



ANALYSIS

China's economic choices: Where to from here?

David Orsmond

December 2019

LOWY INSTITUTE

The Lowy Institute is an independent policy think tank. Its mandate ranges across all the dimensions of international policy debate in Australia — economic, political and strategic — and it is not limited to a particular geographic region. Its two core tasks are to:

- produce distinctive research and fresh policy options for Australia's international policy and to contribute to the wider international debate
- promote discussion of Australia's role in the world by providing an accessible and high-quality forum for discussion of Australian international relations through debates, seminars, lectures, dialogues and conferences.

Lowy Institute Analyses are short papers analysing recent international trends and events and their policy implications.

The views expressed in this paper are entirely the author's own and not those of the Lowy Institute or the institutions with which the author is affiliated.

EXECUTIVE SUMMARY

China's economic progress is slowing. A rapidly ageing population means its demographics are becoming increasingly unfavourable, and China has reached the limits of its traditional reliance on investment and exports to fuel rapid economic growth. The key question is what comes next. Continuing with the same approach risks a further decline in the pace of growth. This would create major difficulties for its highly leveraged economy, disappoint the growth expectations of its populace, and add to the internal and external economic risks that are already evident. Deep reforms will be required just to sustain a trajectory of 5–6 per cent growth over the coming decade.

Beijing's current policy strategy, with its focus on domestic innovation and protecting the privileged status of state-owned enterprises, is unlikely to prove sufficient. Nor will an overly narrow focus on resolving the current trade disputes with the United States. A better approach for China is to emulate the strategy behind the successful economic transitions of Japan and Korea – shifting its focus towards the economy-wide absorption of mature technology, fostering private competition, and exposing China's state-owned enterprises to efficiency targets. To sustain a conducive international environment, bold public steps to shore up the global trade and investment system will also be critical.

None of this will be easy, since it will require the deft handling of a new set of winners and losers compared with the status quo. Nonetheless, the reforms required to sustain a strong growth path over the coming decades are all firmly within China's grasp and not reliant on the actions of other countries.

INTRODUCTION

China's economic progress has been remarkable. Annual growth has averaged close to 10 per cent for forty years, and the level of output now exceeds \$US16,000 per person.¹ At the same time, life expectancy and literacy rates have increased sharply, the number of people living in abject poverty has fallen by more than 800 million, and millions of households have moved into relative affluence.² China's impact on the world economy has also been substantial, with China now the largest trading partner for almost 60 countries, including Australia.³ Yet with millions of households still living well below a middle-class lifestyle, further rapid growth will be needed to lift average living standards towards those in advanced economies over the coming decades.

However, continued economic progress is not preordained, especially for emerging economies. Each successive growth phase in the transition from low to high income levels requires a new approach and the deft handling of complex and evolving social and political challenges. China is again at such a point. The sources of growth that China has historically relied on — favourable demographics, a reallocation of labour from inefficient industries towards more productive activities, high rates of investment and rising exports — are no longer likely to deliver the rapid economic returns that will be necessary to continue to drive incomes substantially higher. If China were to nonetheless stick with its current growth approach, while the economy would continue to expand this expansion would involve increased risks from a marked reset in local expectations on the pace of per capita income advances, and a likely worsening in China's internal and external economic imbalances.

But China has better options. In essence, the country is confronting a challenge faced before by all fast-growing economies, with varying levels of success. The early stages of economic development tend to rely on a centrally-driven approach, structured around high rates of investment and an outward-oriented focus. However, while riding that success, governments need to set in place the policies and institutional structures that will underpin the next growth phase, which is typically more focused on driving innovation, adaptation and efficiency. The experience of other countries suggests that while this transition is hard to achieve, the growth rewards from meeting this challenge are large.

Against this background, this Analysis examines the outlook for China's growth path over the coming decade. It addresses four core questions: where China's growth prospects stand today, what pace might be feasible in the future, whether the policy steps taken by the authorities to date are sufficient to deliver a favourable growth outcome, and what other efforts will be needed to sustain its rapid catch-up to advanced economy incomes. Navigating the next phase of China's transition will not be easy, but the policy actions to secure its economic aspirations are firmly within its own reach. The pace of growth from here is a choice that is ultimately up to China to determine.

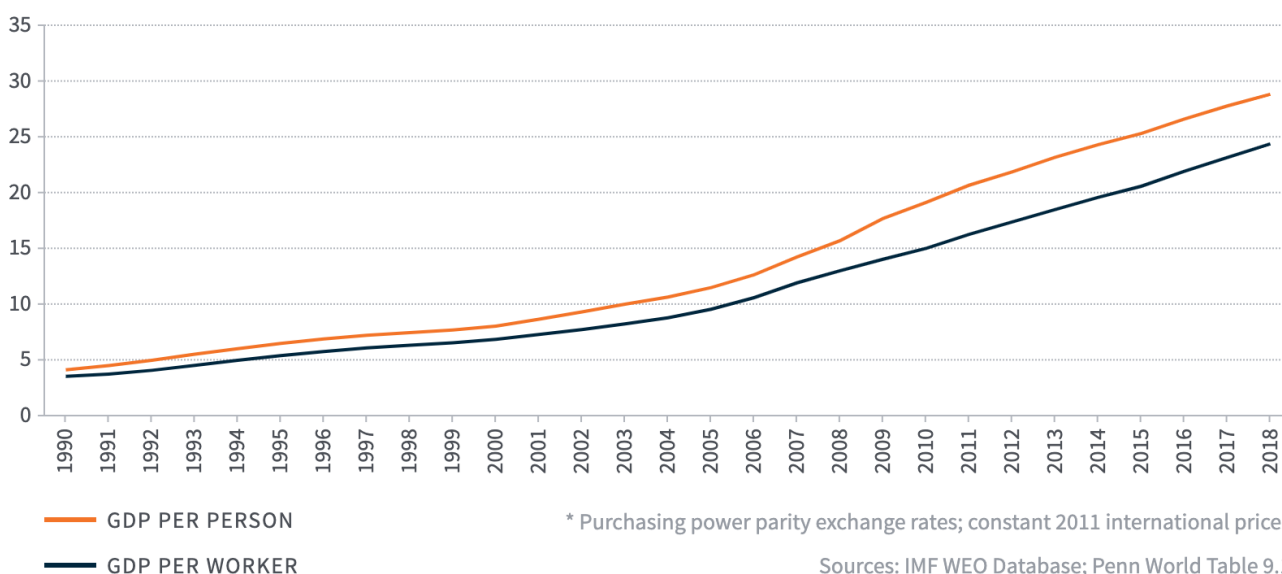
*China has better options.
In essence, the country is
confronting a challenge
faced before by all fast-
growing economies.*

CHINA'S RAPID GROWTH PERFORMANCE — SO FAR

China's economic transition to date has in many respects mimicked the paths followed earlier by the industrialising countries in Asia, such as Japan and Korea. Like those countries, China initially focused on boosting productivity and releasing surplus labour from the agricultural sector, building an export-focused manufacturing sector based around cheap wages, and using a repressed financial sector to fund investment in heavy industry and public infrastructure. There were, however, some variations. China has provided a range of incentives for foreign direct investment and joint ventures (often with US companies as part of their production chains), and its industrial strategy has been to direct credit and other inputs to its state-owned enterprises (SOEs). In contrast, Japan and Korea relied less on attracting foreign companies and fostered large export-focused private conglomerates to execute its official industry policies.⁴

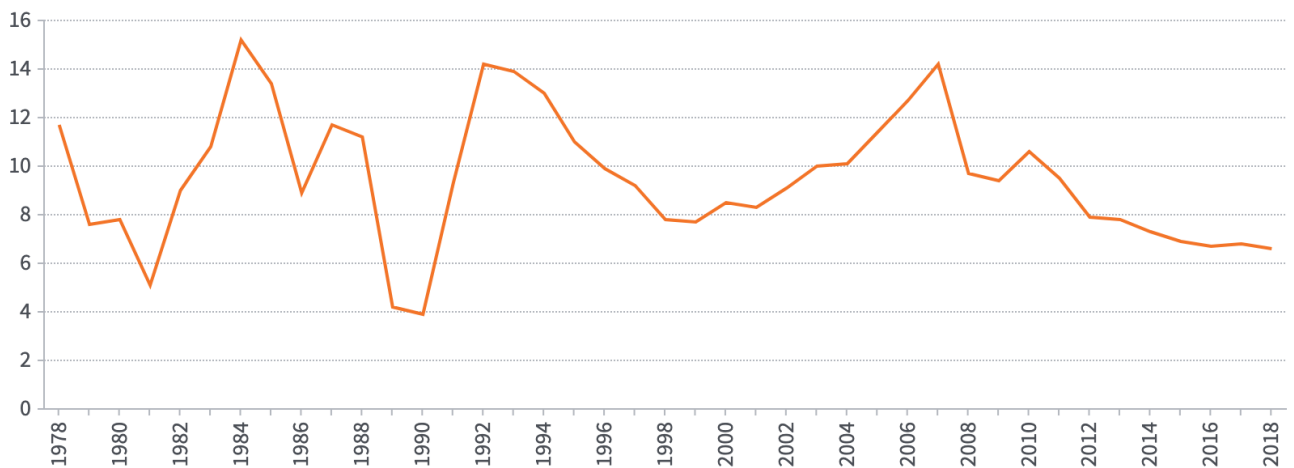
China's strategy has proven very successful, with economic growth having averaged 9½ per cent annually since 1978.⁵ The levels of per capita income and of labour productivity relative to the United States (the country typically taken as the global productivity frontier) have increased from single digits in 1990 to now both be around one-quarter (Figure 1).⁶ Even so, with its output and productivity still low compared with global standards, China has an opportunity to grow rapidly for an extended period as it converges closer to advanced income levels.

Figure 1: China GDP relative to the United States*
(in per cent)



However, since the global financial crisis, the pace of growth in China has been slowing markedly. Even looking through the spike in the years immediately following the crisis, growth has fallen from 10.6 per cent in 2010 to 6.6 per cent in 2018, its slowest pace since 1990 (Figure 2). Data for 2019 to date indicate that this slowing has continued. Some of this could be temporary. All economies go through cycles, with periods of demand softness followed by subsequent strength. Over the past decade, China's economy has faced generally weaker growth among its major trading partners and the recent trade dispute with the United States has added a new headwind.⁷ However, while such factors can clearly affect growth for a period, a range of indicators suggest that a trend slowing in the pace of China's growth is now well underway.

Figure 2: Annual growth of GDP
(in per cent)



Source: National Statistics Yearbook of China

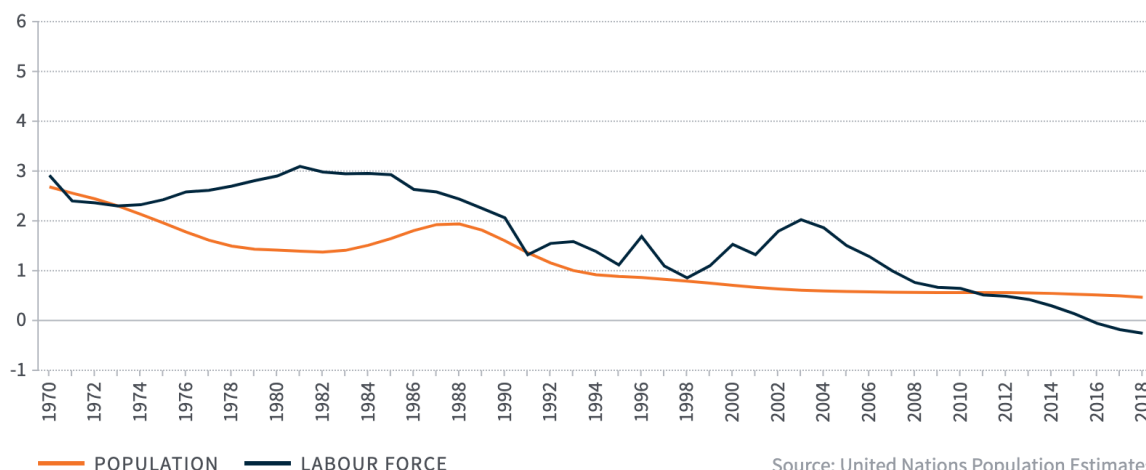
WHY IS CHINA'S PACE OF GROWTH SLOWING?

The total amount of output produced in an economy is determined by the number of labour hours worked, the size of the capital stock (machinery, buildings, roads, ports, etc), the average quality of the productive inputs such as labour and capital, and the effectiveness with which its inputs are put together (with the last two components collectively termed 'total factor productivity' or TFP). Sustaining a high pace of growth for an extended period therefore requires ongoing rapid increases in some combination of these components. The literature on economic growth shows that successive increases in the *quantity* of labour or capital generally lead to decreasing returns to output unless there is a corresponding increase in TFP.⁸ While the various factors that drive increases in the *quality* of the production inputs and TFP are hard to pin down, they include better education, the adoption and adaptation of known technologies, innovation, better management practices, and the movement of capital and labour from relatively low to high productivity firms and industries. This organising framework points to several structural challenges that lie behind China's slowdown in growth over the past decade.

1. DETERIORATING DEMOGRAPHICS

After a favourable run, China is now facing very poor demographics, with a rapidly ageing population. While fertility rates commonly fall as income levels rise, this has been accelerated in China by the one-child policy that was introduced in 1980. This is weighing heavily on the size of China's labour force; after growing by around three per cent a year in the early 1980s, that pace has subsequently slowed and the labour force has actually been shrinking since 2016 (Figure 3).⁹

Figure 3: Population and labour force growth
(in per cent)



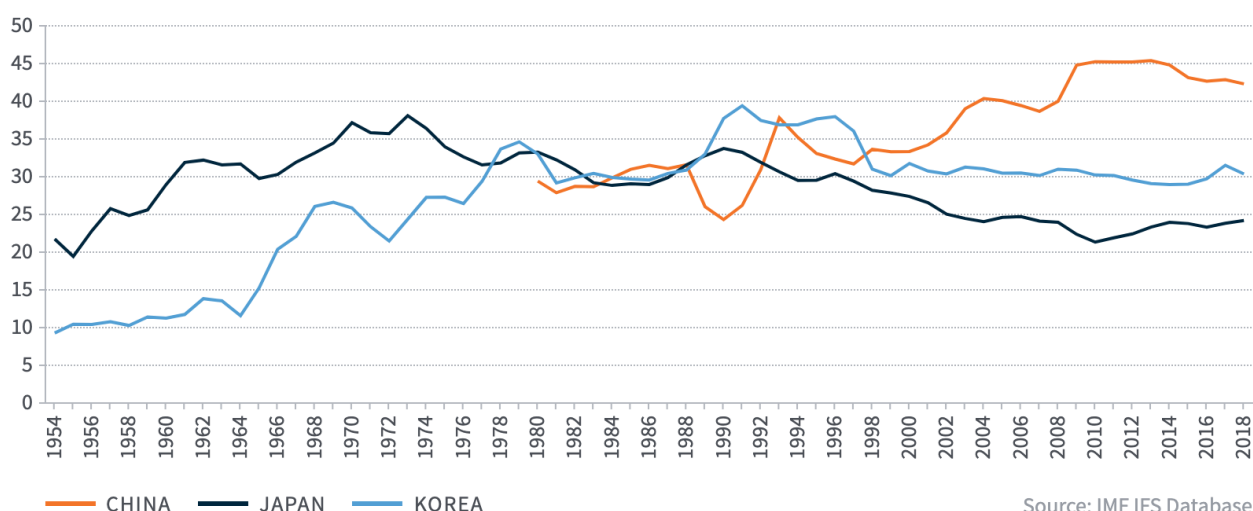
Source: United Nations Population Estimates

These demographics are much more unfavourable than when Japan (1959) and Korea (1986) were at similar income levels during their economic transitions, when their labour force was still growing at 2 per cent a year.

2. HIGH BUT INEFFICIENT LEVELS OF INVESTMENT SPENDING

China has traditionally had a strong focus on expanding its capital stock as a key source of growth. The investment/GDP ratio has been rising for decades, but increased to levels beyond those of other regional economies after the Asian financial crisis in 1997-98 and then rose again after the global financial crisis in 2008-09. It peaked at an unprecedented 45 per cent of GDP in 2009, before falling back a little, to be around 42 per cent of GDP more recently (Figure 4). As a consequence, the capital stock per worker is now estimated at one-third of US levels, which is very high for a country of China's income level. By comparison, it was one-sixth and one-quarter when Japan and Korea were at a similar level of per capita income to China's today.¹⁰

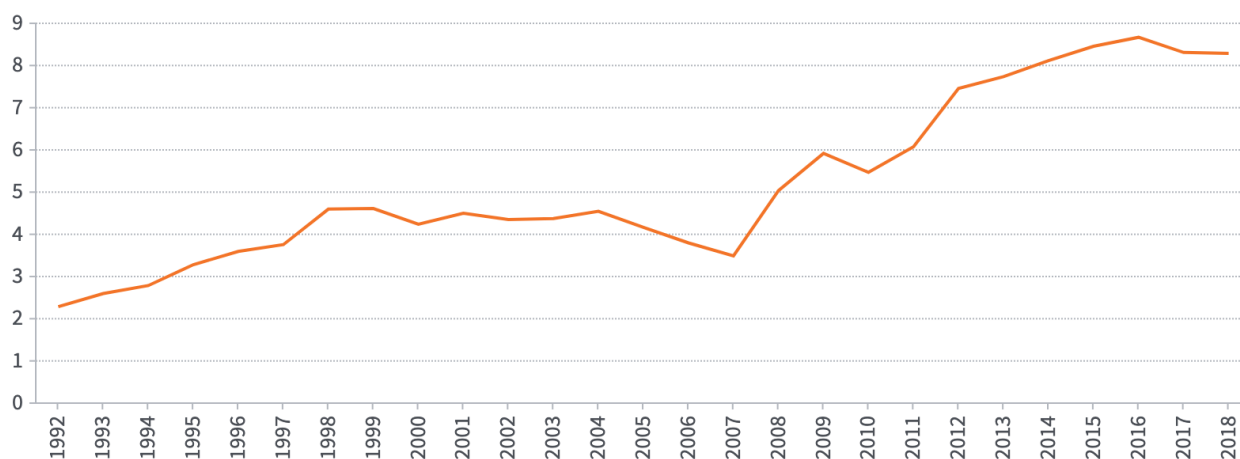
Figure 4: Investment/GDP ratios
(in per cent)



The available data, as well as anecdotal reports of empty apartments and underutilised infrastructure projects, indicate that the efficiency of this large investment spend in China has been poor, especially of late. One crude statistic to assess overall investment efficiency is the incremental capital-output ratio (ICOR), which measures how much change in the capital stock is needed to generate a given amount of economic output, with higher levels a sign of a weaker allocation and utilisation of investment.¹¹ In China, the ICOR was already running at around 3-4 before the financial crisis, which was on the high side compared with Japan and Korea when they were at a similar income levels. Since then

the ICOR has increased very sharply, indicating a marked deterioration in the efficiency of China's investment spending during the past decade (Figure 5).

Figure 5: Incremental capital-output ratio

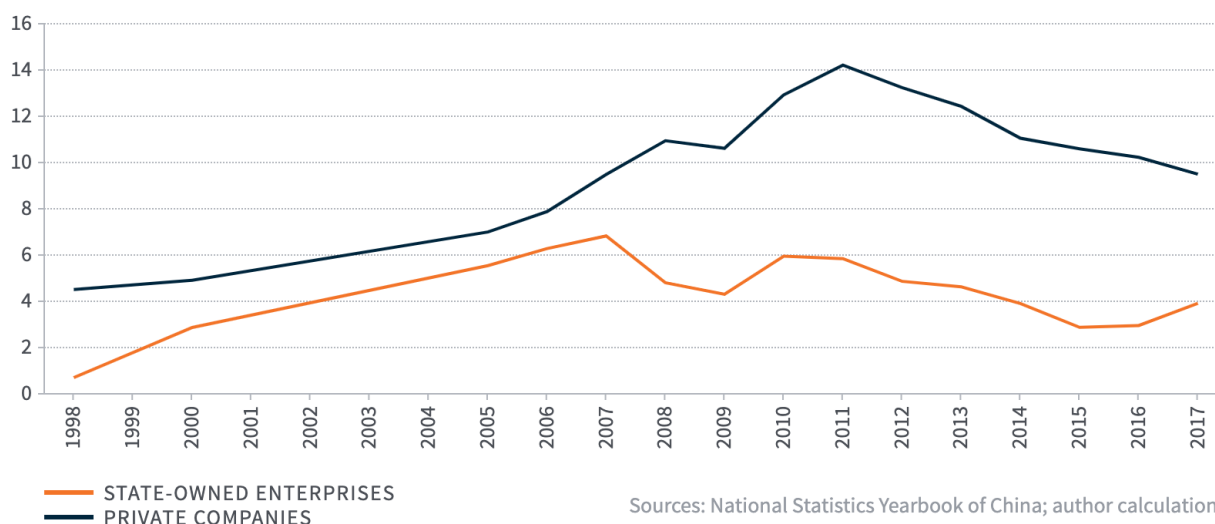


Sources: National Statistics Yearbook of China; author calculations

This deterioration coincides with the government's response to the global financial crisis and the subsequent challenge in reversing the investment forces unleashed at that time. The large economic stimulus package announced at end 2008 focused on boosting local government infrastructure spending, building new housing and expanding industrial capacity within the SOEs.¹² Ramping up investment has been a common tool used to achieve the Chinese Government's macroeconomic targets, including those set for local governments, with a quid pro quo for the SOEs in terms of cheap access to inputs such as land and finance as well as protection from competition. While some SOEs are profitable — due to their monopoly position and access to cheap inputs — many have low or negative returns.¹³ The various investment-based stimulus packages introduced during the past decade have been associated with deteriorating SOE efficiency, as seen in their declining return on assets (Figure 6: next page).

Corporate debt levels have also ballooned, reflecting in part the rise in investment undertaken by the SOEs. The debt of non-financial corporations increased from almost 100 per cent of GDP in 2007 to 160 per cent in 2016, before falling back to around 150 per cent in 2018.¹⁴ This debt burden has generated two further risks for China's future growth pace. First, its size and industry concentration raise issues in terms of the banking sector's nonperforming loans (NPLs). There are concerns that the ostensibly low level of banks' NPLs is being masked by

Figure 6: Return on assets
(in per cent)



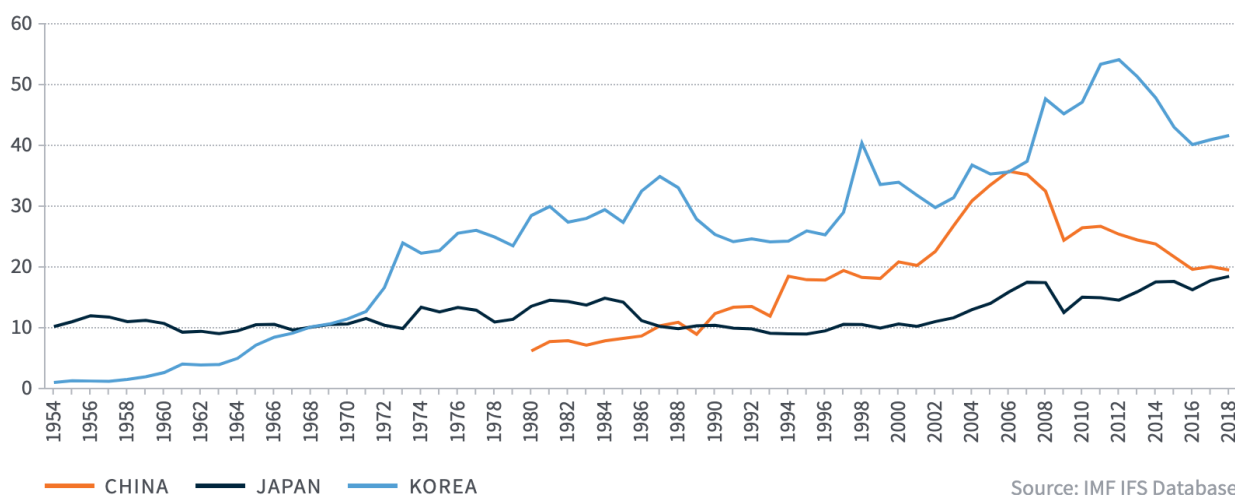
underreporting.¹⁵ Second, while much of the original funding comes from the four large state banks, it then travels through a complex chain of interconnected and opaque lenders and borrowers, often backed by increasingly short-term funding and with unclear recourse to government guarantees. A stress event could therefore be difficult to resolve quickly.

3. A MATURE EXPORT SHARE

Since 1978, China has maintained a strong external focus, which has not only helped ensure competitiveness of its emerging industries but also boosted demand for its output as investment in its industrial capacity has increased. As a share of GDP, exports increased from just 6 per cent in 1980 to peak at 36 per cent in 2006, although this has since fallen back to 20 per cent (Figure 7).

Around half of China's exports are made by global multinational corporations that use it as the manufacturing part of their supply chain, with the balance of the exports from SOEs (including steel and other heavy industry) and from Chinese private companies. Although exports are now a smaller share of China's GDP, due to the sheer size of its economy the dollar-valued level of China's exports has continued to rise. As a consequence, China's share in global merchandise exports now stands at 13 per cent, compared with just 4 per cent in 2000.¹⁶ This suggests a high degree of saturation in global export markets and hence limited export opportunities should the industrial base expand further.

Figure 7: Exports/GDP ratios
(in per cent)



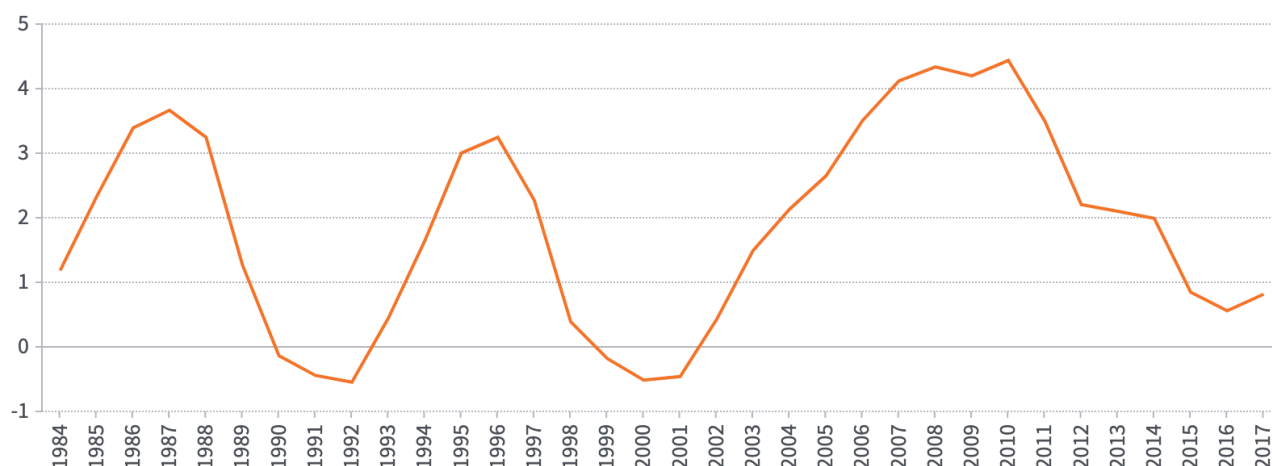
... this increasingly challenging external environment suggests that the pathway to rapid economic growth is unlikely to lie in boosting exports.

Furthermore, as the level of China's exports has increased, and their composition moves up the value-added chain, China's trade and investment practices are leading to a range of complaints, especially by the United States. These cover, *inter alia*, China's export promotion activities, intellectual property right protections and access by foreign sellers to key parts of China's economy (such as the services sector). Not all of this pushback reflects China's current practices and the issues remain controversial.¹⁷ In part, the dispute reflects gaps in the international architecture, such as the ability of countries to self-designate as 'developing country status' at the World Trade Organisation (WTO), which provides a range of access benefits. But when taken together with China's large share of world trade, this increasingly challenging external environment suggests that the pathway to rapid economic growth is unlikely to lie in boosting exports.

4. FALLING GROWTH IN TOTAL FACTOR PRODUCTIVITY (TFP)

The pace of growth of China's TFP has declined, despite still being far behind the global productivity frontier. Estimates for China's TFP growth average between 2-4 percentage points a year since 1978, and most studies show a similar cyclical pattern, with an acceleration in the pace of TFP soon after China's entry into the WTO in 2001 and then a decline since the global financial crisis following the large increase in its investment spend (Figure 8, see next page).¹⁸ Furthermore, a large share of the TFP gains to date have been the comparatively easier ones to achieve, a by-product of the reallocation of surplus labour since the 1980s from the inefficient agriculture sector and SOEs towards the emerging private (and more productive) sector.¹⁹ Most young agricultural workers have now shifted to urban areas and SOEs represent a smaller share of the urban labour force (around 15 per cent), meaning that further labour reallocations are unlikely to produce significant improvements in TFP growth.

Figure 8: Growth of total factor productivity
(in per cent; five-year moving average)



Source: Penn World Table 9.1

GROWTH SCENARIOS FOR CHINA

Noting these structural headwinds, the key question is where China's growth rate will go from here. Two broad scenarios have emerged in the literature on this question, which can be broadly labelled as a baseline growth and reform growth scenario.

THE BASELINE GROWTH SCENARIO

This scenario is a continuation of the slowing growth trend. Empirical studies demonstrate that after a period of rapid growth, countries generally show a 'regression to the mean', partly because of their income gaps with advanced economies narrowing.²⁰ In this scenario, China is forecast to achieve annual growth of only around 3-4 per cent over the next decade. A variation of this empirical approach focuses on the 'middle income trap', where growth in emerging countries has tended to flatten out once countries reach a per capita income level around one-quarter of that in the United States (measured using PPP exchange rates) — China's level today.²¹ If the pace of growth in China over the coming decade were to continue to slow in line with that seen in recent years — around $\frac{1}{4}$ percentage points or so annually — a straight-line projection would see growth at just $3\frac{1}{2}$ per cent by the year 2030.²² This would be the slowest pace of growth since 1978.

In this scenario, China is forecast to achieve annual growth of only around 3-4 per cent over the next decade.

While China's overall economy would still expand significantly over the next decade even in this less favourable scenario, such a marked slowing

in the pace of its economic transition could have wide-reaching effects and carry heightened risks. It could be destabilising for a government that sustains its credibility on the ability to deliver a very high pace of output growth and rapid rise in living standards. An effort by the government to pre-empt this outcome by doubling down on its traditional growth approach — with an even heavier reliance on investment to expand its industrial capacity and infrastructure, efforts to boost exports further, and increased recourse to ‘temporary’ stimulus plans — would at best delay rather than prevent the slowing already evident. The stagnation in TFP would weigh on the growth of real wages and the pace of consumption growth, and increase the concerns already apparent in the financial sector. More broadly, the SOEs’ low profitability, rising corporate debt and growing income inequalities would add to the financial, social and political risks. The knock-on effects globally would also be unfavourable, and trading partners would likely push back against any effort by China to export its way out of slowing internal demand.²³

However, it is not inevitable that China’s growth will continue to slow. While these sorts of projections are based on empirical data from the large number of countries that became stuck in the middle-income trap, growth is ultimately driven by the ways individual countries manage their challenges during successive transition phases in order to achieve their aspirations. How China measures on that metric requires a deeper look at its growth and reform opportunities.

THE REFORM GROWTH SCENARIO

When Japan and Korea were at one-quarter of the US per capita output level, they subsequently continued to grow at an annual average pace of around 9 per cent for a decade.

What then is a sufficiently ambitious yet realistic target for growth in China over the next decade or so? While the majority of former fast-growing countries became stuck along their transitions, Japan and Korea along with a few other smaller Asian economies managed to sustain a fast pace of growth, pass through the middle-income trap and achieve the high levels of income they enjoy today. When Japan and Korea were at one-quarter of the US per capita output level, they subsequently continued to grow at an annual average pace of around 9 per cent for a decade.²⁴ On this basis, economists such as Nicholas Lardy and Justin Lin argue that annual growth in China could continue at 8 per cent or more, assuming the right policies are put in place.²⁵

However, there is clearly an issue as to whether the past growth experiences of these two countries are attainable for China. That approach assumes that countries have the same access to foreign knowledge and the appropriate incentives and institutions in place, or at least can introduce the policies to do so. These are strict assumptions.²⁶ Furthermore, it misses linking the growth projection for the next decade to China’s current circumstances. The pace of growth in Japan and Korea was accelerating during the period leading up to the income level at which China sits today, not declining as it is in China, and the demographics of

those countries were much more favourable. In fact, given the current fall in the labour force and the practical constraints to boosting investment further, TFP in China would need to grow by around 5 per cent annually to meet the historical growth averages seen earlier in Japan and Korea, a level China has achieved for only the briefest periods in the past forty years.

An alternative approach to setting a medium-term target is to examine each of the components of China's growth outlined earlier — labour input, capital and TFP — assuming a degree of policy ambition. Using this approach, projections within the literature are generally for an average potential growth rate of between 5 to 6 per cent over the coming decade (a representative set of studies that forecast China's growth over the next decade is summarised in Table 1).²⁷ This would be up to a 2-percentage point annual increase in growth compared with the baseline scenario. An examination of the input components suggests the following:

- Rather than contributing strongly to growth as it has for many decades, the labour force is forecast to decline by around $\frac{1}{4}$ – $\frac{1}{2}$ per cent annually over the coming decade, which will weigh on the pace of overall economic growth. While there is potential to slow this effect somewhat — say through an increase in the retirement age and the participation rate more broadly — these efforts would be unlikely to make a large difference to the demographic outlook over the coming decade, although they could have a more substantive effect thereafter.
- The contribution to growth from investment spending is likely to fall over the coming decade. While investment needs in China are still high — for example, mechanisation rates in agriculture remain low and infrastructure in the Western provinces is still generally poor — given the large inefficiencies highlighted earlier, most studies assume that the investment share in GDP will need to decline while also being reallocated across industries. An appropriate eventual investment/GDP target could be 35 per cent, which would be around the (high) levels seen in Japan and Korea when they were at a similar income level. This would reduce the annual contribution to economic growth from the expansion of the capital stock from over 4 percentage points today to be a bit over 3 percentage points.
- With the projected fall in the contribution to growth from the labour force and an assumed decline in the contribution from investment, TFP growth would have to pick up sharply to around $2\frac{1}{2}$ –3 per cent annually for economic growth to average around $5\frac{1}{2}$ per cent a year over the coming decade. Achieving such an average pace of TFP growth, and sustaining it over an extended period thereafter, will require significant policy ambition.

In considering the attainable growth path over the coming decade, the magnitude and timing of the policy responses required to propel growth

Achieving such an average pace of total factor productivity growth, and sustaining it over an extended period thereafter, will require significant policy ambition.

are difficult to predict. Reform initiatives typically take time to have an impact, given that they often constitute a sea-change in mindset and responses by the various players, are varying in quality and then take an extended period before they deliver growth dividends.²⁸ Consequently, even an ambitious reform agenda implemented now might make little meaningful impact on the current slowing pace of growth for the next few years at least. However, that does not mean such reform is not worth doing. Over time, setting in place a more efficient investment allocation and taking steps to lift the pace of TFP growth would provide a solid basis for boosting real incomes and consumption and expanding the middle class over decades to come.²⁹ And with China's growth thus internally driven in a robust and sustainable manner, financial sector risks and global tensions are more likely to be contained than under the baseline projections.

Table 1

Author	Years	Overall	Labour	Capital	TFP
WB/DRCS (2013)	2012-25	5.9	-0.2	4.0	~2.0
	2026-30	5.0	-0.4	3.5	~2.0
Australian Government (2012)	2021-30	4.3	-0.3	n.a.	n.a.
ADB (2011)	2021-30	5.0	-0.1	n.a.	n.a.
HSBC (2018)	2020-30	5.2	n.a.	n.a.	n.a.
Goldman Sachs (2011)	2020-29	5.4	n.a.	n.a.	n.a.
Lee and Hong (2010)	2021-30	5.0 – 6.2	-0.1	3.0 – 4.0	2.2
Wang and Zhou (2016)	2021-30	5.5 – 7.5	n.a.	2.8	2.0 – 4.0

POLICIES TO ACHIEVE THE REFORM SCENARIO: HAS THE GOVERNMENT DONE ENOUGH?

Growth targets are easy to prescribe; the challenge is implementing the policies that will have sufficient impact to achieve them. The Chinese Government has announced a range of policies to improve the medium-term outlook. Its approach has three main components:

- First, China aims to boost innovation in the high-technology sector. In 2010, the government announced the Strategic Emerging Industries (SEI) initiative to promote cutting-edge technology in areas such as big data, telecommunications, supercomputers, artificial intelligence, robotics and space technology.³⁰ In May 2015, it announced its 'Made in China 2025' strategy to increase the quality and technology level in eight manufacturing and services industries.³¹ The government is also boosting research and development (R&D) expenditure — primarily to research institutes and within the SOEs — doubling it over the past decade to 2 per cent of GDP in 2016, the second highest spend in the world (after the United States).
- Second, the government supports a resurgence of the SOEs to boost their activities in core 'strategic sectors' where they already play an exclusive or dominant role.³²
- Third, the government is trying to shore up its external focus, negotiating on some of the issues associated with the trade dispute with the United States while taking steps to expand its export opportunities, such as through the Belt and Road Initiative.

While there will be some growth dividend from these efforts, there are reasons to question whether these efforts alone will be sufficient to offset the slowing pace of growth and depth of the structural problems that underlie this trend. The growth literature indicates that the key to sustaining a rapid pace over time is to switch from an investment-driven approach towards one that emphasises not just innovation — as currently the focus of the Chinese authorities — but also the adoption and adaptation of existing and mature technologies, along with improvements in input efficiency.³³ The policies to do so tend to be more amorphous and the responses less easy to centrally manage, though if successfully implemented history suggests that the economic returns are substantial.

The experiences of Japan and Korea indicate the sorts of policy directions needed to make this transition. In both cases, as they moved towards and through the level of income that China has today, they continued their outward-oriented focus and adjusted their policy

... there are reasons to question whether these efforts alone will be sufficient to offset the slowing pace of growth and depth of the structural problems that underlie this trend.

frameworks to improve the quality of inputs by fostering greater competition and the adaptation of existing technologies (see details in the Annex). These policies were sufficient to sustain a high pace of TFP growth, which averaged around 3 per cent a year over a 10-year period in both countries even as they maintained fairly high investment/GDP ratios.³⁴ In particular, during this period:

- Their industry policies became less focused on specific companies and targeted sectors and more on providing guidance and facilitation for types of activities (such as R&D spending), especially in Korea during the 1980s that initially took a more direct hand in guiding activity;
- Preferences in terms of access to finance and other inputs to targeted companies were phased down, with greater reliance on market mechanisms to allocate financial and other inputs to all companies;
- New laws to promote competition between private companies were introduced, with monopoly rights and protections removed (especially in Korea) and restrictions on foreign competition gradually eased in both countries;
- Throughout their transitions, governments of both countries encouraged the importation and local adaptation of advanced capital goods and licensing of foreign technologies, including by multiple domestic companies to encourage competition and rapid technological catch up;
- Internationally competitive consumer-goods companies, combined with increased wages in Japan, boosted household consumption;
- The governments actively sought to deepen human capital development and promote R&D by institutions and private enterprises, though accelerating the pace of original innovation took years to achieve.³⁵

These historical experiences suggest four interrelated ways to buttress China's prospects for robust growth over the coming decade:

- (i) adopting wide-ranging policies to enhance the ability of local companies to absorb basic mature knowledge from the global productivity frontier and diffusing such knowledge from the most efficient local companies throughout the country more generally;
- (ii) enabling greater contestability by private companies to operate alongside the SOEs, with the latter therefore facing greater market discipline;
- (iii) boosting consumption to sustain the level of internal demand as the investment sector pulls back, and encouraging a dynamic climate of innovation and adaptation among small and medium sized enterprises (SMEs) and other companies to meet changing consumption needs; and
- (iv) taking bold steps to strengthen multilateral institutions and a rules-based global trading approach to sustain China's access to global markets. These policies are elaborated in the next sections.

POLICY 1: THE BULK OF THE GROWTH IN THE COMING DECADE IS LIKELY TO COME FROM THE ADAPTATION OF EXISTING MATURE TECHNOLOGIES RATHER THAN OFFICIAL EFFORTS TO BOOST CUTTING-EDGE INNOVATION

The Chinese authorities' current efforts to promote high-tech innovation may not add much to the overall pace of growth in the coming years. The authorities have historically had limited success in promoting creativity centrally. China's 'National Medium to Long Term Plan for Science and Technology Development' was introduced in 2006 — which involved subsidies to R&D spending, financial rewards for patents and efforts to encourage technology transfers — but the economic returns were reportedly fairly meagre.³⁶ In terms of its recent 'Made in China 2025' strategy, it is unclear which companies are involved, how the goals are to be achieved, the financing sources or the criteria for funding allocation. Indeed, while there is extensive evidence that China has a strong capacity to innovate — the internet businesses, on-line finance, and so on — these innovations have been driven primarily by private companies with little official support during their development.

In any event, high-tech innovation that pushes on the global productivity frontier is not where the bulk of the growth advances for China over the next decade are likely to lie. It took decades for high-technology innovation to be a driving force for growth in Japan and Korea. New frontier advances tend to be risky and slow to show success. Development of new technologies involves a large degree of trial and error, and even after proven success their adoption into existing production processes tends to be slow. Indeed, the slow pace of growth in frontier knowledge is the main reason why advanced economies typically grow at a per capita rate of only around 1-2 per cent a year.

In contrast, emerging economies can grow more rapidly than advanced economies since they can absorb knowledge from abroad that has already been discovered and proven. China is operating at just one-quarter of the (already known) global productivity frontier. By adapting and diffusing mature technology to best fit China's local circumstances, China can catch up with the productivity levels of established firms abroad, resulting in vast growth opportunities over the coming decade and beyond. Unlike frontier technology that is typically protected by patents — and is a source of much of the current trade dispute with the United States — access to well established global knowledge is not difficult to acquire: ideas leak, especially once they are mature and broadly shared within many countries. As a consequence, relying on mature knowledge transfers to boost the pace of medium-term growth is an approach that is less vulnerable to access restrictions from advanced economies, or to the risks inherently involved in developing frontier innovation.

Multinational corporations have a long history of producing in China, which in principle can serve as such a source of knowledge transfer.³⁷ However, the experiences of many countries, including Japan and Korea, indicate that most technology absorption from abroad comes

... high-tech innovation that pushes on the global productivity frontier is not where the bulk of the growth advances for China over the next decade are likely to lie.

through the importation by local firms of embodied technology. This comes in the form of capital goods, patents and designs that is then adapted to local conditions, along with tacit contact such as learning by locals of advanced country management practices. This includes the diffusion of knowledge that is initially adopted in some local firms — often in the large urban areas — and then gradually spreads to other local companies and regions across the country. Much of this is through small steps that are not high-profile, but which collectively drive productivity advances and efficiencies, exploiting emerging opportunities across different industries and geographic locations as the economy evolves.

Ensuring strong incentives across China for a rapid take-up and adaptation of mature knowledge requires an appropriate enabling environment. The growth literature highlights the importance of policies that promote low barriers to entrepreneurship, efficient judicial systems, strong corporate governance, bankruptcy laws that can be enforced, access to finance for start-ups, and transparent interactions with government.³⁸ While the quality of the policy efforts to date in these areas is hard to assess let alone to summarise comprehensively, the evidence generally suggests that China remains underdeveloped on these aspects.³⁹ The four-fold gap between China's current productivity level and that in the United States suggests there is considerable scope for further advances in these areas. Given this large gap, as well as the opportunity for all its local companies to learn from the most efficient frontier firms within China itself, it seems very plausible that this effort alone could lift the pace of growth by 1-2 percentage points a year over the medium term.

POLICY 2: SINCE THE SOEs WILL RETAIN A ROLE IN CHINA'S DEVELOPMENT PATH, REQUIRE GREATER SOE EFFICIENCY AND OPEN MORE AREAS TO PRIVATE SECTOR COMPETITION

... While in principle, the creativity and efficiency of a company's operations should not depend on its ownership, in practice public entities the world over do not face the same incentives as those that are privately owned. China is no different.

China has implemented a range of industry policies to advance successive stages of its development. In this respect, it is very similar to many of the Asian economies that also relied on industry policies at various times to build on their initial comparative advantages.⁴⁰ However, unlike those economies, China has traditionally relied on its SOEs rather than private companies to execute its industry policies and has set aside designated core industries for either an exclusive or dominant activity for the SOEs.

While in principle, the creativity and efficiency of a company's operations should not depend on its ownership, in practice public entities the world over do not face the same incentives as those that are privately owned. China is no different, with studies indicating that innovation and efficiency occurs more in its private firms than in publicly owned ones.⁴¹ There are four interrelated problems with China's ongoing reliance on its SOEs: they are not set on a commercial basis and their losses are a drain on the economy; there is little accountability over their activities; preferred access to bank loans at low interest rates leads to excessive investment; and the system encourages political rent

seeking. More generally, the development of high-tech innovation — China's current policy focus — innately involves a large degree of trial and error, with multiple risks and rewards for those that succeed. Private entities motivated by profit would more likely be better equipped for this process than the SOEs.

However, advocating for a significant further downsizing of the SOEs and their activities is not realistic in the current circumstances. Given the unique role they have played in China's development for decades, there are large vested career and government structures built around the SOEs, especially at the provincial and local levels. While some steps have been taken to put them on a more commercial structure, the presence of the SOEs is unlikely to fade soon.⁴² However, the path forward is not to avoid taking firmer steps to address the inefficiencies of the SOE sector. As highlighted earlier, the return on assets at SOEs has fallen markedly and many are loss making, suggesting that the growth dividend from better productivity would be large. The IMF estimates that lifting SOE productivity towards that already evident in China's private companies would add ½ per cent a year to growth (Lam, et al, 2017). The issue is how best to achieve this return.

Three approaches are commonly discussed. First, greater efforts to build on the previous reforms to the SOE sector by strengthening governance. As a condition for SOEs continuing to receive preferential access to resources (both physical and financial), they should be accountable to government-set efficiency targets. There is precedent for such targets. Korea established strict accountability for the *chaebol*: if the *chaebol* failed to meet official export or industrial upgrading targets, the government could withdraw subsidised credit and import licenses, impose income tax audits and dismiss CEOs.⁴³

Second, notwithstanding the current positive discrimination provided to SOEs in accessing resource inputs, private companies could be allowed to operate and compete in the protected industries. Over time, SOEs should have to downscale or withdraw if — despite their advantaged access to resources — they underdeliver on official efficiency targets (such as return on assets) compared with private companies. This would not be easy, as the delineation line on relative performance is unclear given the preferential access to inputs. However, allowing SOEs and new private players to operate side-by-side may be a practical way to promote greater competition and innovation across all industries while accepting a continuing role for SOEs, at least for now. In the future, it would be appropriate to enable competitive neutrality and contestability across all players and industries.⁴⁴

Third, private firms need to access critical resource inputs, and access to finance in particular, so they can compete and grow in areas that fall both inside and outside the current favoured industries. In advanced economies, the finance sector plays a critical role within the economy in vetting *ex ante* ideas of potential borrowers and imposing *ex post* realities on their subsequent profit outcomes. This role becomes even more important in the context of a rapidly changing economy such as China's, which is based on emerging opportunity yet substantial risk. At

While some steps have been taken to put them on a more commercial structure, the presence of the SOEs is unlikely to fade soon.

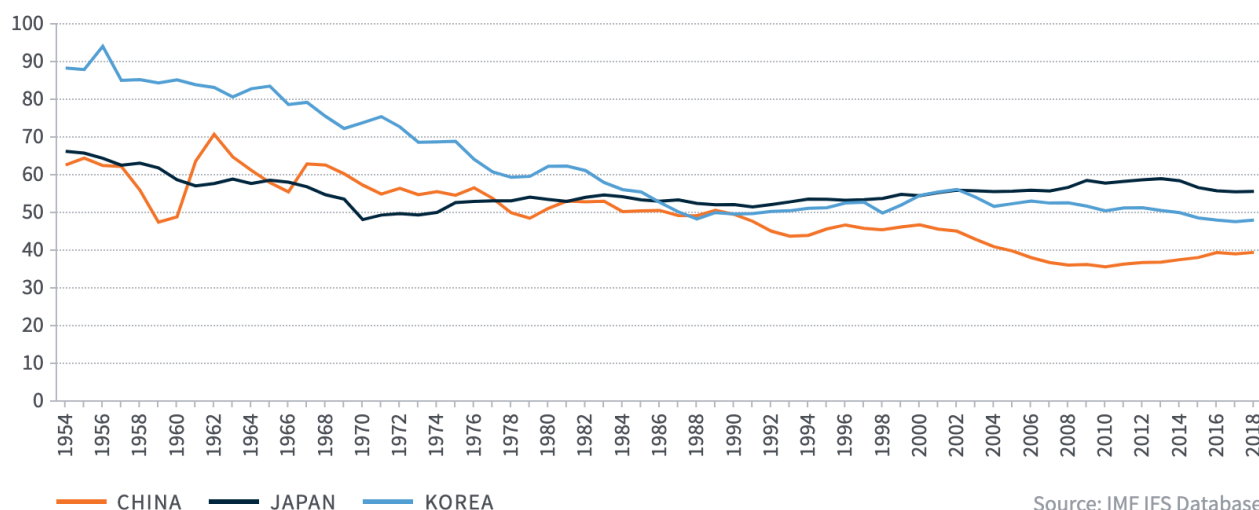
present, however, the financial sector (dominated by four large government-owned banks) extends the majority of credit to the SOEs, and under explicit and implicit government guarantee. This provides no incentive for banks to develop the proper risk management mechanisms needed to serve this supporting role and to provide an adequate level of credit to SMEs and other private companies. Over time, the explicit and implicit subsidies to SOE lending should be removed, although it will be essential to get the sequencing of reform right given the current size and opaqueness within the financial sector. One interim step could be to put a cap on the share of new credit that can be provided to the SOEs, although there is a range of possible approaches.⁴⁵ This may not lead to much change in the current high share of corporate debt/GDP, but could significantly change the entities that receive the funding.

Despite the growth in real household consumption, which has averaged around 9 per cent a year since 1980, consumption as a share of GDP in China remains very low compared with other Asian economies.

POLICY 3: PROMOTING CONSUMPTION WILL SUSTAIN THE LEVEL OF OVERALL INTERNAL DEMAND AND BOOST INCENTIVES FOR LOCAL INNOVATION AND EFFICIENCY ON THE SUPPLY-SIDE

With the gradual pullback from the high level of investment and practical limits in boosting exports substantially, household consumption spending will need to rise in order to sustain the level of overall internal demand over the next decade.⁴⁶ Despite the growth in real household consumption, which has averaged around 9 per cent a year since 1980, consumption as a share of GDP in China remains very low compared with other Asian economies (Figure 9).

Figure 9: Consumption/GDP ratios
(in per cent)



While clearly challenging to achieve in the right magnitude and timing, policies that lift consumption would provide a strong catalyst for more dynamism and flexibility in the productive sector.⁴⁷ Expansion of the middle class will produce greater demand for consumer durables, leisure activities, housing, health, education and so forth, while the ageing of the population will change the composition of consumption demand. Further, the production of consumption services is typically labour intensive, which will be important as further labour-saving productivity advances are implemented in the agricultural and manufacturing sectors.

Policies to achieve such a rebalancing need to focus on boosting household incomes and reducing the very high level of household savings (over one-third of household disposable income).⁴⁸ Wages as a share of GDP fell sharply during the 2000s as income was increasingly concentrated in the SOEs and corporate sector, although there has been some reversal since 2011 reflecting a declining labour surplus and rising real wages.⁴⁹ Policies to support growth of SMEs, including access to finance, would help sustain this recovery. Additionally, efforts to encourage a reduction in precautionary savings could include a strengthening the social safety net, pensions and education and health expenditures.

POLICY 4: IT IS IN CHINA'S INTEREST TO ADDRESS THE CURRENT TRADE DISPUTE AND TO TAKE THE INITIATIVE IN LONGER-TERM REFORM OF THE GLOBAL ARCHITECTURE TO ENSURE IT REMAINS FIT-FOR-PURPOSE FOR THE WORLD AS A WHOLE

The current China–US tit-for-tat, on-again/off-again tariff increases will decrease economic efficiencies in both countries. However, if the dispute is contained to its existing scope, it is unlikely to have much effect on China's overall growth prospects over the coming decade. Exports to the United States constitute around 4 per cent of China's GDP, some are lightly processed imports from other Asian economies, and there may be opportunities for trade diversion should there be a marked decline in US demand. The IMF estimates a permanent 25 per cent tariff on its goods exports to the United States could lead to a reduction in China's GDP growth of around ½ per cent over the longer run.⁵⁰ An effect of that magnitude would not be a major constraint on the pace of China's growth transition over the coming decade, and hence the size of its economy by 2030, although it could have a more concentrated headwind over the next year or so.

However, the current frictions risk tapping into a bigger medium-term challenge for China. They could significantly affect its ability to utilise the global trading system, cross border financial and knowledge flows and international education that have been critical to its growth path to date. In

... if the [China-US] dispute is contained to its existing scope, it is unlikely to have much effect on China's overall growth prospects over the coming decade.

... if China is perceived as trying to skirt the global trading rules and exploit gaps, it risks constraining its ability to focus outwards as part of its medium-term growth approach.

principle, a large and growing Chinese economy *per se* does not negate a rules-based approach to global trade, nor hinder foreign direct investment and other financial flows. Nonetheless, as China's economy grows and its exports become higher-value add, its trading partners will inevitably focus more on its trading and investment practices. Consequently, if China is perceived as trying to skirt the global trading rules and exploit gaps, it risks constraining its ability to focus outwards as part of its medium-term growth approach. Left unchecked, that could escalate tensions with a wider range of countries, reduce the efficiency gains from open competition, and limit research and education interactions and exchanges with other countries.

Alternative approaches have only limited potential to offset this effect. One purpose of China's Belt and Road Initiative is to set up new infrastructure and export channels for its construction companies. The initiative is already prompting concerns in some recipient countries, with questions about the lack of transparency, high borrowing costs, the reserved role for Chinese companies and how the initiative interacts with activities of other regional multilateral institutions.⁵¹ Even if these concerns could be adequately addressed, the annual disbursements by China under this initiative may not provide much of a boost to its overall growth pace.⁵²

However, for China to continue to reap the benefits of an outward focus over the medium-term it will need to foster — and be perceived as fostering — a global system that is fit-for-purpose, both for a growing China and for the rest of the world. Many of the trading issues currently being raised, such as providing foreign companies with access to China's internal markets and ensuring legal access to foreign intellectual property, are in China's long-term interest to implement, especially since it too is now an innovator. China has already taken steps to address the legislative basis for some of these issues, although the key will be implementation.⁵³ While China's efforts are unlikely to fully quell discontent among its trading partners, they could narrow the access limitations to just the most advanced and sensitive forms of knowledge rather than to a much wider set of technologies and interactions.

China could also make other bold moves to set the right tone. It could lead efforts to support multilateral agreements for liberalising foreign direct investment flows, modernise the WTO to cover digital and other areas, and establish resilient dispute settlement arrangements. It could also take public steps to ensure its SOEs operate on a level playing field abroad and finalise negotiations to join the WTO's Agreement on Government Procurement. These moves would send strong signals and enhance the long-term resilience of the global trade and investment architecture.

MANAGING THE NEW WINNERS AND LOSERS

Implementing policies to enhance the adoption and adaptation of mature technology and to encourage a vibrant private sector on an efficiency-led growth path will create an evolving set of winners and losers very different from that seen to date. This will bring a significant political economy dimension to the current economic challenges. Growth strategies based on high rates of government-led investment tend to favour all the players involved, with the number of beneficiaries only limited by the size of the investment spend. However, it is politically more difficult to allow economic activity and returns to be based on personal ability and effort. Contestable markets favour those best able to read the emerging and disparate signals and who are successful in their risk-taking endeavours within a climate characterised by a high degree of disruption.

This leads to an inevitable set of immediate losers within this competition, which could be quite a change of mindset for many of the current players. A change in the source of growth toward more private-led technology adaptation and contestability will cut across a vested interest structure that allocates economic rents, which will inevitably lead to resistance from the losers of these reforms. This is likely to include local governments, the weaker SOEs and maybe banks that currently enjoy government loan guarantees. More generally, it will put the spotlight on several key issues: the appropriate role of government at all levels, how to reduce corruption without impeding the functions of government, and how transparently the government interacts with the public. All these aspects will be challenging for the government to manage through the transition.

Furthermore, if personal initiative is to be more at the centre of the growth strategy, policies will be needed to ensure fair opportunity for households, including those in the rural areas. If the government were to abolish the *hukou* system that restricts access to social benefits for those who migrate to the urban areas, it would send a powerful message of inclusion. Such a measure would allow labour to move in line with market signals of its relative value, while making access to opportunity more portable. Another move (as discussed earlier) would be to deepen the social safety net to better handle those that fall between the cracks in a more disruptive, innovation-led economy. The abolition of the *hukou* system and other social safety net reforms will require significant intergovernmental reform to stabilise revenues for local governments, especially if they are weaned off financial control over their SOEs.

Finally, this approach means China will need to accept greater variability in annual growth due to business cycles. As the structure of the economy and China's comparative advantage evolves in its transition to higher incomes, there will be periodic coordination failures during the process of

A change in the source of growth toward more private-led technology adaptation and contestability will cut across a vested interest structure that allocates economic rents, which will inevitably lead to resistance from the losers of these reforms.

innovation and adaptation. An activist approach that continues to use the assets of the state — especially SOEs and banks directing credit — to smooth away periodic changes in demand and supply will not send a strong signal of a transition towards encouraging activity and financing based solely on sound risk/reward metrics. While this requires public acceptance of more fluctuations in the annual pace of growth, the alternative is a slower progression of living standards.

LOOKING AHEAD: IMPLICATIONS FOR CHINA AND THE REST OF THE WORLD

A 'business-as-usual' approach would likely see the continuation of the slowdown given the range of structural headwinds.

China stands at a fork in the road. While the benefits of its growth path so far have been substantial, the dividend from this approach is now in clear decline. The question is which policy path China now takes to underpin its economic opportunities over the coming period. A 'business-as-usual' approach would likely see the continuation of the slowdown given the range of structural headwinds, probably punctuated by periodic investment-based stimulus efforts that improve the short-term at the cost of medium-term growth. While China's economy would continue to expand, it would do so with a considerable rise in both internal and external risks.

By contrast, a reform path that included not just innovation but also wide-ranging policies to increase the level of technology adaptation and efficiency would improve capital allocation and TFP. Such an approach would need to increase the focus on contestability to drive creativity and initiative. The pursuit of growth through a vibrant private sector that incorporates mature knowledge from offshore, competes against the SOEs, adapts to changing consumption needs and sustains a strong external focus is a well-worn path by other countries that have successfully moved to higher incomes.

It will not be easy for China to implement policies that take it faster down that approach, not least since it will involve a clear change in mindset. It will be especially challenging for central and local officials to pull back and provide more space for private entrepreneurship. It will require overcoming vested interests, including the SOEs and local and party officials that allocate economic rents.

However, while challenging to deliver, the options outlined in this Analysis are all firmly within China's grasp and not dependent on the actions of other countries. Improving incentives and competition to encourage domestic adaptation and innovation largely requires a reduction in the current barriers to entry in areas occupied by the SOEs, better protection

of domestic property rights, more transparency in judicial and government systems, stronger corporate governance, and better access to finance for start-ups and other private companies. These are issues that China can control.

China's actions will also have significant implications for the rest of the global economy. A thriving China will see a rising middle class that will provide more opportunity for markets to efficiently allocate resources with lower financial risk and be a boost to global demand. China's rising productivity and knowledge creation will spread to other countries and in turn spur more innovation. Such transfers can be mutually beneficial interactions, serving as the ballast to cooperative relationships and generating a combined interest in reinforcing the global rules and strengthening global public goods. This calls for a pragmatic and constructive approach as the issues evolve. The rest of the world has a clear stake in China's economic transition.

ACKNOWLEDGMENTS

With thanks to John Edwards and Roland Rajah for discussions on the issues noted in this Analysis

ANNEX: ECONOMIC PROGRESS IN JAPAN AND KOREA

Like all the newly industrialising countries in Asia, economic growth was initially rapid in Japan and Korea, with income per capita reaching one-quarter of US levels in 1959 and 1986 respectively. Thereafter, and unlike many countries, Japan and Korea continued to grow rapidly (though not without financial and economic challenges), and both countries are now classified as advanced economies. This Annex outlines policies these countries implemented during this period of their transition.⁵⁴ Overall, government policies moved away from a direct role in promoting specific industries towards a more facilitating role that promoted innovation and efficiency, encouraged a high degree of contestability and sustained a strong external focus. Technological catch-up and absorption, the building of globally competitive manufacturing brands, and new innovations were encouraged.

Industry policy and the role of government: Both countries initially followed industrial policies aimed at building future comparative advantage endogenously by promoting priority industries. Intervention in Japan was the most indirect, with some companies resisting these efforts. In Korea, actions were initially more direct, though that approach faded during the 1980s as the government moved more towards general support for activities rather than for targeted industries. Many consumer-goods based companies developed outside the strictures of state guidance.

Role of large private corporates: Large private conglomerates (the *keiretsu* and *chaebol*) were initially supported in both countries. Incentives included preferential access to credit for capital-intensive export industries and investment tax incentives. During the 1980s, Korea removed some subsidies and preferential loans. Its 'Monopoly Regulation and Fair Trade Act' of 1981 aimed to promote competition. In Japan, older industries, such as textiles, coal, shipbuilding and aluminium had to exit as the economy moved up the value-add chain. More generally efforts were taken to promote market mechanisms to allocate resources in response to the gradual increase in complexity in the economy.

Trade and an outward focus: Both countries maintained a strong export orientation, promoting fierce competitiveness for external sales among local private companies to drive investment and productivity advances. Given the size of its internal market, Japan's export/GDP share was smaller than Korea's. Japan and Korea at times protected their internal markets from foreign competition in critical sectors to build competitiveness. In the 1960s, Japan opened external trade in a strategic step-by-step manner; in Korea import restrictions were gradually eased

during the 1980s. In both, the international competitiveness of their consumer-goods-focused companies supported local sales.

Import of foreign technology: Both countries adopted advanced capital goods and licencing payments for foreign technologies to build their industrial sectors. Licensing of US technology, patent purchases, and imitation and improvement of foreign inventions was common. In Japan, identical technology was imported to foster competition between local private corporations. Foreign direct investment was initially limited in Japan though liberalised from the 1970s; it was more common in Korea.

Financial system policies: While both countries had repressed financial systems, in Japan private banks allocated funds fairly efficiently among growing industries despite the role of directed credits, though there was a shortage of venture capital. In Korea, the government intervened extensively in the allocation of investment funds, but the system was gradually liberalised from the 1980s.

Education systems and R&D: Both governments placed a high priority on upgrading labour force skills, reinforcing a traditional focus on education. This helped the labour force absorb foreign technologies and adapt imported institutions to local conditions. Both countries supported R&D by public institutions and private enterprises, though in practice original innovation took many years to develop.

NOTES

¹ Using purchasing power parity exchange rates; GDP per person at market exchange rates is around \$10,000: China 2018 data, “GDP Per Capita, PPP (constant 2011 international \$) – China”, World Bank International Comparison Program Database, accessed 16 December 2019, <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD?locations=CN>.

² World Bank, China – Systematic Country Diagnostic: Towards a More Inclusive and Sustainable Development (English). (Washington DC: World Bank Group, February 2018), <http://documents.worldbank.org/curated/en/147231519162198351/China-Systematic-Country-Diagnostic-towards-a-more-inclusive-and-sustainable-development>, 41-59 and Appendices.

³ Lowy Institute, based on IMF Direction of Trade Statistics, data.imf.org.

⁴ The large private business conglomerates are known as *keiretsu* in Japan and *chaebol* in Korea. For further discussion of the similarities and differences between China and other industrialising Asian economies, see Arthur R Kroeber, *China's Economy: What Everyone Needs to Know* (New York: Oxford University, 2016), 1-26. For more details on China's specific growth performance and policies, and the challenges and opportunities facing its economy, see World Bank/Development Research Center of the State Council (World Bank/DRCS), *China 2030: Building a Modern, Harmonious and Creative Society* (Washington DC: World Bank, 2013), <http://documents.worldbank.org/curated/en/781101468239669951/pdf/China-2030-building-a-modern-harmonious-and-creative-society.pdf>; and Ross Garnaut, Ligang Song et al, *China Update Series* (Canberra: ANU Press, 2005-2019), <https://press.anu.edu.au/publications/series/china-update>.

⁵ The data in this Analysis are mainly drawn from the National Bureau of Statistics of China, IMF, or Penn World Table 9.1, Robert C Feenstra, Robert Inklaar and Marcel P Timmer (2015), “The Next Generation of the Penn World Table”, *American Economic Review*, 105, No. 10, 3015-82, available for download at www.ggd.net/pwt. The Penn Tables provide consistent country comparisons of the capital stock and productivity levels; they do not use official China GDP estimates but the (lower) estimates derived using the methodology outlined in Harry X Wu, “The Real Growth of China Industry Debate Revisited — Reconstructing China's Industrial GDP 1949-2008”, *Economic Record* (Institute of Economic Research, Hitotsubashi University), 62, No. 3, 209-24.

⁶ Labour productivity measures the amount of output produced by each worker.

⁷ China has also seen a large decline in its trade surplus over the past decade, which can drag on the pace of growth during the adjustment back towards balance, a level it has now broadly reached: Nicholas Lardy, *The State Strikes Back* (Washington DC: Peterson Institute for International Economics, 2019), 10-13.

⁸ For the standard economic models, see Robert Solow, “A Contribution to the Theory of Economic Growth”, *Quarterly Journal of Economics*, 70, No. 1 (1956): 65-94, and Paul M Romer, “Endogenous Technological Change”, *Journal of Political Economy*, 98, No. 5 (1990): 71-102.

⁹ Measured as the growth of the population aged between 15 and 64 years; alternative labour force definitions provide a different turning point, but do not change the trend slowdown in the workforce.

¹⁰ Author's estimates using Penn World Table 9.1.

¹¹ ICOR reflects the change in the real (i.e., after inflation) capital stock relative to the change in real output. Since it is difficult to estimate accurately the level of the capital stock and the annual capital depreciation rate, ICOR is often approximated by comparing the level of real investment to the change in real output (as shown in Figure 5). In practice, the diminishing returns to ever higher levels of investment illustrated by a sharply rising ICOR in China show up in a lower level of recorded TFP.

¹² While their share in output and employment has fallen since 1980, SOEs still play a dominant role in heavy industries such as metals and mining, energy, chemicals, machinery, construction and airlines. Ownership classification in China is complex, with many private enterprises having a degree of government ownership and/or involvement.

¹³ For further discussion, see World Bank/DRCS, *China 2030*, 25-33, and Lardy, *The State Strikes Back*, 50-54.

¹⁴ Bank of International Settlements data. Lam, et al (2017) estimate that although now only 15-20 per cent of output, SOEs account for 57 per cent of corporate debt and almost 60 per cent of its rise between 2008 to 2016: W Raphael Lam et al, "Resolving China's Zombies: Tackling Debt and Raising Productivity", IMF Working Paper No. WP/17/266, 27 November 2017,

<https://www.imf.org/en/Publications/WP/Issues/2017/11/27/Resolving-China-Zombies-Tackling-Debt-and-Raising-Productivity-45432>.

¹⁵ McKinsey Global Institute estimates the level of NPLs at 7 per cent of bank assets as at June 2016: Jonathan Woetzel et al, "Capturing China's \$5 Trillion Productivity Opportunity", McKinsey Global Institute, June 2016, <https://www.mckinsey.com/featured-insights/employment-and-growth/capturing-chinas-5-trillion-productivity-opportunity>, 40.

¹⁶ UNCTAD merchandise trade data; unctadstat.unctad.org.

¹⁷ See Stephen S Roach, "America's False Narrative on China", Project Syndicate, 26 April 2019, <https://www.project-syndicate.org/commentary/america-false-china-narrative-by-stephen-s-roach-2019-04?>, and John Edwards, "Economic Conflict Between America and China: A Truce Declared, the Talks Begin", Lowy Institute Report (Sydney: Lowy Institute for International Policy, 2018), <https://www.lowyinstitute.org/publications/economic-conflict-between-america-and-china-truce-declared-talks-begin>, for a critical examination of the current complaints by the United States.

¹⁸ While TFP cannot be directly measured, various studies point to estimates within this range. A recent study, "Calculation of Total Factor Productivity Growth Rate", China Development Research Foundation, Paper presented to the China Development Forum: Engaging with the World for the Common Prosperity, Beijing, 23-25 March 2019, also shows a decline in TFP since the global financial crisis but that it has averaged 2-3 per cent over the past five years. The estimates shown in Figure 8 are from Penn World Table 9.1.

¹⁹ Bulman and Kray estimate half of the TFP growth between 1979-2008 came from labour reallocation: David Bulman and Aart Kraay, "Growth in China 1978-2008: Factor Accumulation, Factor Reallocation and Improvements in Productivity", Background Paper for "China Big Ideas" Report, World Bank Working Paper, May 2011, <http://documents.worldbank.org/curated/en/206401468024284207/Growth-in-China-1978-2008-Factor-Accumulation-Factor-Reallocation-and-Improvements-in-Productivity>.

²⁰ See argument in Lant Pritchett and Lawrence H Summers, "Asiaphoria Meets Regression to the Mean", National Bureau of Economic Research Working Paper No. 20573, October 2014, <https://www.nber.org/papers/w20573>.

²¹ See Indermit Gill and Homi Kharas, *An East Asian Renaissance: Ideas for Economic Growth* (Washington DC: World Bank, 2007), <http://documents.worldbank.org/curated/en/517971468025502862/An-East-Asian-renaissance-ideas-for-economic-growth>, and Barry Eichengreen, Donghyun Park and Kwanho Shin, "When Fast Growing Economies Slow Down: International Evidence and Implications for China", NBER Working Paper No. 16919, March 2011; Barry Eichengreen, Donghyun Park and Kwanho Shin, "Growth slowdowns redux: New Evidence on the Middle-Income Trap", *Japan and the World Economy*, 32: 65-84, <https://www.nber.org/papers/w18673>; World Bank/DRCS, *China 2030* ((Box 0.1, 12) notes that of the 101 countries with middle-income status in 1960, only 13 had moved to a high-income level by 2008.

²² A recent study by the Reserve Bank of Australia took a similar approach to show that based on current trends, growth in China will fall to around 3 per cent by 2030; Ivan Roberts and Brendan Russell, "Long-term Growth in China", Reserve Bank of Australia Bulletin — December 2019, <https://www.rba.gov.au/publications/bulletin/2019/dec/long-term-growth-in-china.html>.

²³ As an example of the economic impact on Australia from a slowdown in China, see Rochelle Guttman et al, "Spillovers to Australia from the Chinese Economy", Reserve Bank of Australia Bulletin — June 2019, <https://www.rba.gov.au/publications/bulletin/2019/jun/spillovers-to-australia-from-the-chinese-economy.html>.

²⁴ Data from Penn World Table 9.1.

²⁵ Lardy, *The State Strikes Back*, highlights the need to address the current inefficiencies of the SOEs; Justin Yifu Lin, "China and the Global Economy", *China Economic Journal*, 4, No. 1 (October 2011): 1-14; Justin Yifu Lin, *Demystifying the Chinese Economy* (Cambridge: Cambridge University Press, 2011), <https://www.cambridge.org/core/books/demystifying-the-chinese-economy/DF9688C7784FB2FA3A7554985C677D0F>, points to the need to target industries that will endogenously change the endowment structure and skills base.

²⁶ For instance, the strong military alliances with the United States enabled Japan and Korea to access US technology via technical assistance and educational exchanges. Korea could also initially rely on large US aid and Japan on the human capital it had built prior to the war.

²⁷ Sources for Table 1: World Bank/DRCS, *China 2030*; Australian Government, *Australia in the Asian Century*, White Paper (Canberra: Australian Government, October 2012); Asian Development Bank, *Long-term Projections of Asian GDP*

and Trade (Manila: Asian Development Bank, 2011), <https://www.adb.org/publications/long-term-projections-asian-gdp-and-trade>; Janet Henry and James Pomeroy, *The World in 2030: Our Long-term Projections for 75 Countries* (London: HSBC Global Research, September 2018), <https://enterprise.press/wp-content/uploads/2018/10/HSBC-The-World-in-2030-Report.pdf>; Dominic Wilson et al, "The BRICs 10 Years On: Halfway through the Great Transformation", Goldman Sachs Global Economics Paper No. 208, December 2011; Jong-Wha Lee and Kiseok Hong, "Economic Growth in Asia: Determinants and Prospects", ADB Economics Working Paper Series, No. 220, September 2010; Xiaolu Wang and Yixiao Zhou, "Forecasting China's Economic Growth by 2020 and 2030", in *China's New Sources of Economic Growth: Vol. 1*, ed Ligang Song et al (Canberra: Australian National University Press, 2016), 65.

²⁸ A relevant example would be the challenges in trying to model in advance the timing and impact on productivity growth of the wide-ranging reform package that was undertaken in Australia in the 1980s and 1990s. The boost to growth from higher productivity took a decade to become evident in the Australian data.

²⁹ For a quantitative examination of the implications of a similar baseline and reform scenario for the investment and consumption shares in GDP, as well as industry output shares, see McKinsey, *China's Choice*, 47-51.

³⁰ Announced in October 2010, the SEI aimed to have eight industries account for 8 per cent of GDP by 2015 and 15 per cent by 2020. The eight industries are: new energy, new-energy vehicles, new materials, high-end manufacturing, pharmaceuticals and biotechnology, next generation information technology, and energy-efficient and environmental technologies. Two additional areas were added in 2017: digital innovation (including cultural, new media and industrial design services) and related services such as research, standardisation and financial services. For an early review, see Xu and Wang (2015).

³¹ The Made in China 2025 policy (announced in May 2015 and modelled off Germany's 'Industry 4.0' strategy) aims to increase local content from 40 per cent by 2020 to 70 per cent by 2025 in eight strategic industries.

³² The seven protected areas with 'absolute control' are defence, electricity generation and distribution, petroleum and petrochemicals, telecommunications, coal, civil aviation and waterway transport. Basic and pillar industries with the state having a 'somewhat strong influence' include machinery, automobiles, electronics and information technology, base metals, construction, steel and chemicals. For a compilation of recent support to the SOEs, see Lardy, *The State Strikes Back*, 16-21.

³³ See, for example, Daron Acemoglu, Philippe Aghion and Fabrizio Zilibotti, "Distance to Frontier, Selection, and Economic Growth", *Journal of the European Economic Association*, 4, No. 1 (March 2006): 37-74, <https://academic.oup.com/jeea/article/4/1/37/2280920>; Robert E Lucas Jr, Making a Miracle, *Econometrica*, 61, No. 2 (March 1993): 251-272, <https://www.econometricsociety.org/publications/econometrica/1993/03/01/making-miracle>; and Fabrizio Zilibotti, "Growing and Slowing Down Like China", *Journal of European Economic Association*, 15, No. 5 (October 2017): 943-88, <https://academic.oup.com/jeea/article/15/5/943/3982423>.

³⁴ Data from TFP calculations for Japan and Korea in Penn World Table 9.1 for the period five years before and after the year when incomes per capita were at around one-quarter of those in the United States.

³⁵ For further details, see Chung H Lee and Ippei Yamazawa, eds, *The Economic Development of Japan and Korea: A Parallel with Lessons* (New York: Praeger Publishers, 1990), and World Bank/DRCS, *China 2030*, 159-160.

³⁶ Xielin Liu et al, "Beyond Catch-up: Can a New Innovation Policy Help China Overcome the Middle-Income Trap," *Science and Public Policy*, 44, No. 5 (October 2017): 656-69; the authors found while the designation of high-tech status was sought by the companies concerned, this was mainly for the tax and preferential benefits derived rather than to actually innovate.

³⁷ While studies are mixed, the literature suggests that multinational corporations are a source of local employment – especially while real wages remain low – but there is little incentive for them to undertake innovation or sophisticated technology transfers to the locational countries of their production chain (Robert H Wade, "Industrial Policy in Response to the Middle-Income Trap and the Third Wave of the Digital Revolution", *Global Policy*, 7, No. 4 (September 2016): 469-80). Nor do they tend to encourage strong backward links to local suppliers (Kenichi Ohno, "The Middle-Income Trap: Implications for Industrialization Strategies in East Asia and Africa," GRIPS Development Forum, National Graduate Institute for Policy Studies (2009), <http://www.grips.ac.jp/forum/pdf09/MIT.pdf>; Shahid Yusuf and Kaoru Nabeshima, *Tiger Economies Under Threat* (Washington DC: World Bank, 2009), <http://documents.worldbank.org/curated/en/920331468088743340/Tiger-economies-under-threat-a-comparative-analysis-of-Malaysias-industrial-prospects-and-policy-options>.

³⁸ Alessandro Saia, Dan Andrews and Silvia Albrizio, "Productivity Spillovers from the Global Frontier and Public Policy: Industry-level Evidence", OECD Working Paper ECO/WKP(2015)56, 16 June 2015, <http://www.oecd.org/economy/growth/Productivity-Spillovers-from-the-Global-Frontier-and-Public-Policy-Industry-Level-%20Evidence.pdf>.

³⁹ For a description of the official efforts and remaining challenges in these broad areas in China, see World Bank, *China – Systematic Country Diagnostic*, 41-59.

⁴⁰ For a discussion of industry policies in Asia, see Reda Cherif and Fuad Hasanov, "The Return of the Policy that Shall Not Be Named: Principles of Industrial Policy", International Monetary Fund Working Paper No. WP/19/74, 26 March 2019, <https://www.imf.org/en/Publications/WP/Issues/2019/03/26/The-Return-of-the-Policy-That-Shall-Not-Be-Named-Principles-of-Industrial-Policy-46710>.

⁴¹ See Shang-Jin Wei, Zhuan Xie and Xiaobo Zhang, "China's Transition to a More Innovative Economy: Progress and Challenges", in *China's New Sources of Economic Growth: Vol. 2*, ed Ligang Song et al (Canberra: Australian National University Press, 2017), 173, and Lardy, *The State Strikes Back*; in a study by Loren Brandt and Xiaodong Zhu, "Accounting for China's Growth", *IZA Discussion Series*, IZA DP No. 4764, February 2010, <http://ftp.iza.org/dp4764.pdf>, TFP growth in the state sector was 1.5 per cent annually between 1978-2007 compared with 4.6 per cent in the non-state sector.

⁴² For a discussion of these efforts and their limitations to date, see Lardy, *The State Strikes Back*, 81-97.

⁴³ Veerayooth Kanchoochat, "The Middle-Income Trap and East Asian Miracle Lessons", in *Rethinking Development Strategies after the Financial Crisis – Volume 1*, ed Alfredo Calcagno et al (New York: United Nations, 2015), 61.

⁴⁴ For a discussion on the merits of competitive neutrality in China, see "Editorial: How China Can Achieve Competitive Neutrality", Caixin Global, 23 October 2018, <https://www.caixinglobal.com/2018-10-23/editorial-how-china-can-achieve-competitive-neutrality-101338043.html>.

⁴⁵ For one discussion amongst many of reform options for the financial sector, see World Bank/DRCS *China 2030*.

⁴⁶ For a quantitative analysis of the implications of lower investment on consumption, see Guonan Ma, Ivan Roberts and Gerard Kelly, "Rebalancing China's Economy: Domestic and International Implications", *China and the World Economy*, 25, No. 1 (2017), 1-31.

⁴⁷ Areas for innovation and competition could include digitalisation, on-line purchases, and the distribution and logistics sectors. For an expanded discussion, see McKinsey, *China's Choice*.

⁴⁸ National Bureau of Statistics of China, China Statistical Yearbook, flow of funds data for 2015, <http://www.stats.gov.cn/tjsj/ndsj/2015/indexeh.htm>.

⁴⁹ Ma, et al, "Rebalancing China's Economy". For an extended discussion of household savings patterns, see Kate Stratford and Arianna Cowling, "Chinese Household Income, Consumption and Savings", Reserve Bank of Australia Bulletin — September 2016, <https://www.rba.gov.au/publications/bulletin/2016/sep/pdf/rba-bulletin-2016-09-chinese-household-income-consumption-and-savings.pdf>, 31-40. A higher wage share and narrowing in the difference between the return and the cost of capital played a critical role in the rise in Japan's consumption share in the early 1970s: Tomoyuki Fukumoto and Ichiro Muto, "Rebalancing China's Economic Growth: Some Insights from Japan's Experience", Bank of Japan Working Paper Series, No. 11-E-5, July 2011, https://www.boj.or.jp/en/research/wps_rev/wps_2011/data/wp11e05.pdf.

⁵⁰ IMF, "World Economic Outlook, April 2019: Growth Slowdown, Precarious Recovery", Box 4.4, 124-27.

⁵¹ For an expanded discussion of the Belt and Road Initiative in the Pacific context, see Roland Rajah, Alexandre Dayant and Jonathan Pryke, *Ocean of Debt? Belt and Road and Debt Diplomacy in the Pacific*, Lowy Institute Analysis (Sydney: Lowy Institute, October 2019), <https://www.lowyinstitute.org/publications/ocean-debt-belt-and-road-and-debt-diplomacy-pacific>.

⁵² Nonetheless, since estimates of the size of the Belt and Road Initiative and the contribution and timing of China's funding vary widely, it is difficult to pin down its likely contribution to China's overall growth.

⁵³ China has already amended forced technology transfer laws, and is opening its banking sector to external competition. China paid US\$36 billion to license foreign technology in 2018 (up from US\$8 billion in 2007: data.worldbank.org).

⁵⁴ Adapted from Lee and Yamazawa, "Economic Growth in Asia", and World Bank/DRCS, *China 2030*.

ABOUT THE AUTHOR



David Orsmond

Dr David Orsmond has recently been appointed Professor of Economics at the Macquarie Business School. Until last year Dr Orsmond worked at the Reserve Bank of Australia, holding senior positions in the Financial Stability and Economic Analysis Departments. From 1992 to 2005 Dr Orsmond held several roles at the International Monetary Fund, including as Resident Representative in Ukraine, Mission Chief for the Solomon Islands, as well as working on economic stabilisation and technical assistance issues across many countries. Previously he was an economist at the Department of the Prime Minister and Cabinet. He has written on a range of topics, including regulatory policies in the financial sector, China and the Australian mining sector. He holds a PhD in economics from Duke University, having earlier completed a Bachelor of Economics at Sydney University and studies in international economic policy at the Kiel Institute for the World Economy.

LOWY INSTITUTE

31 Bligh Street
Sydney NSW 2000 Australia

Tel: +61 2 8238 9000
Fax: +61 2 8238 9005

www.lowyinstitute.org
twitter: @lowyinstitute