

Investing in long term productivity growth

Submission to the Productivity Commission's Five-year Productivity Review

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Having been involved in the first Productivity Commission's Five year review of productivity I welcome the opportunity to make a submission to the second review in this series.

Five years on productivity growth remains subdued

Five years after the first report, which highlighted a long list of still to do reforms that had been recommended by various reviews and pushed for a shorter list of prospective areas for reform, productivity growth rates have remained low. A short burst of labour productivity growth in 2020-21 was largely due to the rise in the ratio of capital services (up 1.4%) to labour (hours worked was down 0.5%). With the five-year average to mid 2021 at 0.18% pa real growth in productivity (increases in total or multifactor productivity) remains elusive.ⁱ Yet it is the essential driver of national prosperity and – to the extent that the gains are shared - economic well-being of the population.

In this submission I make the case that this long-term slowdown in productivity growth is due to a long-term underinvestment in the things that are essential for high productivity growth. These are reinvestment in the environment; making the most of the human resources; and investment in systems and processes that govern markets to correct for the many market failures – including a major failure to deliver outcomes that are fair.ⁱⁱ

Measured productivity growth largely treats environmental, human and institutional capital services as 'free' inputs

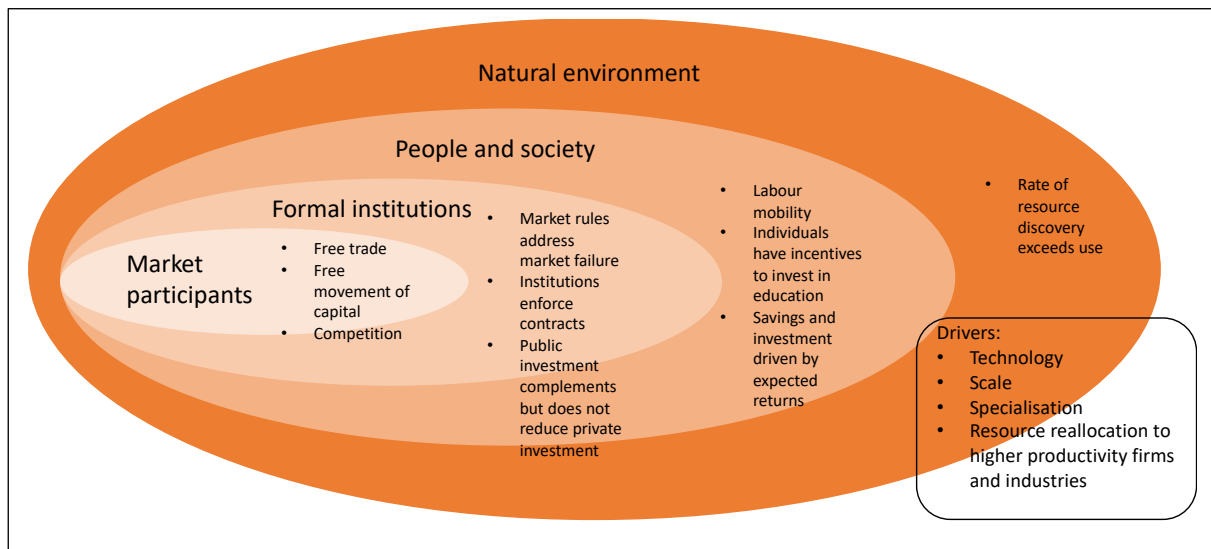
Most productivity growth (multifactor as well as labour productivity) is the result of past investment. This includes investment in exploration to discover mineral resources, investment in education and early childhood nurturing to build human capital, and investment in research and development that delivers new technologies and the capabilities to adapt and adopt technology. It also includes investments in systems that support the efficient allocation of capital, labour and natural resources. Very little of these types of investment get captured in the measurement of capital services, so measures of multifactor productivity reflect these past investments. They are also investments that have the potential for delivering dynamic efficiency – using the resources available to deliver the highest returns to the future, not just the current, population.

Failure to measure the services from these sources of capital result in a policy focus on static allocative efficiency rather than dynamic efficiency

Too much of the focus of productivity reform has focused on static allocative efficiency - putting the resources you have now to their most efficient use. This most productive use is defined by where the current market returns are greatest. This short-term source of productivity growth comes from: moving resources from low value to higher value uses;

better matching of labour and capital (complementary gains); and gains from specialisation and scale (application of existing knowledge to a greater volume that also allows adoption of more efficient technology). The drivers of these opportunities for gains are more open trade (between firms, states and nations) and competition, which provides the ‘improve or perish’ impetus, as well as constraining the pursuit of market power driven by the profit motive (Figure 1).

Figure 1 The underpinnings of static allocative efficiency



The growing literature on lagging and leading firms in terms of measured productivity suggests that the improve or perish impetus might be growing less effective as a driver of productivity growth.ⁱⁱⁱ The standard policy prescriptions are to restore competition, but while this would hasten some firm’s demise, it only improves productivity the resources in question are easily reallocated to the more productive firms. For reasons set out in this paper, this assumption is increasingly less likely to prove true and this dampens the creative destructive forces of competition.

Many of the recommendations in the first Five year review were about removing market distortions to static allocative efficiency. They remain important. But a focus on static allocative efficiency and use of market mechanisms to determine the optimal allocation of resources misses the big productivity picture – dynamic efficiency. It is here that Australia, and much of the developed world, are reaping the consequences of decades of under investment.

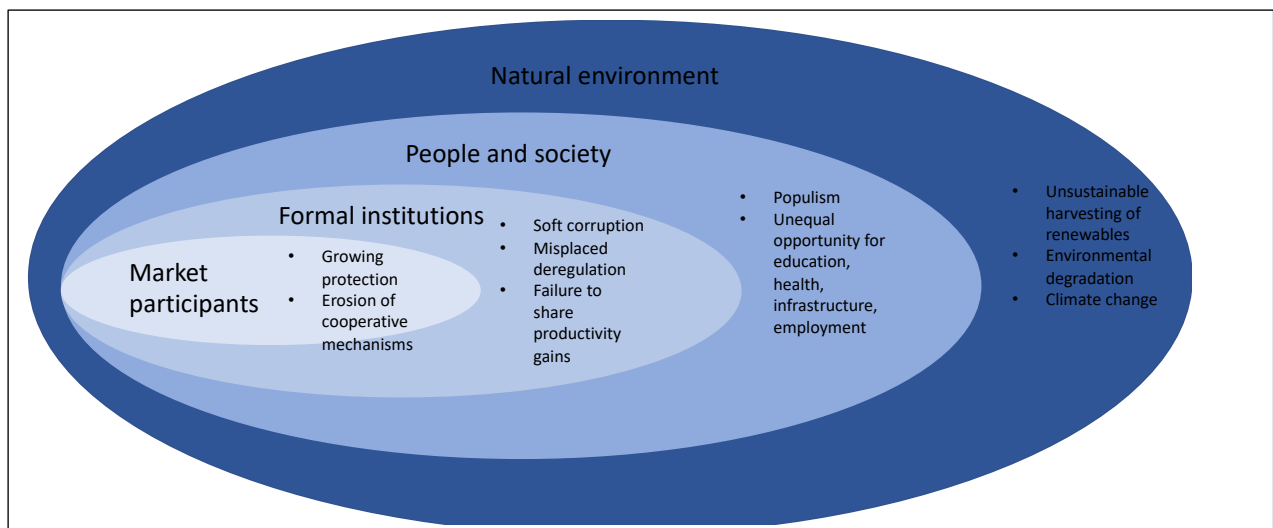
Shifting the productivity agenda attention to sources of dynamic efficiency

There are at least three fundamental areas where we need reform if we are going to build the systems, human capital, and physical and knowledge capital to generate long term productivity growth. The three areas are: environmental services; human capital; and the institutional systems (the rules that govern markets and the institutions that make these rules and enforce them), that are both supported by the population and discipline market behaviour.

It is our failure to invest sufficiently in these areas that lays behind the low productivity growth rates in developed countries. Part of this failure is due to the way in which the Washington Consensus^{iv} has been applied, which in seeking to leave the allocation to the market and get government out of the way of production and consumption decisions opened the system to one long recognised and one more recently recognised source of ‘market failure’. The old source of market failure is the capture by vested interests, who work to maintain their positions of influence and affluence, including through shaping the rules that govern the market. The new source is a consequence of the market efficient allocation aligning with inclusive growth outcomes only by accident and not by design. These factors are not independent, and they have compounded over time to the point where even the economics profession is recognising that a reset is required.^v

How these factors have undermined productivity growth (figure 2) and what to do about it is the focus of this paper.

Figure 2: Factors undermining long term productivity



Natural capital – providing environmental services essential for productivity growth

We have treated environmental services as free goods, but their depletion reduces productivity

Environmental services – whether clean air, rainfall, soil health, and products that we harvest – are a major input into production. But only the capital investment and labour required to extract and use them are measured as inputs for the purpose of production, so measures of productivity in industries that use these free services overstate the actual productivity of the industry. Rising rates of use appear as growing productivity, declining rates of use appear as slowing productivity.

We have used renewable natural capital at rates well above the rate that they can continue to provide us with the same level of environmental services. We have depleted the productive capacity of the fisheries, forests, water supplies, and the carbon budget in the atmosphere among other natural resources. This depletion contributed to productivity at the time – but has and continues to come at a cost to later productivity. We have also used

up non-renewable natural capital, some that is hard to replace, and some while abundant that is still more expensive to access (as the market dictates that we will use the easiest to access first). This means that all new developments in areas that are already developed will require more built capital to realise the same level of production. More inputs for the same output mean lower productivity.

An easy to understand example is dam sites, the most suitable are built first, so subsequent dams will generally be on less suitable sites. And now there are almost no rivers in the world that have not been dammed or diverted in some way. Population growth, as we add more people to the, at best, fixed natural resource also reduced the services available per person, even if the resource has not been degraded. For example, tertiary treatment of sewerage is now required in major coastal cities as the volume of sewerage can no longer be processed by the ocean. Desalination plants are needed to supplement rainfed water systems as demand rises, and where climate change has shifted rainfall patterns. A Productivity Commission research paper documents these and other examples in Australia's utilities industries.^{vi}

While many of the resources that have been depleted are local, others, such as fisheries, cross national boundaries, and some, such as climate change, are global. Addressing resource depletion that crosses boundaries will require developed countries to assist developing countries. We are morally obliged to do so, given that much of the depletion is due to the activities of the developed countries. But there is also a productivity case for assisting these countries as ultimately their growth is a source of our productivity growth by facilitating scale and specialisation through trade.

We need to take the long-term productivity cost of depletion into account in investment decisions – and reverse depletion of our renewable resources, including the atmosphere

Dynamic efficiency requires that we calibrate our use of resources to a sustainable level – which means thinking about the investments we need to make alongside our use of resources to ensure that they can keep delivering the environmental services so essential for productivity growth as well as our well-being. We have the tools to make these assessments but have not applied them – likely because we preferred not to acknowledge the problem. But ignoring the problem does not make it go away, so we need to put natural capital accounting in place.

Natural capital accounting is an essential step to support green finance and carbon markets

Australia has been at the forefront on measuring natural capital, with the ABS developing a green national account some years ago. But we need more investment in measurement and reporting, which remote sensing and digital technology is making easier and cheaper all the time. We also need the development of global accounting standards, which is an area that Australia is well placed to promote in international fora. Natural capital accounting is also essential to engage the tools needed to price in the cost being imposed on the environment. It also underpins efforts to develop green finance and carbon markets, both areas where while Australia makes lots of encouraging noises it puts little resources towards their development. The Australian Government also continues to implement policies that actively undermine the market confidence essential for investments that seek green finance.

Investments are needed to minimise the environmental impact of population growth

Population growth inherently reduces the services available per person, so built services, which are counted as inputs into production, will increasingly be needed to replace the naturally bounded environmental services. Concerns about migration are often driven by the underlying competition for natural resources – land for housing, land for roads, water, sewerage and sanitation services as well as congestion in the built services that use these resources. A wholistic approach to planning investment to accommodate population growth, to conserve the natural resources that support the population, and to protect and restore where possible the natural environment, makes sound sense from an economic productivity perspective. These types of investment, not least in reducing carbon emissions to keep warming below 1.5 degrees, need to feature as a priority in any productivity reform agenda.

Human capital – making the most of all our population

Investment in education has long been recognised as a major driver of economic growth. Primary educated labour is highly complementary to relatively low technology manufacturing, and as we move up the technology scale – in all industries – higher levels of education are required to get the full value from technology. This is as true for services and agriculture as it is for manufacturing and mining. Take aged care, not only does the worker require compassion they need to know and respond to their client’s medical and care needs, which requires good literacy and numeracy and in many cases use of computer technology. Investment in life-long learning requires foundational skills in literacy and numeracy, and is growing in importance as the pace of technical change accelerates. But while efficient and effective investment in education was a theme in the previous Five year review, it failed to address a major problem with Australia’s education system – which is that it is highly segmented and fails to give too many Australian children a fair start in life.

The strong productivity growth in Australia in the 1990s, while largely credited by the Productivity Commission to Competition Policy and other microeconomic reform^{vii} was at least partly due to the very large investment made in the 1970s and 1980s in human capital. The Whitlam reforms to higher education opened up access to university to a large number of talented people who would otherwise not have gone to university. The reforms to reduce the gender pay inequity and sex-based discrimination created incentives and opportunities for women to pursue a higher wage career. These changes, along with more competitive labour markets, made investment in education worthwhile for more people. Combined this meant that the talent pool expanded dramatically – an investment that paid off in higher productivity growth in the 1990s, complementing the boost in technology that opening markets and welcoming foreign investment brought.

We have an opportunity to invest more effectively in human capital by reducing inequality in education and giving all children a good start in life

We have an opportunity to create a similar boost in the future by addressing the growing problems of inequality in access to and the quality of education from early childhood to higher education.^{viii} The Australian education system is leaving a growing share of our future labour force without the foundations to be highly productive. Dynamic efficiency needs us to ensure that: all children start life with their full potential; they have the education

throughout their childhood to fulfil this potential; and that they get to opportunity to apply that potential in careers that deliver good wages because they are in valued work.

The segregation of the Australian education system into private and public, elite and non-elite schools, and by cultural and linguistic backgrounds is undermining future productivity growth by limiting the opportunities for many children in the education they get and by curtailing their expectations. Changing this system is not easy, but it is essential that the state and territory and federal governments change the way education is funded to reduce the inequities and change the incentives for parents so that they value diversity and do not seek to educate their children with other children who are just like their own. Children do not come with inherent biases, so this type of policy shift will have positive effects on inclusion through a reduction in discrimination as well as making best use of the raw material that makes up our stock of human capital.

Engaging civil society in policy, systems and institutions that discipline markets

The reforms of the 1980s and 1990s moved Australia from a protected and controlled economy, where much of the production of utilities and key areas such as transport were government owned, to a more competitive and market driven economy. These reforms allowed the market to allocate resources more efficiently, and delivered substantial productivity growth through the 1990s, averaging 1.4 % per annum over 1994-95 to 2004-05. This rapid growth was possible as Australia's actual productivity was well short of our potential – and reflects a level shift rather than a permanent rise in the growth rate. But the subsequent average growth of 0.4% from 2004-05 to 2018-19 was well below the long-term average of 0.8% from 1974-5 to 2018-19.^{ix}

Our global and local institutions have been failing to provide the right settings for digital technologies to boost productivity growth

Australia is not alone in the slowdown of productivity growth, many in the developed economies have been asking why the digital revolution is not delivering a boost usually associated with the adoption of a significant new technology. The previous Five year review examined some of the reasons why the digital transformation had yet to deliver, which ranged from measurement problems, to consumers capturing much of the surplus, to digital only being incremental and fundamental technology revolutions being exhausted. There is, however, a deeper reason why the market is not delivering the gains that digital technology promises.

Our institutions that govern the market have failed to provide the market disciplines and cooperation required for digital technologies to add the value that they have the potential to do. This requires global cooperation, as digital technologies are not nationally bounded, data needs to flow across borders, and open standards are needed for interoperability and market contestation. Our institutions have failed to adequately address the network externalities, the market power granted by technological dominance, the purchasing power used to buy out the competition, and the inability to hold the market players to account for the harm caused, whether by data breaches and misuse, or by facilitating social unrest. Nor has there been the much-needed international cooperation to impose discipline on the big

tech players, or to facilitate drivers of productivity growth through cooperation on data sharing and use protocols, technology interoperability, and digital standards. Australia is only a small player in this, but has a major interest in working with other countries to push for greater openness and cooperation. A bifurcation on digital technologies along geostrategic lines is not in our national interest.

Protectionism and geostrategic competition lie behind the erosion of the multilateral economic institutions ability to impose market discipline

The slowdown of growth in global trade following the global financial crisis has been another weight on the rate of productivity growth. In the United States and elsewhere the rise in protectionist sentiment stems from the policy failure to redistribute the gains to trade and to technology across the population. The reaction to the rising economic weight of China by the United States was unilateral action in unrealistic trade deals. The United States resistance to adjust to the changing economic balance, along with aggressive behaviour by China, has undermined the multilateral organisations that supported confidence in trade and investment relationships. This neglect of the international institutions further undermines the potential productivity growth around the world as gains to trade remain the best 'free lunch' available.

Domestically, the deregulation agenda has ignored the scope for externalities and cost shifting

A policy pendulum that has swung too far toward self-regulation, at least in some industries, is also costly to productivity growth. One worrying example is the number of high rise apartment blocks in New South Wales that are now too dangerous to live in – an investment in capital that has failed to deliver capital services, along with the distress this has caused the residents. The deregulation agenda needs to be replaced with a right size regulation agenda – some need more, some less, and all need attention to how to reduce the transaction costs that sap productivity more than compliance does.

The expansion of 'soft' corruption, decline in the ability of media to hold government to account, and undermining of the professional public service, reduce the effectiveness of the rule making and rule enforcing system that is meant to discipline markets

There are bigger problems with the policy making and institutional system than failure to keep up with the challenges of regulating digital technologies, the decline in the effectiveness of international institutions, and poor outcomes from self-regulation. A free press, binding constraints on political donations, transparency in decision making, and the ability to impose sanctions (legal, market or social) on those who act outside the public interest are instruments that deliver more effective government policy and efficient regulatory institutions. These drivers of effective government policy have been eroded over the past few decades in many developed countries. Reversing this trend is a first step in developing the institutions required for markets to work efficiently – so has long-term productivity implications.

While the economics profession has been reticent to push for these fundamental reforms, which are also essential for democratic systems to function well, none of this is news to those seeking to make markets work more effectively to improve productivity. What is new

in the economics discipline is the recognition that the policy making systems need to respond to societies desires for a system they see as fair.

Market outcomes are increasingly being seen as unfair

The market is indifferent to the fairness of outcomes. The digital revolution and the value of digital networks and data has seen the widening of the wage distribution and scarce technical skills at high productivity firms attract higher and higher salaries. The shift of more economic activity to the caring sector, which is inherently labour intensive with high levels of government funding and regulation, has seen the creation of more low wage jobs. The automation of manufacturing and mining jobs has seen these industries grow while their workforces shrink. These shifts, as well as competition from lower wage countries in industries that had traditionally paid good wages to blue collar workers, has resulted in a wage distribution that many view as unfair. While others would argue that the market rewards those who invest in their education and who work hard, this presupposes that everyone has the same opportunity for a good education from early childhood on, the same positive peer influences and family support, and face jobs market that does not discriminate on gender, ethnicity, disability, and other differences.

People are willing to trade off economic growth for fairer outcomes

Recent research is pointing to the pandemic as being a watershed moment for the economic paradigm. The economics discipline has historically focused on advising policy makers to correct the market failures of asymmetric information, missing and incomplete markets (which make addressing many externalities impossible), and market power. It has long been concerned about the market capturing the government institutions through lobbying and the soft corruption of buying influence.^x But more recent research acknowledges that the market is amoral, but people are not – they care about fairness. This work recognised that the people who are the market players, who provide the labour and consume the products, care about the type of society they live in and their connection to their community. These forces shape the role they want government and markets to play in their lives.^{xi} The new policy frameworks being developed are driven from the perspective of engaging with civil society and these attitudes to find policy solutions that get wider acceptance because they are seen as fair.^{xii} This work is often framed as returning economics to its moral philosophy foundations.

Fairer outcomes deliver more support for the market system

What these frameworks miss, which is the thrust of this paper, is that getting this policy balance right matters for longer term productivity. It is not just a moral question, there are dynamic efficiency outcomes that rely on both the government and market system being seen by most of the population as fair.

Most people appreciate the result of effort, and don't mind people benefiting from good luck. What they want to be assured of is that the processes that led to the outcomes is fair. That everyone had a chance at some point in the process to be heard, to acquire the skills and knowledge to participate in the process, or an equal chance to the lucky outcome. This fairness includes equitable access to environmental services for production and to enjoy and knowing that their children's children will also be able to enjoy these services. Only when

they see a system as fair will they support the institutions that make and enforce the rules - that governs on their behalf.

Fairer outcomes also mean a higher share of market production goes to improve wellbeing and future productivity

The OECD has defined expenditures that are required to prevent and mitigate the impact of harm as 'regrettable expenditures'.^{xiii} While they contribute to GDP, our wellbeing would be higher if they are not required. Inequality and civil unrest raise the share of GDP that goes to regrettables. These expenditures also undermine long term productivity growth as they reduce the resources going to investing in the things that will raise productivity – human capital, technology, and institutions that support innovation.

Expenditure on security and defence fall into the category of regrettables – while some level is essential and may well have other positive benefits, dedicating more government and household resources to these areas reduces spending on other things that contribute to well-being. Increases in defence spending at a cost to spending on basic R&D also undermine productivity growth, as R&D spending has been found to have a positive impact on productivity while defence spending has had no impact in Australia.^{xiv}

Where to for global productivity growth?

Australia's prosperity has and will continue to depend on the demand for our commodity exports for the foreseeable future. As a result productivity growth in the rest of the world, through countries catching up to the productivity frontier, as well as how fast the frontier is pushed out, will largely determine our economic growth rate. On both these fronts, the outlook is not encouraging, which is why it matters so much that we look to improving Australia's productivity now and for the future.

Globalisation, while it has disruptive effects on groups within countries, as discussed above, has delivered strong global economic growth. This has lifted millions of people, many in South and East Asia, out of poverty. The application of capital and technology to an underutilised labour supply, which shifted from agriculture to manufacturing, resulted in massive growth in labour productivity – and is key to the Asian miracle. Through trade Australia has benefited greatly from this massive economic growth in our region.

Australia needs to push for reform in the multilateral economic institutions that accommodates the changing global economic balance

Unfortunately, growing concerns about the effects of global trade on local jobs in developed countries, the disruption to supply chains during the pandemic, and exercises in the weaponisation of economic relationships have undermined the narrative that free trade and globalisation are the means to prosperity. The failure to invest in the evolution of international institutions that govern trade and investment to accommodate shifts in economic power, while retaining the capacity to discipline misuse of that power, further undermines the narrative. While it is not too late to evolve to more effective cooperative international institutions efforts are hampered by the great power rivalry. Middle powers,

like Australia, need to act cooperatively to pursue reforms that are essential if global trade and investment are going to drive productivity growth around the world.

Australia needs to contribute to pushing out the global productivity frontier in order to be able to move faster to this frontier

At 0.17% of GDP in 2018-19, Australian governments' investment in R&D is low, and at 1.875% in 2017, down from 2.4% in 2008, overall R&D investment is well behind many other OECD countries. Investment in R&D has also been down in many OECD countries. US R&D investment declined after the global financial crisis in 2008, with the downward trend only reversing from 2015 to be 2.8% in 2018. Investment has been further boosted by the Biden administration, but there is usually a lag between basic R&D investment and application in production, so this slump in R&D investment will drag on frontier productivity growth for a while.^{xv}

China's rapid expansion of investment in R&D makes up for some of the decline in other countries. However, to the extent that this investment is about finding alternatives to existing technologies denied to China, rather than progressing technical knowledge for the benefit of all, global potential productivity growth will be lower for the commensurate level of overall investment. Global cooperation on technology, and regulatory support for the open-source revolution in computer code, is needed to deliver the greatest gains for R&D investment. However, the pandemic has accelerated the protectionist trend in technology as countries seek to secure supply chains and reduce their exposure to cyber incursion. These trends, like the ramp up in defence spending, do not bode well for global productivity growth.

Australia is largely a technology taker, and so our productivity growth rises when we are converging on the frontier – adopting and adapting technology developed elsewhere as well as developing our own. But the capacity to adopt and adapt technology depends on our engagement with the leaders in any area of technology. This requires being part of the basic R&D efforts, which builds our human and technical capabilities to be early in application development. Without this foundational set of capabilities Australian researchers and businesses have limited knowledge of new developments and lack the skills and the equipment to advance its application. A higher level of novelty (new to the world and new to the firm innovation) has been found to help Australian firms increase market share, increase exports and create positive spillovers.^{xvi} Our underinvestment in basic R&D, lack of linkages between business and research institutions, and low numbers of highly trained scientists, mean we struggle to deliver innovation so important for both contributing to expanding the productivity frontier and reaching it. The solution to this is a reversal of the push to target research funding to the applied end for a more balanced approach that focuses on building the foundations in our research institutions and engaging industry on the application side.

A reform agenda for long term productivity growth

While there are still productivity gains to be made through improving allocative efficiency, not least in lifting the long tail of low productivity firms closer to the leaders, we need to start turning the ship of state in the right direction for long term productivity growth. This

requires actions to improve our government and institutions, build real opportunities for all our population, and investing in sustaining our natural environment and in creating healthy, educated and engaged communities. It needs government to tackle the challenging problems – many of which we know how to address but lack the political will. And it needs the community – civil society – to support governments to impose short term costs for long term benefits, and for the losers to be willing to accept that their current advantage cannot continue, while providing them with new opportunities.

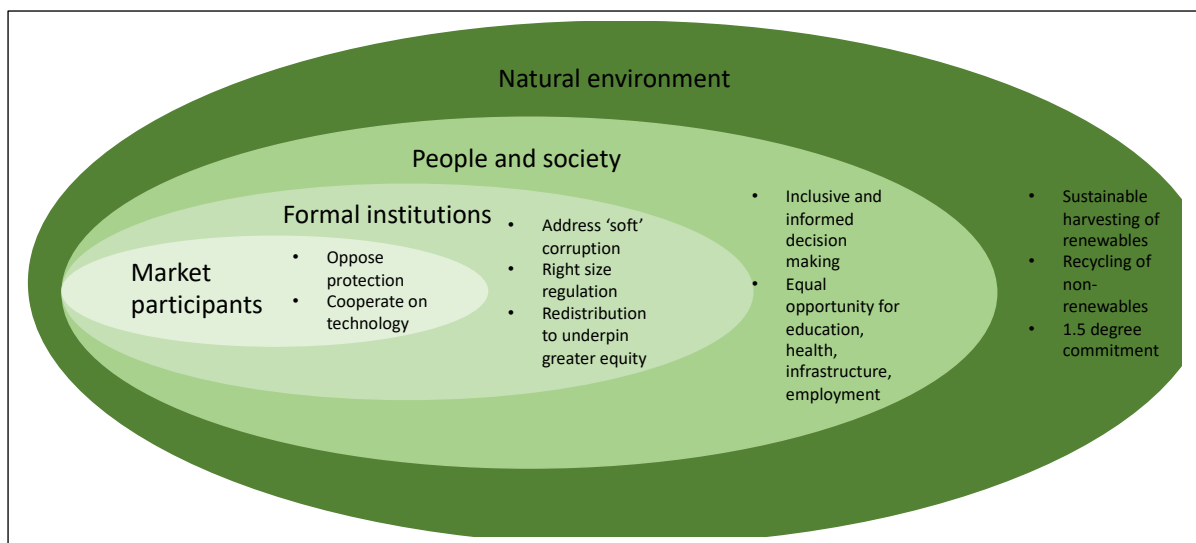
It is not rocket science, but it requires moving away from belief in simple solutions and siloed approaches to reforms. This needs new ways of making policy, with clear overall objectives (figure 3). This is a policy reform agenda that:

- weighs the long-term costs against short term benefits for society now and in the future, and not just a narrow set of interests – a 7% real discount rate is no longer appropriate, if it ever was for many policy decisions
- recognises the complex systems in which policy actions play out – and seeks to build on as wide a knowledge base as possible to ensure that all costs and benefits, risks and opportunities are considered, and ongoing learning about how a policy is playing out embedded in the policy design – we often don't know enough to have confidence on the policy outcomes, so building evidence to understand is ongoing
- builds in institutional evolution and works to allocate responsibility for rule setting and enforcement to the levels and institutions that are best placed to undertake these responsibilities, as well as ensuring communication and collaborative mechanisms are in place – more thought is needed on which level of government and/or mini-lateral or multilateral institutions are best placed to deliver policy decision
- ensures that the population is well informed and participates in decisions that affect them directly, and their views are sought where the effects are indirect – this starts with honest communication, and providing accurate information through the sources that the communities trust
- is proactive in redistribution of the gains to trade, technology and other sources of productivity growth – this includes addressing the harms to those who the market leaves behind. But this is more than income redistribution, it is about opportunity redistribution, which is a long-term process. Investment in reducing inequality in education, health, and access to infrastructure is a precondition to being able to ensure opportunities can be geographically redistributed.

The Productivity Commission is well placed to support a process of change in how policy is made. But it will require a shift in policy making approaches that empower public service agencies to cooperate to design a policy that can deliver on the objectives set by the Government of the day. These processes will need to be built through trial and error, so should start with a few critical areas that need cooperation to turn the policy ship. I would nominate reducing the segregation in our education system and making our tax system efficient and fairer as two areas that need a comprehensive package approach. Reviews led by notable people can be cherry picked or ignored. Rather a team of experts from across federal and state agencies need to be tasked with developing a long-term plan to move toward these objectives.

The process must be transparent and apply a public education and engagement process to both learn from and inform the population. Media need to be educated so that they can engage with the groups that will be both positively and negatively affected by the changes. The ‘can you guarantee that no one will be worse off’ question needs to be replaced with questions that go to how the policy program will work, and why is it fair for this group to win at the expense of another group. Bipartisan support on the desired outcomes would remove a major barrier to these reforms, but it is up to the Australian people to demand this of our politicians in order to reverse the trends of environmental degradation, underinvestment in a large share of our population’s human capital, and deteriorating institutions that have been eroding our productivity performance.

Figure 3: Actions to grow long term productivity



ⁱ Productivity Commission 2021, *Australia's Productivity Performance*, accessed 1 March 2022. ABS Estimates of Industry Multifactor Productivity, December 2021

ⁱⁱ I am in good company in this recognition of the need make markets work better for inclusive growth. Jean Tirole in *Economics for the Common Good*, Princeton University Press, 2018 explains the moral limits of markets. One interpretation is that the resulting inequality is just as much a source of market failure along with information asymmetry, incomplete (and missing) markets, externalities (a special case of incomplete markets), public goods (a special case of externalities) and market power. Australian academics Richard Holden and Rosalind Dixon (forthcoming) in *Fair Markets: Liberalism after COVID-19*, Oxford University Press, provide policy solutions to many of the issues raised in this paper.

ⁱⁱⁱ The OECD firm level datasets have provided evidence of a growing gap. See for example, Dan Andrews, Chiara Criscuolo and Peter Gal, "The best vs the rest: The global productivity slowdown hides and increasing performance gap across firms", March 2017

^{iv} The Washington Consensus is a term used to describe a set of ten standard policy prescriptions that are set the foundations for open and free market economy. They include privatisation, independent monetary policy, deregulation of barriers to entry and exit, and securing property rights. They were supported by the major multilateral economic institutions in their policy prescriptions but have been challenged by the Global Financial Crisis and the rise in populism. The broad thrust remains essential, but the application is becoming more nuanced.

^v It is less what economic theory says and more in how it has been interpreted in the 'Washington Consensus'. For an excellent explanation see Dani Rodrik, "Rescuing Economics from Neoliberalism" Boston Review, 2017, <http://bostonreview.net/class-inequality.dani-rodrik-rescuign-economics-neoliberalism>.

^{vi} Productivity Commission Staff Research Note, “On productivity: the influence of natural resource inputs”, June 2013. The rate at which countries are using up their natural resources is documented in World Bank, *Changing Wealth of Nations*, October 2021. This reports a very worrying 83% reduction in the global value of marine fish stocks from 1995 to 2018, among other concerning data.

^{vii} Productivity Commission Research Paper, “Microeconomic Reforms and Australian Productivity: Exploring the links”, November 1999.

^{viii} Lamb, S, Huo, S, Walstab, A., Wade, A., Maire, Q., Doeckel, E., Jackson, J., and Endekov, Z., “Educational opportunity in Australia 2020: Who succeeds and who misses out?”, 2020, Victoria University Centre for International Research on Education Systems.

^{ix} Productivity Commission, *PC Productivity Insights*, February 2020, ISSN 2652-5461, No. 1/2020

^x A recent book by Yuen Yuen Ang, *China’s Gilded Age: the paradox of economic boom and vast corruption*, Cambridge University Press, 2020, categorises corruption into four types. One type, which is mostly legal, is the purchasing of influence or access, such as bribes to access land, credit and so on. This type of ‘access money’ can facilitate economic growth in systems where institutions are slow and inefficient in providing permission for the use of resources. However, the costs of such access money rise over time as access become increasingly related to financial capability and in-group relationships and excludes potentially high productivity ideas and people from accessing resources or the market.

^{xi} A recent *IMF Finance and Development Issue* (March 2022) provides summaries of a number of papers challenging the economic community to bring the lessons from evolutionary moral psychology into economic theory. Paolo Mauro, in “Adding Ethics to Public Finance” in this issue cites empirical work is showing that attitudes to policy depends on how people relate ethically to their community compared to how they relate to those outside their community. Policies that benefit those outside their community are more likely to be resisted by people who have strong communitarian attitudes, while more likely to be supported by people who are more universalist. For example, the resistance to progressive income tax is stronger from communitarians than universalists. However direct experience of misfortune, and information that clarifies policy understanding, have been found to change attitudes about reallocation to those outside their community.

^{xii} For example, see Bowles, S. and Carlin, W., *Rethinking Economics*, in the *IMF Finance and Development*, Spring 2021.

^{xiii} OECD, 2013, *How’s Life? 2013, Measuring Well-being*

^{xiv} Elnasri A; Fox KJ, 2017, 'The contribution of research and innovation to productivity', *Journal of Productivity Analysis*, vol. 47, pp. 291 - 308, <http://dx.doi.org/10.1007/s11123-017-0503-9>

^{xv} ABS, Research and experimental development, Government and private non-profit organisation, Australia, released 19/06/2020.

^{xvi} Majeed, Omer and Breunig, Robert V., Determinants of innovation novelty: Evidence from Australian administrative data (August 31, 2021). *Tax and Transfer Policy Institute - working paper 15/2021*, Available at SSRN: <https://ssrn.com/abstract=3918065> or <http://dx.doi.org/10.2139/ssrn.3918065>