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Challenges and roadmaps for moving towards a high-income economy

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China's per capita income reached US\$10,000 in 2019—an important milestone in measuring the significant improvement in wellbeing for 1.4 billion Chinese people resulting from the decades-long program of reform and development. In the same year, China's total gross domestic product (GDP) reached US\$14.3 trillion, accounting for 16.4 per cent of global GDP according to World Bank estimates, which matches closely to China's share of about 18 per cent of global population. Along with the rise in per capita income and total GDP, the Chinese economy witnessed some fundamental changes in the pattern of industrialisation, continuing to move towards high value-added production, trade and investment, progress on innovation and technological change and large-scale poverty reduction. These changes reflect some key features associated with a new and more advanced stage of growth and development. These structural changes are expected to continue to deepen and will allow China to accomplish its goal of becoming a high-income economy, which is one marked by a level of per capita income above US\$12,270.¹

¹ The World Bank classifies countries into low-income, lower middle-income, upper middle-income and high-income economies according to gross national income per capita (World Bank 2021).

Dynamic changes in moving up the ladder of development

China's consistent, rapid economic growth over four decades was made possible by a good combination of economic reform and opening (Lin 2013a) and its demographic structure (Cai et al. 2018). The strong incentive effects of reform and opening matched so well with China's abundant supply of labour (initially low skilled, then shifting towards highly skilled at later stages of development) during the high-growth period in explaining the fundamental pattern of China's economic development (Li et al. 2012). Some key development lessons can be learned from this experience.

First, China's pattern of economic growth has centred on the development of manufacturing industries, which for a consistently long period drew significant investment despite contraction in its share in total investment in recent years (Figure 1.1). Investments in industry created employment, facilitated the unprecedented scale of urbanisation, established a comprehensive manufacturing base and turned China into an international industrial powerhouse through deepened international integration and specialisation at the beginning, following the East Asian manufacturing-based growth model in the 1970s and 1980s, and later through participating in global production networks (Kojima 2000; Lin 2013b). The development of manufacturing has had positive externalities as expounded by Kaldor's growth laws, which say there is a strong positive correlation between the growth of manufacturing output and the growth of GDP, a strong positive correlation between the growth of manufacturing output and the growth of productivity in manufacturing, and a strong positive relationship between the growth of manufacturing output and the growth of productivity outside manufacturing (Thirlwall 2015). One empirical work using cross-provincial data from China has validated such growth laws in the Chinese context (Thirlwall 2011: 111).

Second, China's industrial sector development did not leave the development of the agricultural sector too far behind. In fact, China's agricultural sector has maintained record productivity growth throughout the reform period while going through its own transformation (Sheng and Song 2019). This allowed a continuously large number of migrant workers to move to the cities, while the rural sectors have become an important source of demand for industrial goods due to the steady rises in rural household incomes. The way in which industrial and rural development support each other through rural reform and urbanisation has led to rapid increases in income in both sectors, narrowing the income gaps between them. A significant change in government policy towards agriculture in 2005 saw for the first time in Chinese history the abolition of agricultural taxes, lessening the financial burden on farmers (Heerink et al. 2006), although much needs to be done to deepen rural

reform, especially reforms of both leased and rural residential lands (Liu 2018). This is in sharp contrast to the experience of many developing countries, where industrial growth was achieved at least temporarily at the expense of rural sector development through policies of ‘urban bias’ (Pugh 1996), which eventually dragged down their overall development as a result (Lipton 2007).

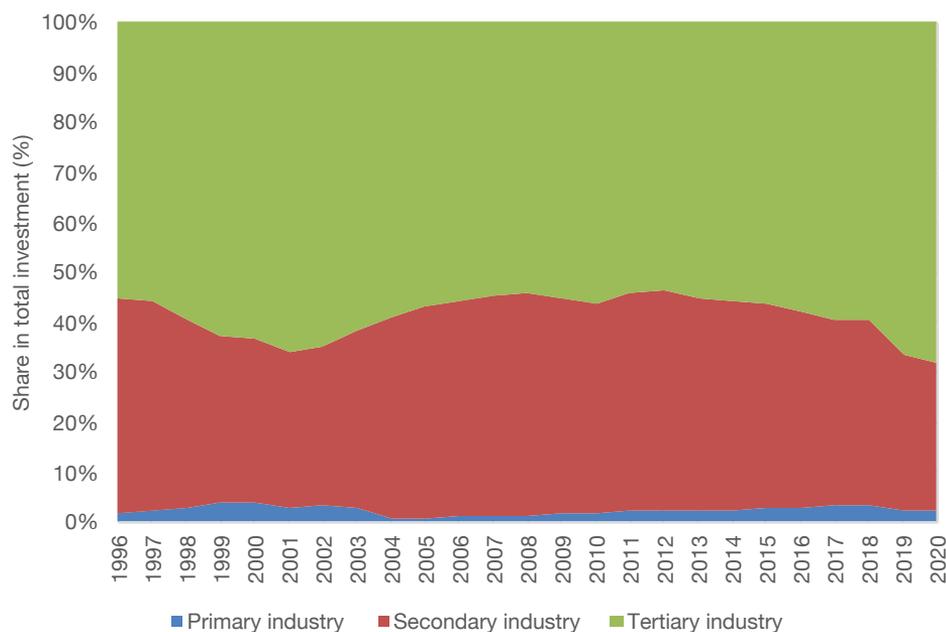


Figure 1.1 Fixed-asset investment in three types of industries as a share of total investment in China (1996–2020)

Source: Authors’ construction using data from CEIC Database.

Third, infrastructure development in China has been a success story during the reform period. The massive investments in infrastructure by both government and the private sector—including in roads, bridges, railways, ports, air links, fast trains, large-scale water projects, electricity and gas—have paved the way for foreign investment and played an important role in enhancing the process of marketisation, which facilitates freer internal flows of goods, factors of production and ideas (Qin 2016; Song and van Geenhuizen 2014; Yu et al. 2012). The literature on the ‘new economic geography’ suggests that widening the market brings benefits in terms of increased competition and contestability in markets and, therefore, transportation infrastructure allows greater dissemination of knowledge and technology (Canning and Bennathan 2000). As Canning and Bennathan (2000: 2) pointed out:

[I]f the takeoff in developing countries relies on a co-ordinated bout of investment, the public provision of risky, large scale infrastructure projects may provide a trigger for private sector investment and escape from a poverty gap.

The Chinese experience in infrastructure development supports this point. China is now on its way to building the so-called new infrastructure that will underpin its embrace of the digital economy (Meinhardt 2020).

Fourth, the periods in which China's rapid economic growth took place coincided with the periods in which globalisation processes were enforced or reenforced, marked by the transition from the General Agreement on Tariffs and Trade (GATT) to the World Trade Organization (WTO) in 1995. Under the auspices of the WTO, global trade and cross-border investment flows were accelerated and China became an important player in the process. The year 2021 marked the twentieth anniversary of China's accession to the WTO. Over the past 20 years, China has become the largest trading nation in the world through its deep integration with the global economy and domestic reforms in compliance with the requirements of the WTO (Drysdale and Hardwick 2018). By 2020, China had become the largest recipient of foreign direct investment (FDI), surpassing the United States, against a background in which global total FDI fell by 42 per cent due to the impact of the COVID-19 pandemic, according to the United Nations Conference on Trade and Development (UNCTAD 2021).

China had also become a big investor in overseas markets, with its total outflow of FDI reaching US\$118 billion, making it the third-largest overseas investor after the United States and Japan in 2019. Although falling from its peak of outward investment reached in 2016, China's outward investment in the countries of the Belt and Road Initiative (BRI) continued to grow rapidly (to 11.7 per cent in 2019). China has made great efforts in opening its markets to foreign competition, deepening its domestic reforms, addressing issues such as intellectual property rights, state subsidies and market competition, and state-owned enterprise (SOE) reform to fully comply with the requirements of the WTO (Yu 2018; Zhou et al. 2019).

Fifth, the catch-up phase of China's economic development saw significant progress in innovation and technological change, underpinned by its human capital and increased capacity for innovative activities. China's spending on research and development (R&D) climbed 10.3 per cent to RMB2.44 trillion (US\$378 billion) in 2020, as reported by China's National Bureau of Statistics (NBS 2021). According to the NBS report, R&D spending accounted for 2.4 per cent of China's GDP in 2020 (Figure 1.2). The report shows that, by the end of 2020, China had 522 'national key laboratories' and 350 'national engineering research centres' in operation; some 457,000 projects had been funded by the National Natural Science Foundation of China in 2020 and 3.6 million patents had been granted—up by 40 per cent from 2019. These developments allowed China to leapfrog its technological capabilities in several key areas, including digital technologies, as well as compelling it to pay more attention to the protection of intellectual property rights in the transition from technological imitation to innovation (Zhou 2014). According to the Global Innovation Index, which provides detailed metrics about the innovation performance of 131 countries and economies around the world,

China was ranked first in innovation performance for middle-income countries and fourteenth globally. The World Intellectual Property Organization (WIPO) reported that its China office received a record total of 1.54 million patent applications in 2018, ahead of the United States, Japan, South Korea and the European Patent Office (EPO). China recorded double-digit growth in 2018, while patent filings slightly dropped in the United States and Japan. More than 84 per cent of all patent filings in 2019 occurred in the intellectual property (IP) offices of China, the United States, Japan, South Korea and the EPO. China accounted for more than 40 per cent of the world total (Figure 1.3).

In lifting China's technological capabilities, both the public and the private sectors have been working more closely in making technological breakthroughs in areas such as new sources of energy, electric cars, aviation and space technologies and 5G networks. For example, by 2020, China had built the world's largest 5G network, accounting for more than 70 per cent of the global total and leading the world in terms of registered patents on key 5G technologies. China has attached great importance to the development of its '5G+ Industrial Internet' strategy, which has been emphasised in the central government's main working reports for four consecutive years. According to the China Academy of Information and Communications Technology, China has more than 1,100 5G+ Industrial Internet projects under construction, covering 22 industries, including cement, automobiles, petrochemicals, steel, mining and oil fields (Xinhua 2021b).

According to a report by China's Ministry of Industry and Information Technology, the quantity of industrial robots produced in 2020 increased by 19.1 per cent year-on-year (Xinhua 2021a). The real hope is that these developments in frontier technologies relating especially to the digital transformation of the economy could lead to economy-wide improvements in productivity. Such a transformation would have global implications in terms of new modes of industrialisation, new patterns of trade and cross-border transfers of technology, and new pattern of consumption.

Sixth, one of the damaging consequences of the so-called investment-driven model of growth is environmental degradation. China's decades-long industry-led growth path has been characterised by rapidly growing energy and emission intensities and increases in its global market shares of manufactured products and natural resources such as petroleum and minerals (Roberts et al. 2016; Zheng et al. 2020). Its carbon emissions and share in global emissions have constantly increased since the 1970s and noticeably accelerated after 2002, when the pace of its industrialisation accelerated. As a result, incremental carbon emissions have surged, with China surpassing the United States since 2007 to become the world's largest emitter of carbon dioxide. Given the scale, pace and trajectory of its industrialisation, China faces an enormous challenge for mitigation. Yet, it is clearly in the country's interests to do so given the high price it has been paying for environmental degradation. To confront this challenge, China has adopted a grand strategy that includes technological change

and innovation, market price mechanisms, adjustments of industrial structure, the use of renewable energy and changes in consumption patterns, with a hope that low carbon growth can be generated (Jiang et al. 2013).

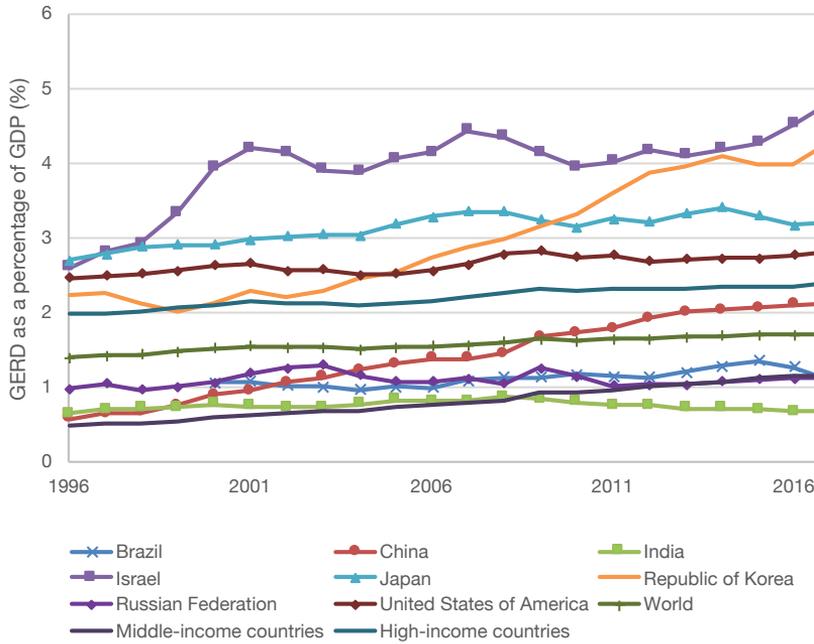


Figure 1.2a. R&D intensity in various economies, 1996–2018

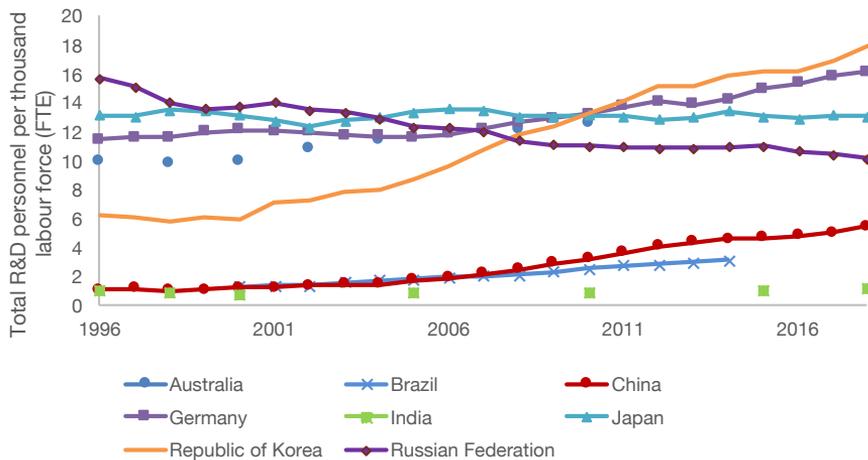


Figure 1.2b. R&D personnel intensity, 1996–2018

Figure 1.2 R&D intensity and R&D personnel intensity in various economies

Note: R&D intensity is R&D expenditure as a share of GDP (R&D intensity). R&D personnel intensity is Total R&D personnel per thousand labour force.

Source: Constructed from UNESCO data.

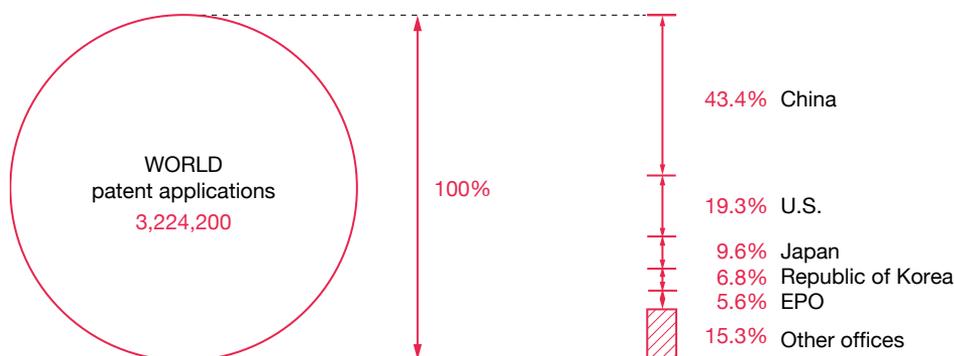


Figure 1.3 Major countries in patent applications in 2018

Source: World Intellectual Property Database website.

Finally, the modernisation drive has fundamentally changed the fabric of Chinese society. With rising income levels, China has created the world's largest middle class (Kharas 2017) and eliminated absolute poverty (Guo et al. 2019); its universal healthcare covers 93 per cent of the population, and its urbanisation ratio reached 62 per cent in 2020. With massive investment in education, China has substantially improved the literacy of its people through compulsory education and expanded levels of training. Its higher education sector has also begun to enter the global top university rankings (Fraumeni et al. 2019; Li et al. 2014). At the same time, its population is ageing (Figure 1.4).

Because mortality will continue to decline and fertility will probably stay at a relatively low level, population ageing is likely to be an irreversible trend of long-term development rather than a historical event occurring at a particular time. (Zhao 2011: 296)

In summary, there have been three significant windows of opportunity for economic transformation in China in the past 40 years. China has successfully met the challenges of the first two and is yet to prove its success for the third. The first window was the historic opportunity to reform and open the economy in the late 1970s, which allowed China to decisively move away from the centrally planned system to embrace an open market economy that fundamentally unleashed all productive forces in creating wealth, leading to high economic growth and much improved standards of living. The second window of opportunity was China's accession to the WTO in 2001, which formally admitted China to the global trading system, allowing it to build a more rules-based market-compatible system with a high degree of interdependence with the rest of the world. China has since benefited enormously from globalisation and contributed to the improvement of global welfare while exerting strong competitive pressure on its trading partners in dealing with the enormous adjustment costs. The third window of opportunity is how China in the post-COVID-19 pandemic world will embrace digital technologies to transform its mode of economic growth and address the challenges of structural change,

deglobalisation, an ageing population, income inequality, public sector debt and climate change. Success in addressing all the key challenges will hold the key for China to elevate itself to the status of a high-income economy.

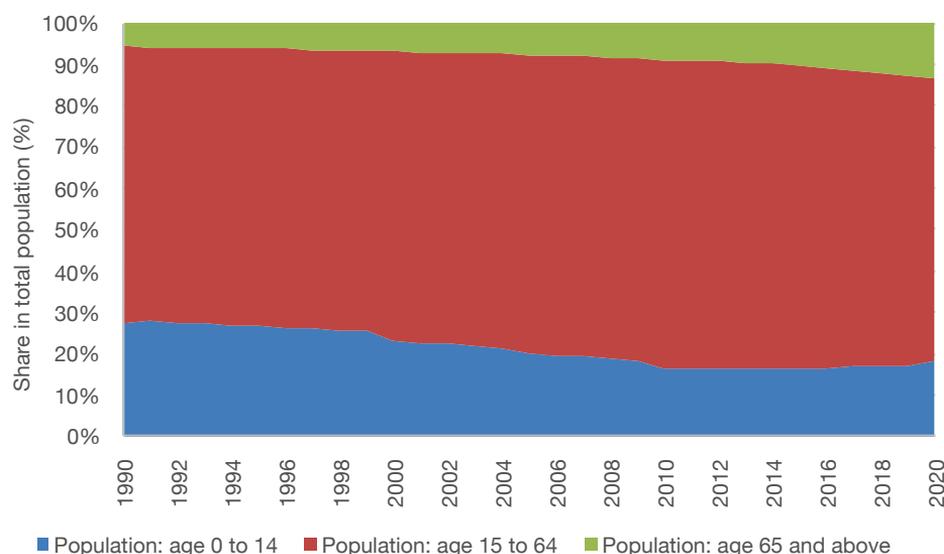


Figure 1.4 China's population by age group as share of total population, 1990–2020 (per cent)

Source: Authors' construction using data from CEIC Database.

At the same time, some longstanding structural problems remain, such as resource misallocation, inefficiency, high emission intensities, income inequality and lack of market-compatible institutions. In the Chinese context of a partially reformed system, these problems need to be addressed through broad-based supply-side reforms, institution-building and social changes to prevent China from falling into the so-called middle-income trap, where income growth stagnates and society loses momentum for growth and development resulting from the rising costs of production and an inability to keep pace with structural reform to produce more high valued-added goods through improved productivity and technological progress. Again, building market-compatible institutions is the key for securing long-term growth and development.

There is some urgency for this as China tries to avoid 'getting old before it gets rich' (Dollar et al. 2020). The pace of China's move towards an ageing society highlights the need to deepen its supply-side structural reforms, including reform of the family planning policy and its household registration system (*hukou*) and rural reforms. This concern is warranted considering economic growth has been decelerating in recent years—in part because of demographic change: there has been an absolute fall in China's working-age population since 2012, fertility rates continue to fall and its total population is expected to fall from 2025 (Bai and Lei 2020). Part of that

growth deceleration is also due to the falling level of productivity in recent years. The Fourteenth Five-Year Plan, which will be implemented from 2021 with a new development strategy, aims to address these structural issues and to build a more mature market system while continuing to raise the level of per capita income and address the challenges of climate change and income inequality.

Maintaining growth amid the COVID-19 pandemic

The COVID-19 pandemic—a once-in-a-century event—began at a time when there were many uncertainties in the global economy, including the slowdown in China’s economic growth. The global economy contracted by –3.5 per cent as a result of widespread lockdowns and severe disruptions to global supply chains. China became the only major economy to achieve growth, of 2.3 per cent, amid the onslaught of the pandemic in 2020, against the background of global economic contraction (IMF 2021). China’s economy has recovered steadily, with employment and people’s wellbeing effectively guaranteed as economic and social development have been better than expected. China’s job market remained stable in 2020, with the surveyed unemployment rate in urban areas standing at 5.6 per cent—below the government’s annual target of 6 per cent. In the same year, China’s total GDP surpassed RMB100 trillion (equivalent to US\$14.7 trillion), accounting for about 17 per cent of global GDP. This achievement ended the final year of China’s Thirteenth Five-Year Plan (2016–20) on a positive note, despite the impact of the pandemic.

A roadmap to a high-income economy: The Fourteenth Five-Year Plan and the new strategy of ‘dual circulation’

China’s post-COVID-19 economic recovery coincides with the implementation of the Fourteenth Five-Year Plan—the economic and social development blueprint for the period 2021–25, as well as the long-term vision for China by 2035 (NDRC 2021). The vision proposes that China will realise ‘socialist modernisation’, become a ‘socialist modern nation’ and reach medium developed-economy status by 2035. The plan sets out the key priorities for the next five years for China’s growth and development. Setting a long-term development goal is important for rebuilding the confidence of the Chinese people after the heavy blow dealt by the pandemic.

The five-year plan could be a watershed moment in China’s economic development path, as policy goals move up a gear from ‘comprehensively building a well-off society’ to ‘comprehensively building a modern socialist nation’. Policies in the plan

aim to strengthen the underpinnings of the modern nation's long-term growth in a well-rounded approach, covering the economy and the market, governance and law, defence and security, culture and identity, science and technology, environment and health, participation in the global economy and governance. The plan has 19 chapters and 65 subchapters, sets out 20 main indicators of economic and social development and describes measures and initiatives, including 102 major engineering projects within the plan's five-year period. Local and sectoral plans fleshing out these targets in greater detail will be released throughout the year.

The plan covers several key themes, including: enhancing innovation and scientific research to provide strategic support to economic development and scientific and technological self-reliance; strengthening the domestic market, boosting domestic demand and deepening supply-side reforms under the 'dual circulation strategy'; deepening market reforms and enhancing coordination between the government and the market; prioritising rural development through the pull of urban development; optimising and promoting coordinated regional development and new urbanisation; developing China's cultural soft power; enhancing green, sustainable and low-carbon economic growth; further opening up to world markets, relying on the large domestic market to enhance international cooperation, promoting BRI cooperation and participating in the reform of global economic governance; improving people's living standards and their sense of achievement, wellbeing and safety, while responding to population ageing; establishing strategies for and coordinating development of national security; and strengthening national defence and military modernisation.

In the plan, the urgency of technological innovation is palpable. Chapters 2, 3 and 5 elaborate on the issue of innovation and technological progress. Because China's labour force peaked in 2011 and its society is ageing, the rate of entrepreneurial activity and innovation may slow, while labour costs, care responsibilities and demand for healthcare resources will add to the cost of operating the economy. Counteracting forces include continued technological progress, labour-substituting and augmenting automation and rising labour quality. For any country, technological progress can come from both domestic innovation and absorption of technological diffusion from abroad. As tensions in technological competition rise, China is compelled to rely more on domestic R&D. We therefore expect to see a rise China's R&D expenditure from this year.

Chapter 4 of the plan discusses developing China's domestic market and building a 'new development pattern', which centres on the 'dual circulation strategy' first articulated by President Xi in May 2020 as China began to plan its post-pandemic economic recovery. The dual circulation strategy aims to promote a stronger domestic market ('internal circulation') while continuing to strengthen China's international economic position ('external circulation'). Domestic circulation is the staple component of this strategy, while external circulation is the complement.

The establishment of this strategy reflects several considerations: increasingly uncertain international markets due to trade conflicts; global value chains becoming more regionalised and localised after the pandemic due to security concerns; rebalancing from export-driven to consumption-driven growth and raising domestic consumption and utility; and enlarging the domestic market and reducing unevenness in growth and incomes across regions. While China may be able to rely more on indigenous innovation to drive technological progress, declining access to international knowledge flows would be costly to any country, as innovation processes are becoming more interconnected and networked. Therefore, China will need a strategy to become more internationally connected to knowledge flows.

Overall, the Fourteenth Five-Year Plan reveals a strong resolution to overcome various challenges and, if successful, the capabilities learned would enable China to achieve high-income status sooner than expected.

Structure of this book

Against the above background, this book explores the challenges faced by the Chinese economy in the transition to a high-income economy, including agricultural development, financial reform, internationalisation of the renminbi, urbanisation, as well as topics related to innovation, corporate-sector development and market competition. China's growth experience has been full of exciting changes and important lessons about reform and structural change, and this year's *China Update* is again the way to gain insights into these.

In Chapter 2, Cai Fang and Jia Peng detail the relationship between China's status as an upper middle-income country and domestic trends in social mobility, particularly as these questions relate to China's ability to overcome the middle-income trap. Using cross-country data, the authors investigate the relationship between development stage, growth rate and social inequality, and examine the drivers of Chinese growth over the past 40 years of reform, detailing how these drivers have changed over time. They find that the primary drivers that sustained social mobility in decades past—namely, labour market mechanisms, massive internal migration and major structural economic reforms—are now inadequate as China has developed and low-hanging growth opportunities have attenuated.

The authors challenge the idea that rising problems of social mobility can be tackled solely through expansion of the economic pie. Instead, they argue that these issues must be additionally addressed via economic and social reforms, including progressive taxation and redistribution policies, as well as the mitigation of institutional obstacles, especially the *hukou* system. The authors conclude by offering policy suggestions aimed at enhancing social mobility and a more equitable sharing of developmental dividends. They suggest reform of basic social services provision to operate on de

facto rather than de jure residence status, while additionally highlighting the central government's institutional responsibility to mitigate the costs of *hukou* reform to alleviate the associated externalities faced by local governments.

Considering China's increased dependence on the importation of agricultural goods to meet growing domestic demand, the authors of Chapter 3, Rao Sihang, Liu Xingshuo and Sheng Yu, investigate China's current and historical comparative and competitive advantages for 17 major crop and livestock products. Using global commodity-level agricultural trade data for the period 1978–2018, the authors calculate the revealed comparative advantage (RCA) and relative trade advantage (RTA) indices to compare China's relative advantages in the trade of certain commodities. They reveal a rapid decline in China's earlier comparative advantage for most agricultural products compared with the rest of the world, indicating that the rise in demand caused by population and economic growth has outpaced growth in agricultural output. With even further growth in food demand anticipated over the coming decade, the authors forecast future demand by commodity and calculate the overall bilateral complementarity coefficient for China and several important countries and regions to best determine potential sources of supply. Their findings indicate that it is in China's interest to import land and water-intensive goods to free up its own land and resources for products for which it possesses relative advantage.

The authors point out that there are more than 3.5 billion hectares of land suitable for agriculture throughout the world, but only around 1.5 billion hectares are being used effectively. If trade and investment relationships could be rearranged between China and the rest of the world based on their comparative competitiveness, global food supply would significantly increase. Therefore, rearranging agricultural trade between China and her trading partners could present a win-win strategy for China as well as for the world. Therefore, the concern that China's food demand will compete with demands from other developing countries, imposing greater pressures on global food supply, may be misplaced.

In Chapter 4, Wang Wei, Deng Yusong, Shao Ting, Wang Ruimin, Niu Sanyuan and Liu Xin detail the many achievements of China's urbanisation since the start of the reform and opening period more than 40 years ago. The authors describe a process in which the urbanisation level has steadily increased, urban patterns have been optimised, cities' overall competitiveness has been significantly enhanced and the system of urban governance has continually improved. Accompanying all these advances has been the steady improvement in residents' living standards. With its urbanisation rate at 60 per cent, China has now entered a new stage of urbanisation, characterised by the pursuit of high-quality development—a status that coincides with a new technological revolution.

Looking forward to 2050, the authors predict that China will enter the ranks of high-income countries and its industrial structure will undergo profound changes. With the transformation and upgrading of urban industries, cities in the future will focus on the requirements of high-quality development. The authors contend that China will need to continually improve the quality and efficiency of urbanisation to create an efficient, low-carbon and green urban development model, arguing that the creation and application of a new technological revolution present an opportunity for the high-quality development of Chinese cities. Their findings indicate that the huge domestic market potential and institutional dividends brought by the new round of reform and opening will be the drivers of the next stage of China's urbanisation.

Governments in China currently find themselves constrained by the necessary trade-offs between cutting tax rates to incentivise business investment and boost consumption and maintaining tax revenue to match its expenditure. To reconcile the tension, the authors of Chapter 5, Yanchao Xu and Shawn Xiaoguang Chen, propose a tax-neutral reform centred on the improvement of tax enforcement across firms, which are currently subject to misallocation and aggregate productivity losses. They examine the theoretical mechanisms sustaining such reform and empirically investigate its feasibility, finding that the underlying mechanisms rest on the positive feedback loop of 'lower tax rate = better tax enforcement and compliance = higher productivity = greater tax base = lower tax rate'. Based on county-level public financial data and industrial firm surveys during 2000–07, the authors use the abolition of agricultural taxes in 2005 as a 'quasi-natural experiment' to test key mechanisms. Using the estimates of key parameters, the authors roughly estimate the lower bound of the value-added tax rate cut able to sustain revenue-neutral reform.

In Chapter 6, Sizhong Sun explores aggregate innovation activities and their growth effects in China. Through examination of both inputs (including R&D) and outputs (including patents), the author reaches several conclusions with important implications for China's growth potential: first, innovation in China is on an upward trajectory, with little evidence of a slowdown in growth; second, innovation appears to promote economic growth in the long run at both the national and the industry levels; third, there is no short-run growth effect from innovation at the national level. Considering the growth effect of innovation and the increasingly binding resource constraints faced by China, innovation will likely play a more important role in China's future economic growth.

Analysis of the financial health of Chinese companies provides important clues for understanding the trajectory of the Chinese economy and is useful for assessing the effectiveness of government policies affecting business and corporate activity. With previous analyses of the state of China's corporate sector indicating a general decline in profitability and an increase in corporate leverage since the Global Financial Crisis, in Chapter 7, Joel Bowman seeks to provide an update on more

recent developments in the sector through an examination of official survey data supplemented by granular data derived from the financial statements of more than 3,700 nonfinancial companies listed on the Shanghai and Shenzhen stock exchanges. The author finds that more recent declines in corporate profitability have been primarily driven by the private sector, even as private firms maintain higher levels of profitability than state-owned firms.

The findings show that major drivers of this trend include a squeeze on less-regulated credit caused by reforms aimed at reducing risk in the financial system, and the private sector's greater exposure to a global slowdown in manufacturing and trade. This has been felt particularly acutely by export-oriented manufacturing firms, affected by relative economic sluggishness in advanced economies and by the US–China trade dispute. After examining the status of corporate leverage and the special challenges faced by the real estate sector, the author details recent government measures aimed at easing financial conditions for small firms, while acknowledging the challenge of achieving these aims in practice.

Developed in the context of economic globalisation and low domestic land and labour costs, processing trade became an important source of China's growth, industrialisation and employment. In Chapter 8, Kunwang Li and Haoran Hu examine the impact of policies aimed at transforming and upgrading processing trade in China, the implementation of which began in 2003. The authors use Chinese customs and industrial panel data for the period of 2000–06 to empirically test the impact of transformation and upgrading policies for processing trade on enterprise productivity by use of the double-difference method.

Their findings indicate that these policies have contributed to resource misallocation and have had a net negative effect on productivity. As the policies explicitly promote the transfer of processing trade from the dominant eastern regions of China to the west and centre, the eastern regions endowed with natural geographic and logistical advantages have been most negatively impacted, disturbing production efficiency and original resource allocation. Given that these policies are aimed at cultivating private firms, the authors find that foreign-owned and joint-venture firms engaged in processing trade with imported materials have been especially negatively affected by the policies' crowding-out effects acting as a drag on production efficiency. They find that processing trade has exhibited a steady downward trend since 2000, but product structure has improved. Nonetheless, the authors caution that industrial policy should be orientated towards efficiency to avoid creating new distortions.

In Chapter 9, Liqing Zhang, Libo Yin and You Wu analyse bilateral offshore renminbi exchange rate returns in an augmented uncovered interest rate parity regression to assess the offshore renminbi's safe-haven characteristics. To explore the issue, the authors evaluate the relationship between the bilateral exchange rate returns on the offshore renminbi against major global currencies and BRI currencies, as well

as global risk factors. The empirical results of their study indicate the following: first, the offshore renminbi exhibits safe-haven characteristics, which exist in certain major currencies and some national currencies in the BRI regions; second, the safe-haven characteristics of the offshore renminbi underlying some national currencies in the BRI regions are relatively weak compared with major currencies; third, the above-mentioned features possess time-varying characteristics, and the hedging values of the offshore renminbi are more prominent in extreme cases. The related results provide important references for asset allocation, hedging strategy arrangements and even the prevention of systemic risk in global financial markets.

References

- Bai, C. and Lei, X. (2020), New trends in population aging and challenges for China's sustainable development, *China Economic Journal* 13(1): 3–23. doi.org/10.1080/17538963.2019.1700608.
- Cai, F., Garnaut, R. and Song, L. (2018), 40 years of China's reform and development: How reform captured China's demographic dividend, in R. Garnaut, L. Song and F. Cai (eds), *China's 40 Years of Reform and Development: 1978–2018*, 5–28, Canberra: ANU Press. doi.org/10.22459/CYRD.07.2018.01.
- Canning, D. and Bennathan, E. (2000), *The social rate of return on infrastructure investments*, The World Bank Policy Research Working Paper 2390, Washington, DC: The World Bank. doi.org/10.1596/1813-9450-2390.
- Dollar, D., Huang, Y. and Yao, Y. (eds) (2020), *China 2049: Economic challenges of a rising global power*, Washington, DC: Brookings Institution Press.
- Drysdale, P. and Hardwick, S. (2018), China and the global trading system: Then and now, in L. Song, R. Garnaut and F. Cai (eds), *China's 40 Years of Reform and Development: 1978–2018*, 545–74, Canberra: ANU Press. doi.org/10.22459/CYRD.07.2018.27.
- Fraumeni, B.M., He, J., Li, H. and Liu, Q. (2019), Regional distribution and dynamics of human capital in China 1985–2014, *Journal of Comparative Economics* 47(4): 853–66. doi.org/10.1016/j.jce.2019.06.003.
- Guo, Y., Zhou, Y. and Liu, Y. (2019), Targeted poverty alleviation and its practices in rural China: A case study of Fuping county, Hebei Province, *Journal of Rural Studies*. doi.org/10.1016/j.jrurstud.2019.01.007.
- Heerink, N., Kuiper, M. and Xiaoping, S. (2006), China's new rural income support policy: Impacts on grain production and rural income inequality, *China & World Economy* 14(6): 58–69. doi.org/10.1111/j.1749-124X.2006.00045.x.
- International Monetary Fund (IMF) (2021), *World Economic Outlook Update*, January, Washington, DC: IMF. Available from: www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update.

- Jiang, P., Chen, Y., Geng, Y., Dong, W., Xue, B., Xu, B. and Li, W. (2013), Analysis of the co-benefits of climate change mitigation and air pollution reduction in China, *Journal of Cleaner Production* 58: 130–37. doi.org/10.1016/j.jclepro.2013.07.042.
- Kharas, H. (2017), *The unprecedented expansion of the global middle class: An update*, Global Economy & Development Working Paper 100, February, New Delhi: Brookings India. Available from: hdl.handle.net/11540/7251.
- Kojima, K. (2000), The 'flying geese' model of Asian economic development: Origin, theoretical extensions, and regional policy implications, *Journal of Asian Economics* 11: 375–410. doi.org/10.1016/S1049-0078(00)00067-1.
- Li, H., Li, L., Wu, B. and Xiong, Y. (2012), The end of cheap Chinese labor, *Journal of Economic Perspectives* 26(4): 57–74. doi.org/10.1257/jep.26.4.57.
- Li, H., Liu, Q., Fraumeni, B. and Zhang, X. (2014), Human capital estimates in China: New panel data 1985–2010, *China Economic Review* 30(September): 397–418. doi.org/10.1016/j.chieco.2014.07.006.
- Lin, J.Y. (2013a), Demystifying the Chinese economy, *The Australian Economic Review* 46(3): 259–68. doi.org/10.1111/j.1467-8462.2013.12035.x.
- Lin, J.Y. (2013b), From flying geese to leading dragons: New opportunities and strategies for structural transformation in developing countries, in J.E. Stiglitz, J.Y. Lin and E. Patel (eds), *The Industrial Policy Revolution II*, International Economic Association Series, 50–70, London: Palgrave Macmillan. doi.org/10.1057/9781137335234_3.
- Lipton, M. (2007), Urban bias revisited, *The Journal of Development Studies* 20(3): 139–66. doi.org/10.1080/00220388408421910.
- Liu, S. (2018), The structure of and changes to China's land system, in R. Garnaut, L. Song and F. Cai (eds), *China's 40 Years of Reform and Development: 1978–2018*, 427–54, Canberra: ANU Press. doi.org/10.22459/CYRD.07.2018.22.
- McKay, H. and Song, L. (2010), China as a global manufacturing powerhouse: Strategic considerations and structural adjustment, *China & World Economy* 18(1)(February): 1–32. doi.org/10.1111/j.1749-124X.2010.01178.x.
- Meinhardt, C. (2020), *China bets on 'new infrastructure' to pull the economy out of post-Covid doldrums*, Short Analysis, 4 June, Berlin: Mercator Institute for China Studies. Available from: merics.org/en/short-analysis/china-bets-new-infrastructure-pull-economy-out-post-covid-doldrums.
- National Bureau of Statistics of China (NBS) (2021), *2020 Statistical Communiqué of the People's Republic of China on National Economic and Social Development*, [in Chinese], 28 February, Beijing: NBS. Available from: www.stats.gov.cn/tjsj/zxfb/202102/t20210227_1814154.html.

- National Development and Reform Commission (NDRC) (2021), *The Fourteenth Five-Year Plan for the National Economic and Social Development of the People's Republic of China and the Outline of the Long-Term Goals for 2035*, Beijing: NDRC. Available from: www.ndrc.gov.cn/xxgk/zcfb/ghwb/202103/t20210323_1270124.html.
- Pugh, C. (1996), 'Urban bias', the political economy of development and urban policies for developing countries, *Urban Studies* 33(7): 1045–60. doi.org/10.1080/00420989650011492.
- Qin, Y. (2016), China's transport infrastructure investment: Past, present, and future, *Asian Economic Policy Review* 11(2): 199–217. doi.org/10.1111/aep.12135.
- Roberts, I., Saunders, T., Spence, G. and Cassidy, N. (2016), *China's Evolving Demand for Commodities*. Reserve Bank of Australia. Available from: www.rba.gov.au/publications/confs/2016/pdf/rba-conference-volume-2016-roberts-saunders-spence-cassidy.pdf.
- Sheng, Y. and Song, L. (2019), Agricultural production and food consumption in China: A long-term projection, *China Economic Review* 53: 15–29. doi.org/10.1016/j.chieco.2018.08.006.
- Song, L. and van Geenhuizen, M. (2014), Port infrastructure investment and regional economic growth in China: Panel evidence in port regions and provinces, *Transport Policy* 36(November): 173–83. doi.org/10.1016/j.tranpol.2014.08.003.
- Song, L. and Zhou, Y. (2020), COVID-19 pandemic and its impact on the global economy: What does it take to turn crisis into opportunity?, *China & World Economy* 28(4): 1–25. doi.org/10.1111/cwe.12349.
- Thirlwall, A.P. (2011), *Economics of Development*, New York: Palgrave Macmillan.
- Thirlwall, A.P. (2015), A plain man's guide to Kaldor's growth laws, in *Essays on Keynesian and Kaldorian Economics*, Palgrave Studies in the History of Economic Thought Series, 326–38, London: Palgrave Macmillan. doi.org/10.1057/9781137409485_15.
- United Nations Conference on Trade and Development (UNCTAD) (2021), *World Investment Report*, Geneva: UNCTAD. Available from: unctad.org/topic/investment/world-investment-report.
- World Bank (2021), World bank country and lending groups, *Data*, Washington, DC: The World Bank. Available from: datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.
- Xinhua (2021a), China's industrial robot output up 19.1 pct in 2020, *XinhuaNet*, 17 February. Available from: www.xinhuanet.com/english/2021-02/17/c_139747876.htm.
- Xinhua (2021b), Huawei 5GtoB solution aims at 1,000 smart factories, *XinhuaNet*, 9 May. Available from: www.xinhuanet.com/english/2021-05/09/c_139934818.htm.
- Yu, N., De Jong, M., Storm, S. and Mi, J. (2012), The growth impact of transport infrastructure investment: A regional analysis for China (1978–2008), *Policy and Society* 31(1): 25–38. doi.org/10.1016/j.polsoc.2012.01.004.

- Yu, Y. (2018), A trade war that is unwarranted, *China & World Economy* 26(5): 38–61. doi.org/10.1111/cwe.12255.
- Zhao, Z. (2011), China's demographic challenges from a global perspective, in J. Golley and L. Song (eds), *Rising China: Global Challenges and Opportunities*, 285–300, Canberra: ANU Press. doi.org/10.22459/RC.06.2011.16.
- Zheng, X., Lu, Y., Yuan, J., Baninla, Y., Zhang, S., Stenseth, N.C., Hessen, D.O., Tian, H., Obersteiner, M. and Chen, D. (2020), Drivers of change in China's energy-related CO2 emissions, *Proceedings of the National Academy of Sciences* 117(1): 29–36. doi.org/10.1073/pnas.1908513117.
- Zhou, W., Gao, H. and Bai, X. (2019), Building a market economy through WTO-inspired reform of state-owned enterprises in China, *International & Comparative Law Quarterly* 68(4): 977–1022. doi.org/10.1017/S002058931900037X.
- Zhou, Y. (2014), Role of institutional quality in determining the R&D investment of Chinese firms, *China & World Economy* 22(4): 60–82. doi.org/10.1111/j.1749-124X.2014.12075.x.

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