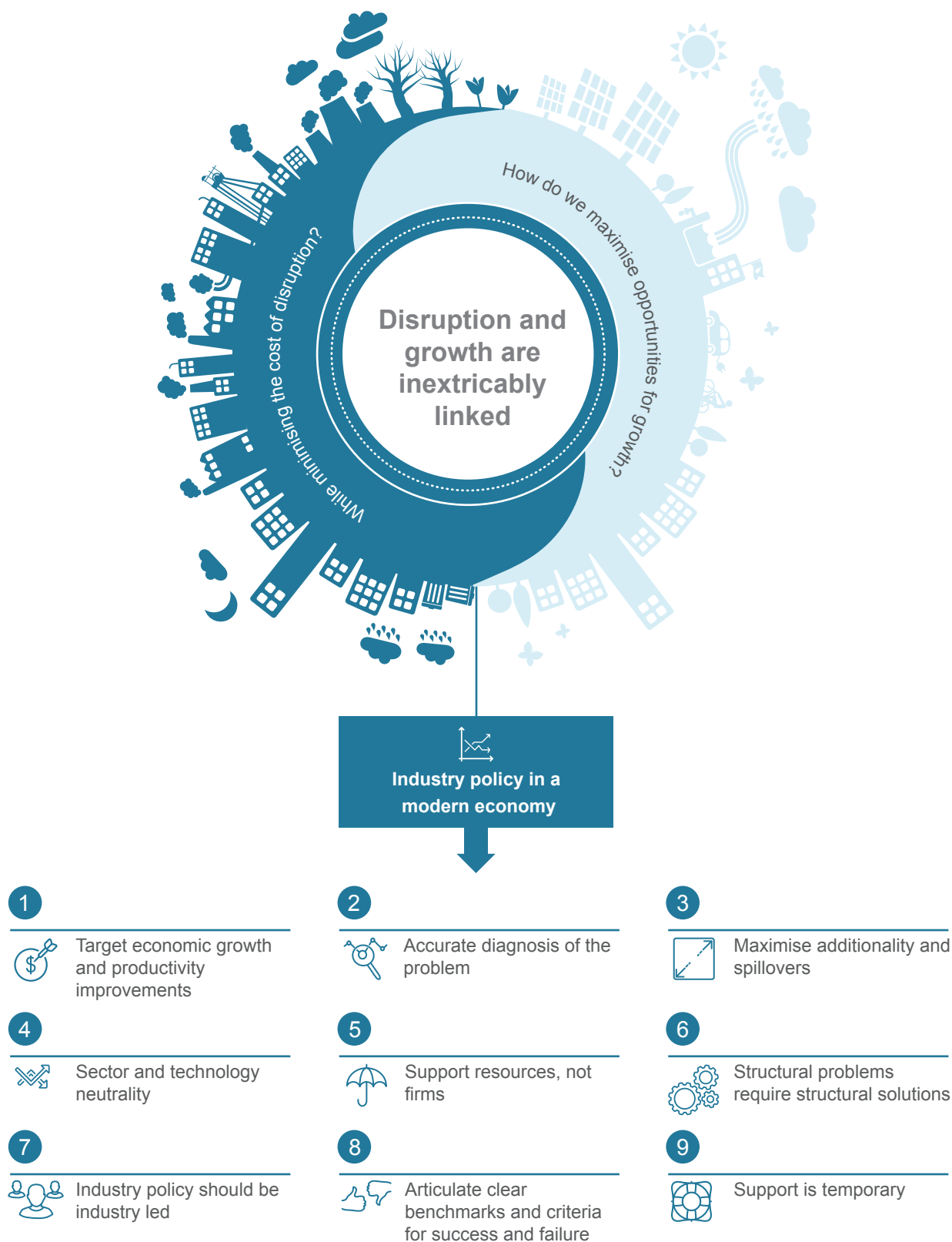


9

Enhancing Australia's competitiveness

A look at 'creative destruction' — the symbiotic nature of growth and displacement — and the role that industry policy plays in managing this process.





'Competitiveness' is a somewhat sweeping term, it means different things to different people. For a business, being competitive means being able to survive in the marketplace. For an economy, competitiveness refers to the ability to generate economic growth and improved living standards.

This report has explored some of these perspectives in an effort to support policymakers in designing and implementing industry policy in the future.

Competition leads to new products and processes, greater efficiencies and greater value. But it also causes disruption and structural change. The consequence of a fiercely competitive, global market place can be seen in every Australian industry — from agriculture, to manufacturing, to mining, to services.

For policy makers, the key question is about how to maximise economic growth, while minimising the economic costs of this disruption.

The feature article below discusses the role of industry policy in the modern economy. It has been written with Martin Baily from the Brookings Institution and draws on research commissioned by the department about policies to enhance Australia's innovation, productivity and competitiveness. That report is available from <https://www.brookings.edu/research/policies-to-enhance-australias-growth-a-us-perspective/>, and the key findings are as follows.

- Competitive markets provide the pressure that forces companies to change their ways of doing business and move towards best practices. Established industries in Australia should be exposed to best practice competition.
- Avoid regulation that restricts competition, or that prevents the transformation of an industry into a more productive format.
- Good industry policy encourages and supports innovation and can help develop the companies and industry segments of the future. Good policy provides support for knowledge creation and to overcome market failures.
- High quality efforts by business, academic and government researchers in Australia have identified industries and industry segments where Australia is building global advantage.

The feature article builds on this research and identifies nine principles to assist policy makers faced with the dilemma of encouraging innovation and growth, while managing the costs of adjustment and loss.

Feature article: Principles for industry policy in a modern economy

With Martin Baily — Senior Fellow, Brookings Institution

Economists use the term ‘creative destruction’ to describe the mechanism through which new products and processes replace the old. Coined by Joseph Schumpeter in the 1940s, the term describes how the market economy evolves, and reminds us that disruption and growth are inextricably linked.

Schumpeter writes:

The opening up of new markets, foreign or domestic, and the organizational development from the craft shop to such concerns as U.S. Steel illustrate the same process of industrial mutation... that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one.¹⁴⁸

Overall, creative destruction is a positive force on the economy. When firms and individuals innovate in pursuit of a competitive advantage they contribute to productivity and economic growth. In the long run, this drives structural change and improvements in the standard of living.

Growth, however, cannot be achieved without disruption, and the realities of this process can be severe. Entrepreneurs succeed by taking market share away from incumbents. Technology lowers the cost of production by taking the place of workers. Investors that choose to invest in one sector choose not to invest in another. Consumer preferences wax and wane, and so do their consumption patterns.

The economic viability of an entire region can be put at risk when it is too reliant on a particular business or industry. The closing of a large plant can trigger the direct loss of jobs followed by a decline along the supply chain, as well as for supporting services such as grocery stores or dentists. Retrenched workers may find the values of their homes have fallen at the same time as they are struggling to retrain or obtain alternative employment at anything close to the same wage level.

For policymakers, creative destruction is a double-edged sword, and managing creative destruction is easier said than done. Structural change generates pressure to support declining companies and mitigate the negative impact on workers. Governments are often called upon to intervene and dampen the effects of market forces.

Modern industry policy seeks to facilitate growth through competitive markets, a well-functioning innovation system and effective regulation. To this end, industry policy complements a range of economic and social policies including education, employment, trade, competition and science. This article provides some insight about how industry policy can be used to effectively manage this tension. It begins with a discussion about structural change and industry policy, and then proposes some key principles that policy makers should follow in its application of industry policy.

¹⁴⁸ Schumpeter J (1942) *Capitalism, Socialism, and Democracy*, Taylor & Francis, p. 83

Structural change in Australia

Structural change occurs in response to movements in relative prices. As the relative price of goods, services, and inputs, such as land, labour and capital move, so do the patterns of production and consumption. This results in a constant flow of resources around the economy as firms and workers attempt to realise opportunities when and where they arise.

Driving forces

Structural change is driven by a number of forces. The first is technology. Technology has had a transformative impact at every point along the supply chain. Examples include:

- advances in communications and data transfer technologies on global commerce
- robotics and automation on the production process
- computerised stock management systems and storage and delivery costs
- online retailing and the consumer interface.

A second force is globalisation. Globalisation has been facilitated and accelerated through policy and technology. Policy changes have reduced barriers to trade, capital flows and labour mobility, allowing markets to become increasingly interconnected. Technology has accelerated globalisation by reducing transport costs, and improving communication and information flows.

Third, consumer preferences. The Australian population is becoming larger, older and richer. Over the past four decades, the population has grown by nearly 9 million persons. The median age has increased by close to 10 years and per capita incomes have doubled.¹⁴⁹ These changes have had significant impacts on what Australian consumers demand — and consequently what market opportunities exist for business. In particular, this explains the increased demand for healthcare services, luxury goods and leisure activities.

And finally, government policies have been instrumental in triggering structural change. The competition reforms in the 1990s — reforms aimed at increasing the participation rate, trade liberalisation, changes to education policies and support for science and innovation — have each left a permanent mark on the Australian economic landscape. The implementation of efficient regulatory regimes and the erosion of protectionist policies over time have freed the economy to react to competitive forces and reallocate resources to their most productive uses. This has resulted in higher incomes, lower prices, greater choice and opportunities across the economy.

The nature and pace of future structural change is difficult to predict. However, it is reasonable to expect that the long-run drivers of change will continue. For example, population ageing, globalisation and technology advances are unlikely to cease or reverse any time soon. Rapid economic growth across Asia and the rise of its middle class will continue to provide investment and export opportunities for Australian businesses.

Structural change is both inevitable and a significant challenge. Without structural change, economies cannot respond to changes in relative prices, and therefore cannot achieve optimal allocation of resources.¹⁵⁰ Structural change supports growth in new sectors and markets, creates new high paying jobs and makes the economy better off.

¹⁴⁹ Committee for Economic Development of Australia (CEDA) (2015) *Australia's future workforce*

¹⁵⁰ See, for example, Department of Industry, Innovation and Science (2014) *Australian Industry Report 2014*, Chapter 2

However, for a number of reasons, resources are sometimes slow to adjust. Workers in particular take time to respond to changes in relative wages. The difficulties of relocating and reskilling can pose as a significant barrier, which can lead to unemployment and other inefficiencies such as idle machinery and equipment. Ensuring adjustment is efficient and timely is crucial for dynamic efficiency — where resources are efficiently allocated over time.

Industry policy is a powerful tool that governments use to help address structural change issues. The next section provides a definition of industry policy and provides a framework for thinking about its guiding objectives.

Industry policy

Unlike most other economic policies, there is little agreement about how industry policy is defined in the box below. Some describe industry policy in active terms, as a purposeful and deliberate attempt to shape the economy. Others describe industry policy as more facilitative — where good industry policies are those that support the functioning of markets.

Definitions of industry policy

‘Industrial policies are concerned with promoting industrial growth and efficiency.’ (OECD, 1975)

‘Industrial policy may be generally defined as any government measure, or set of measures, to promote or prevent structural change.’ (Curzon-Price, 1981)

‘...the term industrial policy indicates the relationship between business and government on a microeconomic level...’ (Wachter and Wachter, 1981)

‘...everything which is useful to improve growth and competitive performance.’ (Adams and Klein, 1983)

‘Industrial policy... means government policy aimed at or motivated by problems within specific sectors.’ (Tyson and Zysman, 1983)

‘Industrial policy means the initiation and co-ordination of governmental initiatives to leverage upward the productivity and competitiveness of the whole economy and of particular industries in it.’ (Johnson, 1984)

‘Industrial policies refer to those policies intended to affect in some ways manufacturing or service industries.’ (Graham, 1986)

‘...a wide-ranging, ill-assorted collection of micro-based supply initiatives which are designed to improve market performance in a variety of occasionally mutually inconsistent ways.’ (Geroski, 1989)

‘Industrial policy is an attempt by a government to encourage resources to move into particular sectors that the government views as important to future economic growth.’ (Krugman and Obstfeld, 1991)

Industrial policy is one ‘aimed at particular industries (and firms as their components) to achieve the outcomes that are perceived by the state to be efficient for the economy as a whole.’ (Chang, 1994)

Industrial policy ‘can be defined as any policy affecting the allocation of resources to industry and in this sense embraces both macroeconomic policy ... as well as the more traditional areas of microeconomic policy.’ (Sharp, 1998)

Industrial policy is ‘every form of state intervention that affects industry as a distinct part of the economy.’ (Foreman-Peck and Frederico, 1999)

Narrow view: 'Restrict attention to policies that target particular firms and industrial sectors.' Broad view: 'any policy that shapes or influences the competitiveness of a country's firms and industries.' (Beath, 2002)

'...restructuring policies in favour of more dynamic activities generally, regardless of whether those are located within industry or manufacturing per se.' (Rodrik, 2004)

Industrial policy is 'the activity which creates a favourable environment for European business in general, the manufacturing sector and its industries in specific.' (Aiginger and Sieber, 2005)

'Industrial policy refers to a set of measures taken by a government and aiming at influencing a country's performance towards a desired objective.' (Pitelis, 2006)

Source: Warwick K (2013) *Beyond Industrial Policy, OECD Science, Technology and Industry Policy Papers*, p 15

Neither view is necessarily more correct. Rather, these differences likely reflect how the emphasis of industry policy has developed over time. Historically, industry policy offered a suite of policies and programmes that sought to directly improve the viability of those industries under stress. In Australia, much of the structural adjustment in the 1980s and 1990s for example was due to policy decisions of the government. Microeconomic reforms, competition policy, the removal of tariffs and trade barriers, the floating of the Australia dollar and deregulation meant that some activities were no longer viable under heightened levels of competition.

The importance of opening up markets and letting competitive forces work. The driving force behind structural change today is the recognition of the value of the market — providing general assistance, but in a way that is market driven.

At its broadest, industry policy can be used to describe any type of intervention or government policy that attempts to improve the business environment or alter the structure of economic activity toward sectors, technologies or tasks.¹⁵¹ Notably, while it is useful to have a well-understood definition of industry policy, the utility of that definition is somewhat limited by its inclusiveness. Indeed it may be more useful to think about what industry policy is trying to achieve. Specifically:

- What is the nature of the problem that industry policy is trying to overcome?
- Is that problem sector-specific, or economy wide?

The first question regards the drivers of industry policy. Here the literature tends to emphasise the industry policy as being driven by either market or non-market forces. The difference is that in the latter, the government assumes a far more active role in shaping the structure and composition of the economy. In the former, the policy seeks to ensure that opportunities are maximised and that industry is not encumbered by supply side constraints.

The second question regards the application of industry policy. Industry policy can be applied either 'vertically' to sectors or 'horizontally' to activities.

¹⁵¹ Warwick K (2013) *Beyond Industrial Policy, OECD Science, Technology and Industry Policy Papers*, p. 15.

Vertical/sectoral — programmes and policies are focused on specific industries. Traditionally particular weight has been given to the manufacturing sector, but more recently this has been extended to include services, the knowledge economy, and so on.

Horizontal/activities-based — programmes and policies cut across sectors, targeting factor inputs and market failures. The concern here is more about the general economic environment that businesses operate within. Industry policy is used to promote competitiveness and economic growth broadly — specifically not favouring one sector over another.

Figure 9.1: A framework for industry policy



Source: Brookings Institution and DIIS

There is of course, no clear answer to either of these questions. In practice, industry policy is likely to be driven both by market and non-market forces, and have both vertical and horizontal applications. Policy drivers exist along a spectrum — somewhere between mostly policy and mostly market driven. And similarly for its application.

The answers to these questions can be combined in a way that describe industry policy's intent as being either directional, transitional, enabling or facilitative. Each of these approaches is described in Figure 9.1.

Economy-wide



Facilitative

Facilitative industry policy is market led and activity-based. Here, industry policy supports an environment in which competitive firms can prosper. This is achieved by ensuring market and systems failures are overcome, and that supply chains are clear of choke points. How resources respond to structural change is thereafter independent of policy desires.

The majority of the government's current policy measures seem to fall into this category. The R&D Tax Incentive, for example, is a programme designed to address underinvestment in R&D — a problem that exists due to a market failure regarding knowledge spillovers. The programme can be accessed by all firms, subject to eligibility criteria, regardless of industry. The decision about where to invest rests with the firm, and is not guided by government.



Enabling

The intent of industry policy can be considered enabling where it used to raise the economy's overall capability. This approach is policy driven in the sense that it requires the government to invest in the development or maintenance of particular set of capabilities. But is focused on activities rather than sectors.

The government's support for science is an example of industry policy with an enabling intent. This is a strategic investment, aimed at improving the nation's competitiveness in the future. The government's support for science is not aimed at a particular sector, but rather seeks to develop capabilities that can be employed across the economy. In doing so, this alters the set of opportunities available to the economy as it responds to structural change — and therefore also changes the set of possible futures.

In Australia, modern industry policy is increasingly ‘facilitative’ in nature. Particularly after the economic reforms of the 1980s and 1990s, market forces have been the main drivers of structural change. Successive governments have looked to strengthen how markets operate, and to overcome inefficiencies where they arise. Moreover, it is becoming increasingly less likely that policies seek to favour a sector or technology. Modern industry policy is far more neutral, looking to improve productivity at the firm level, as well as improve system wide failures.

Managing creative destruction with industry policy

Industry policy straddles both sides of the creative destruction coin. Industry policy helps to promote creation by ensuring competitive business environments and through support for science and innovation. Industry policy also helps manage the pains of disruption by helping resources to relocate elsewhere in the economy.

Creative destruction is both powerful and irresistible. Moreover, efforts to curtail its impact or limit its pace can be detrimental to an economy. The extent that industry policy can ‘manage’ creative destruction, is only likely to be at the margin.

Creation and innovation

Innovative activity has spill-over benefits that accrue to the broader economy and the relationship between innovation and productivity is well established.¹⁵²

Pure scientific research is on one end of a spectrum that stretches through applied research to product development. Pure research is a ‘public good’ that supports the economy because the knowledge is made available to all. In fact, research done in Australia can positively influence global scientific endeavours, just as Australia benefits from research done in other countries. Government support of pure science is important to ensure the strength of Australia’s universities and to make sure our scientists are a part of the global community of researchers. It is important to the economy because companies must be able to take advantage of scientific advances wherever they originate, and that means having access to a strong scientific community in Australia.

Further along the spectrum comes applied research that promises economic payoffs in the foreseeable future. There is an economic motivation for this research to be carried out in the business sector, but there are also important spill-overs that benefit the economy more broadly. The social returns from applied research are greater than those that can be expected to be captured by any single firm that carries it out. This means the incentive for a single firm to conduct such research is muted if their competitors can see the fruits of the research and apply it to their own products or services.

Knowledge is not always as homogenous and instantly adoptable as is assumed by neoclassical approaches. Knowledge is often heterogeneous, context-specific, tacit and ‘sticky’. Furthermore, the system of production and innovation is made up of formal and informal networks that may be inefficient in disseminating knowledge across the economy.¹⁵³

A key role for industry policy then, is to overcome ‘system failure’ and develop networks to maximise the potential of the system at large. Industry policy can be used to solve infrastructural and institutional problems, technological lock-in, path dependency and learning dynamics in the firm, local network and system levels.

Typical policies designed to address these problems include:

¹⁵² See, for example, Department of Industry, Innovation and Science (2015) *Australian Innovation System Report 2015*

¹⁵³ Ibid

- incentives and programs to improve collaboration between actors in the innovation system and internationally
- policies to ensure sound framework conditions — stable government funding for education, public research and science infrastructure
- policies to enhance access to finance for firms and entrepreneurs — programs and policies to enhance the innovative capacity of firms
- policies to foster entrepreneurship
- regulation and standards designed to facilitate innovation.

In terms of new-to-market innovations and collaboration on innovation, Australia ranks below the OECD average. Further, expenditure by Australian businesses on research and development is well below the leaders such as Germany, Japan and the United States.

To address this, the Australian Government has announced the *National Innovation and Science Agenda* (NISA), aimed at addressing the gap between the private and the social returns to applied research. The agenda includes more than \$1 billion in funding towards some 28 initiatives grouped around culture and capital, collaboration, skills and talent, and government as an exemplar.

Destruction and adjustment

Over the long run, Australia's economy has progressively become more and more service-based. A century ago for example, approximately one in three workers were employed in primary industries. Today, this figure has fallen to less than one in 30. In the 1970s, one in four jobs was in manufacturing. Today it is less than one in 12.

On balance the process is net positive. But that is not the same as saying the process is costless. Where resources are sticky, the economy can be slow to adjust, resulting in prolonged unemployment.

For those regions that rely on one particular industry, structural changes like these can have a significant impact on the local economy. Historically, Victoria and South Australia have relied on a strong manufacturing sector as part of their economic bases. Pockets of Queensland, Western Australia and the Northern Territory are heavily reliant on mining industries. Around the country, agriculture plays a critical role in the performance of many regional communities.

Schumpeter's view of creative destruction implicitly embodied the idea that labour and capital have alternative uses, and would not remain idle in the face of structural change. In practice, some workers who lose their jobs do not have other options anywhere close to where they are located. Especially if they are older, they can find it very difficult to relocate or retrain. They may have a large part of their assets tied up in a home that has lost value when a region's economy declines. There is a significant economic and social cost when resources go unemployed.

An economy can take many paths as it transitions from one state to another. Some paths might be considered 'better' than others, because they are perhaps quicker, require fewer resources, produce more outputs, or result in a preferred destination. Improvements in the efficiency of this transition brings growth in living standards over time. Industry policy can support improvements in dynamic efficiency by:

- helping to repurpose redundant resources
- supporting innovation and entrepreneurship
- investing in and using infrastructure efficiently
- facilitating trade with other countries
- improving physical and human capital investment.

Principles for designing future industry policy

Critics of industry policy are not difficult to find. Policy makers have been criticised for their inability to ‘pick winners’, the lack of competency and expertise, industry capture, gaming and even corruption.¹⁵⁴

While there are equally strong retorts, ‘good’ industry policy should nonetheless be mindful of these pitfalls.

Outlined below are some principles for the design of future industry policy. They have been adapted from Rodrik to fit the Australian context.¹⁵⁵ These principles are intended as a guide only, and there may be compelling specific circumstances where it is sensible to depart from them.

1. **Industry policy should target economic growth and productivity improvements.** The driving objective behind industry policy should be the promotion of economic growth. Policy can seek to achieve this through a number of means — encouraging exports, developing skills or supporting new businesses — but these efforts are means, and themselves the ultimate objective. Any new applications of industry policy should be accompanied by a clear economic case for intervention and supported by a strong evidence base.
2. **Accurate diagnosis of the problem.** For a number of reasons markets may fail to produce the most efficient outcomes. Correcting a market failure can require government intervention, and the nature of the intervention is dependent on the cause of the market failure. Policies and regulations must be able to clearly articulate the problem they are trying to address and an understanding of the relative benefits and costs — including opportunity costs — that might result. Moreover, it is critical that any intervention is implemented in a way that is efficient and welfare-improving.
3. **Maximise additionality and spillovers.** To the greatest extent possible, industry policy should incentivise activities that would not have occurred in the absence of government intervention. The R&D Tax Incentive for example, should aim to encourage additional R&D spending, not subsidise expenditure that would have occurred regardless. In a similar vein, supported activities should have a clear potential for providing spill-overs and demonstration effects. Public intervention can be justified if there are economic activities that are being undersupplied because the private actors are not capturing spill-over benefits.
4. **Sector and technology neutrality.** Industry policy should not seek to favour growth in one sector or technology at the expense of another. Economies do best when they focus on their areas of comparative advantage. Australia is a very large, resource-rich country, with a highly skilled but relatively small work force. This means that while Australia has some natural advantages, there are limits to what can be competitively produced. Attempts to develop new ‘strategic’ industries or sustain industries in decline can be a very expensive exercise, and not always successful. Accordingly, industry policy should steer away from investments that are sector or technology specific, and focus instead on developing capabilities that can be employed across the economy. Examples include better regulation, the establishment of well-functioning markets, improving managerial capabilities, and the development of core and transferable skills.

That said, it may be more efficient for governments to focus initiatives on specific sectors of competitive strength and strategic priority to achieve its economic policy goals. Moreover, a sector may have sector-specific market failures that are best solved by sector-specific approaches. The Industry Growth Centre

¹⁵⁴ Rodrik, D (2007) *One Economics Many Recipes*, Princeton, New Jersey

¹⁵⁵ Ibid

Initiative is an example of this. The Initiative is a sector-based mechanism the Government is using to pursue economy-wide objectives relating to collaboration, skill shortages, capability development and better regulation. Businesses generally organise themselves in sectors and this facilitates interaction between business, research institutions and governments.

5. **Support resources, not firms.** The potential for failure imposes a fierce discipline on firms to make smart business decisions. This discipline is undermined when there is a promise of government support and rescue should things turn poorly. The economic costs of a firm going out of business do not relate to the firm, but rather its former employees and assets. Industry policy should seek to ensure that resources can be re-employed in productive sectors as efficiently as is feasible.
6. **Structural problems require structural solutions.** One key question to ask is whether the troubled industry is facing a temporary problem, or whether it has permanently lost the ability to compete in the national or the global marketplace. There is little point trying to 'save' an industry that has no long-term future. There is a strong case for helping workers and their community deal with their adversity, but well-intentioned policies cannot turn back the tide. People may need help to move and find jobs elsewhere. A community may need help in providing services to those who choose to remain. However, it would be a mistake to give up on innovation policies that will help create the industries of the future in order to prop up the industries of the past for a few months or years.
7. **Industry policy should be industry led.** Policy will be most effective when there is a shared sense of ownership between government and industry. Businesses, industry associations and the research community are valuable source of information and intelligence about the realities of the market. Policy solutions should be designed in consultation with these groups to help improve implementation and help direct resources to the core of the problem.
8. **Articulate clear benchmarks and criteria for success and failure.** Industry policy can be an experimental process. Sometimes it is not clear how effective a policy might be. The best answer to this problem is that clear benchmarks be set out from the beginning and the criteria for success or failure laid out. There is merit in trialling new policies before taking them to scale. Clearly articulated success metrics are needed to ensure that policies can be sufficiently evaluated, such that they can then be expanded or terminated as appropriate. Failures can be highly instructive, and can point to directions for future successes.
9. **Support is temporary.** Industries that rely on public support are not sustainable in the long run. While there may be an argument to support an industry in its infancy, or through a period of transition, it should be well understood that support is time limited. Policies that include an explicit sunset clause help to makes this very clear.

Following these principles may be particularly difficult when issues are severe and localised. Their purpose is to provide policy makers with a set of overarching values that embrace structural change as a positive force on the economy. They help to provide consistency and coherency to how industry policy is applied.

Conclusion

Australia has just celebrated its 25th year of consecutive economic growth. The changes to the economy over this period have been dramatic. The economy has become more servitised, it has embraced the internet, and has adjusted to a range of market-embracing policy reforms. While some sectors have ascended, others have declined.

Looking ahead, a wave of new, transformative technologies sits on the horizon. Artificial intelligence, the Internet of Things, additive manufacturing, driverless automobiles, big data and quantum computing each have the potential to significantly change the economy. These technologies are a tremendous economic opportunity. They will also be the source of tremendous disruption.

The economy will continue to change and evolve. Modern industry policy plays an important role in how this occurs. Modern industry policy helps establish a competitive business environment where firms can take advantage of the opportunities before them. It also ensures that those affected by displacement are appropriately supported, and that resources are not left idle and unemployed.

To maximise Australia's economic potential, it is important that industry policy does not seek to minimise disruption. Rather, industry policy must embrace disruption and seek to minimise the economic costs of that disruption.

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