China Leadership Monitor

Xi Jinping's Mixed Economic Record

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The economic scorecard for Xi Jinping's ten years in office is mixed. He opened the economy further to foreign trade and investment. He set a target date for China's carbon emissions to peak and another date to reach net-zero. While GDP growth slowed down by more than four percentage points under Xi, it still averaged over 6%. On the negative side, the target to reach net-zero is not ambitious enough to prevent the worst effects of climate change. Also, Xi has doubled down on industrial policy, increasing subsidies to try to achieve technological dominance in key areas. This is a risky gambit that no doubt will have some successes, but at the cost of wasting a lot of resources. Looking ahead to the future, this state interference in the economy, combined with negative blowback from its trading partners and from China's own entrepreneurs, is likely to result in China performing below potential.

Xi Jinping is finishing his tenth year as general secretary of the Chinese Communist Party and seems positioned to embark on at least one more five-year term. This is a good time to take stock of his economic record. Xi has garnered the most attention for his actions in non-economic realms (treatment of Uyghurs, Tibetans, and Hong Kong citizens; zero tolerance of COVID-19; and alignment with Russia and support for its invasion of Ukraine). But his economic record is important as well because it affects the everyday life of 1.4 billion people, with large spillovers to the rest of the world economy.

Chinese leaders since Deng have used GDP growth as the main metric of economic performance. During Hu Jintao's ten years as party secretary GDP growth averaged 10.6%; under Xi Jinping, through nine years, GDP growth averaged 6.5%. Some slowdown as the economy matures is almost inevitable because labor force growth has been slowing, there are diminishing returns to investment, and opportunities to absorb technologies from more the advanced economies decline as China moves toward the frontier. Still, a four-percentage-point drop in the growth rate is large. Furthermore, the drop comes mostly from a decline in Total Factor Productivity (TFP) growth. That is, the growth of capital and labor inputs has been fairly steady, slowing only a minor amount, but the impact of these inputs has diminished sharply. In the 2000s (roughly during the Hu Jintao era) TFP growth averaged 3.5% per year; in the 2010s, it dropped to 0.7%.[1] This is a sign that technological upgrading, either through innovation or via borrowing, has slowed as have improvements in the efficiency with which resources are used. Compounded until 2049, the difference between 1% TFP growth and 3% TFP growth will be huge in terms of the standard of living and quality of life.

[1] International Monetary Fund, *Staff Report for the Article IV Consultation*, December 2021.

The main argument in this essay is that Xi Jinping has introduced three innovations in economic policy that are somewhat contradictory and that have produced mixed results. The first policy change is stepped-up industrial-policy intervention. This has always been part of the CCP's playbook, but, as the next section documents, under Xi there has been increased state intervention in the economy and in the allocation of capital. This activist industrial policy is aimed at increasing China's self-sufficiency and reducing its technology dependence on the West, the U.S. in particular. It also aims to bolster the role of state enterprises in the economy and to rein in the private sector in areas not favored by the industrial policy. So far it is not producing particularly good economic results and it is probably the chief factor behind China's productivity slowdown.

The following section shows that, somewhat paradoxically, Xi has accelerated China's foreign trade and investment liberalization. Tariffs have come down, massive new trade agreements signed, and restrictions on inward investment lifted. After ten years of stagnation under Hu Jintao, China's external policies have become significantly more liberal under Xi. This is somewhat contradictory with the renewed focus on self-sufficiency since the more open policies have led to increased exports and imports, that is, greater dependence on the world economy. But the two policies are not completely contradictory because China's leaders hope to use the subsidies in the large domestic market to achieve competitiveness in the technologies of the future, which Chinese firms can then export. Also, under Xi there has been some shift away from trade with the U.S. in favor of greater integration with the developing economies, especially the nearby economies, much of this through the Belt and Road Initiative (BRI).

The third important policy change under Xi has been a commitment to reduce China's carbon emissions and to contribute to the global effort to limit temperature rise to 1.5 degrees C. Xi has committed China to reach net-zero emissions by 2060 and to "strictly control" the increased use of coal over the next decade, reaching peak carbon by 2030. China has introduced an ambitious carbon trading system centered on the power sector. The initial prices in the carbon trading system are very low, however. While it is positive that China has made carbon commitments under Xi, in general they are not good enough to ensure that the world will reach the 1.5-degree C target. China will continue to have increased coal use and rising emissions for the next decade. Recent studies show that China will be one of the biggest losers from climate change, with sea-level rise and severe heat and water problems having massive effects by the middle of the century.

In sum, Xi Jinping should get credit for fairly good economic performance, which has been bolstered by new trade agreements and further opening of the economy. His commitment to reduce carbon emissions to "net-zero" is extremely important, though his timeframe is too casual. If China continues to increase coal use over the next decade, this will have a very negative effect on living standards in China and will undo much of the potential progress. Xi's industrial policy gambits are also risky, both economically, because it seems much capital is wasted without positive results, and politically. Relations between a rising China and a relatively declining U.S. were always likely to be difficult, but the program seeking to monopolize the advanced technologies of the future naturally makes the relationship more contentious.

China's industrial policy

During China's rapid TFP growth phase, an important source of dynamism was a shift of resources from the state sector to private firms. Because the overall capital stock was growing very rapidly – at about 10% per year throughout the reform period – the government actually did not have to take resources away from state firms. It merely oversaw a process in which the private sector grew up around the state sector. When China joined the WTO in 2001, 65% of its manufacturing assets were in the hands of state enterprises, with which they produced 50% of output. Ten years later, the state share had declined to 40% for assets and 25% for output.[2]

This shift was partly deliberate because in the 1990s China had legalized the domestic private sector and opened up to foreign private firms. But the extent of the shift was probably not deliberate. China's trade and investment reforms, combined with a robust global economy, led to an extraordinary surge in exports. Most of the direct exports at the time came from foreign-invested firms, but they quickly built backward linkages to Chinese private suppliers so that most of the value-added in China's exports came from the domestic private sector. An export-oriented strategy was implicitly a pro-private-sector strategy.

This expanding private sector ended with the 2008 Global Financial Crisis. The global economy, and hence China's exports, remained weak for several years. To some extent, this was compensated for by rising consumption. Relative to exports, consumption relies more on services. Unlike manufacturing, China had left most of the important service sectors in the hands of state enterprises: telecom, airlines, media, finance. These state-dominated sectors all were increasing their share of the economy. Plus, the leadership under Xi Jinping decided that in manufacturing it would consolidate some of the state enterprises to make globally competitive firms in upstream sectors, such as shipbuilding, steel, and chemicals. As a result, the state-enterprise share of the total economy has remained stable, at about 25%, for some time now.[3]

In addition to the renewed focus on state enterprises, China has tried to replace lost external demand with a huge domestic stimulus. Some of this was aimed at infrastructure and housing. It was during this period that China expanded high-speed passenger rail throughout country and rapidly increased the housing stock, including construction of many apartments that ended up sitting empty. China stands out in having a huge infrastructure stock, about three times as large as that in the U.S. relative to GDP (see Figure). The U.S. certainly has its infrastructure deficiencies, and much of China's infrastructure is impressive. But it now appears that China over-invested and that this is one factor contributing to the slowdown of growth. The initial lines of high-speed rail, for example, served densely populated corridors and were widely used; but more recent investments have extended the network into sparsely populated areas where there is little use. The government has also invested in new industrial areas, such as Xiongan, which probably add little to the country's productive capacity. It is telling that the Chinese government has over-invested in public capital and under-invested in public services. More social services, for migrants, the elderly, and the rural population, could be paid for by cutting back on wasteful infrastructure investments.

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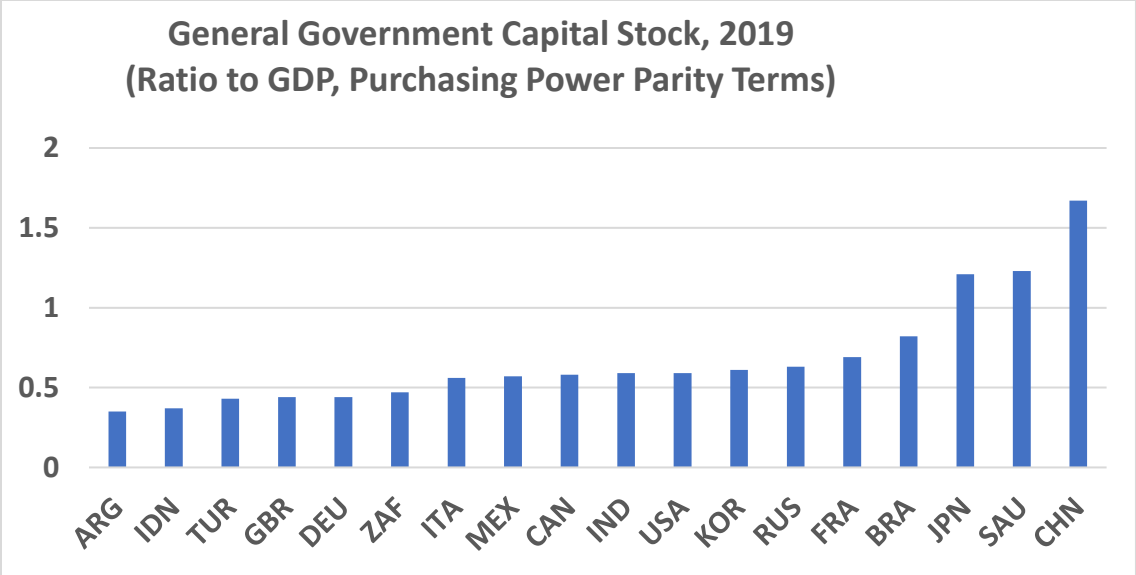
[2] International Monetary Fund, *Staff Report for the Article IV Consultation*, December 2021.

[3] A. Batson, "The State Never Retreats," Gavekal Dragonomics, Deep China Report, October 2020.



Source: IMF Investment and Capital Stock Dataset, 2021.

China's policies took a more statist bent around the time that Xi Jinping emerged as general secretary in 2012. As Barry Naughton has pointed out, the shift to a more interventionist industrial policy was already underway when Xi came to power.[4] It began with the 2006 "Medium and Long-Term Plan for Science and Technology Development" (MLP) which laid out a strategy for building China's technological capabilities and emphasized the importance of "indigenous innovation" (*zizhu chuangxin*). The objective was to reduce China's reliance on foreign technology. This plan included sixteen favored sectors and investment by the state of tens of billions of dollars to develop these technologies. Key sectors financed included high-end semiconductors, machine tools, nuclear power plants, a GPS-style satellite navigation system, passenger aircraft, and hypersonic missiles.

Under Xi, these strategies and commitments have been broadened and finetuned. The "Made in China 2025" program, announced in 2015, aims to generally upgrade technology in Chinese manufacturing and to achieve technological leadership in key areas. The plan was accompanied by ambitious targets for Chinese firms' share of domestic and global markets for key products. These numerical targets proved especially controversial and were viewed in the United States and Europe as evidence of Beijing's intent to use subsidies and forced technology transfers to enable Chinese companies to wrest market share from Western incumbents. Responding to this criticism, China has toned down references to "Made in China 2025" in official documents, but the underlying intention remains in place.

Two other changes relate not to the favored sectors but to the theory behind China's industrial policy as well as to its implementation. At the conceptual level, the Innovation-Driven Development Strategy of 2016 put technological upgrading at the heart of China's long-term economic strategy and it indicated that the main source of future productivity gains should be

[4] B. Naughton, "The Rise of China's Industrial Policy, 1978 to 2020," Universidad Nacional Autonoma de Mexico, 2021.

technological advances rather than greater efficiency via structural or market reforms. At the implementation level, funding sources were diversified with the launch of government-sponsored "industrial guidance funds," beginning with a US$29 billion semiconductor fund in 2014. Instead of the government directly financing companies in key sectors, it would seed professionally managed funds. These funds then would raise money from other sources, invest in a range of technology companies, and face accountability for delivering a profit on the entire portfolio. Within a few years, more than 2,000 such funds were set up by central and local governments, with a combined fund-raising target of over US$1 trillion. A recent study by the Center for Strategic and International Studies estimates that in 2019 China spent 1.7% of GDP on industrial policy, including direct subsidies to state firms, tax breaks, below-market credits, and state investment funds. This is more than twice as much as the U.S. spends on similar support to its industries.[5]

At the same time that the government was subsiding investment in favored sectors, especially SOE investment, it was reining in a highly innovative private sector that focused on the internet and digital platforms. Chinese regulators restricted activities by firms involved in online shopping and payments, ride sharing, food and other package delivery services, and online tutoring, with the result that their share prices fell and their scope for expansion was circumscribed. These firms are all part of the tech sector, but they are not manufacturing hardware, which is favored by China's industrial policy. These regulatory crackdowns have had a chilling effect on sentiment among China's entrepreneurs.

The overall output of China's industrial policy so far is not impressive since, as noted, China's TFP growth has fallen to low levels. There is both macro and micro evidence that the productivity of capital has declined in China. Some diminishing returns as capital is built up is natural, but in China's case the drop-off has been severe. At the macro level, the growth rate of capital stock has been around 10% for a long time, and for much of that period GDP growth was also at 10%. But with the same accumulation continuing, GDP growth has now declined to around 6%, and it looks likely to be headed even lower. At the enterprise level, the real return to capital has declined from 15% to 5% during the past twenty years. Comparative studies find capital productivity in private firms to be almost 100% higher than that in state-owned firms, hence one policy that would restore capital productivity would be to rein in state enterprises and favor the private sector, as occurred in the 1990s and 2000s.[6]

The financial sector is one of the state-dominated service sectors. China has a bank-led system in which four giant state-owned commercial banks take the lead. State enterprises receive a disproportionate share of financing as do local government infrastructure projects. The capital markets are under-developed. Listing on the stock market is a bureaucratic affair that requires multiple approvals. It is difficult for private firms to list, and at the same time households are reluctant to put their savings into the market because it lacks transparency and seems like a

[5] G. DiPippo, I. Mazzocco, and S. Kennedy, "Red Ink: Estimating Chinese Industrial Policy Spending in Comparative Perspective," Center for Strategic and International Studies, 2022. https://www.csis.org/analysis/red-ink-estimating-chinese-industrial-policy-spending-comparative-perspective

[6] International Monetary Fund, *Staff Report for the Article IV Consultation,* December 2021.

gambling casino. Households keep considerable savings in the banks, which funds their lending. But households also have a striking 75% of their wealth in real estate.[7] Households hold apartments not only for living but also for investment and speculative purposes. This is probably another factor contributing to the decline of capital productivity: empty apartments do not produce any GDP.

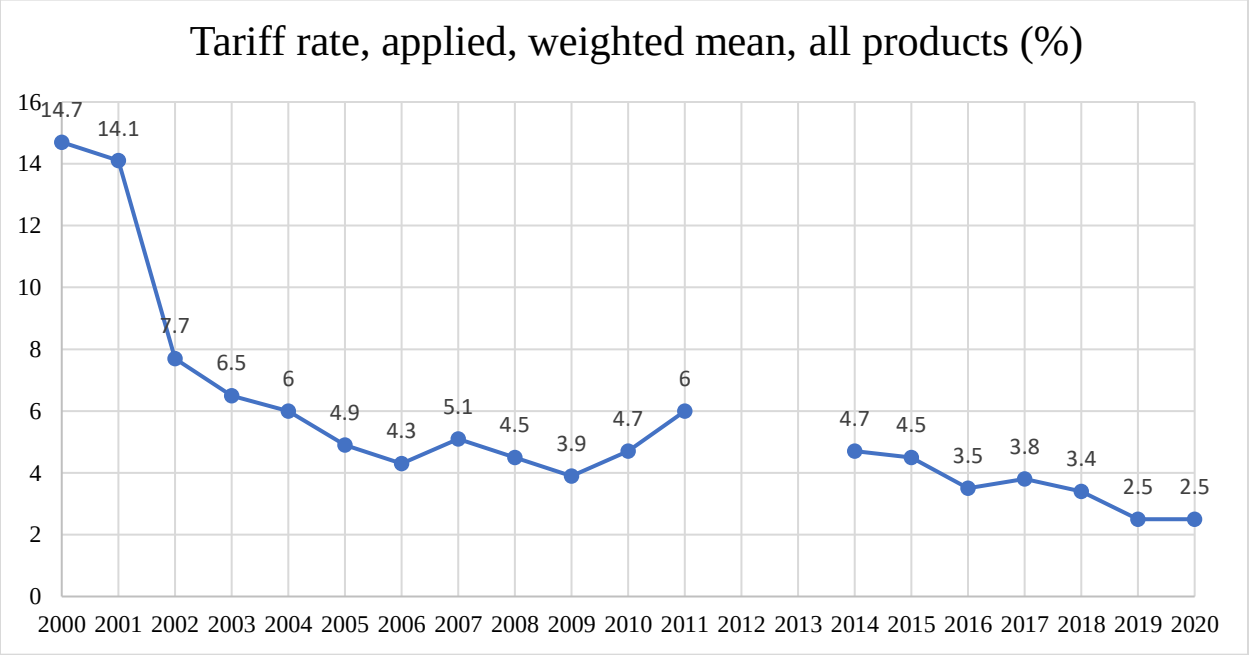
The underdevelopment of China's capital markets is clear from a number of metrics. The U.S. and Chinese economies are now close in size (China's GDP is 77% of that of the U.S., at market exchange rates). Yet U.S. capital markets are far larger: stock market capitalization is $26.2 trillion compared to China's $7.6 trillion (as of July 2021). The American bond market has $46 trillion capitalization as compared to $19 trillion for China. The differences arise because in the U.S. firms that meet standards of profitability and transparency can go to the markets at their discretion, whereas in China firm access to stock and bond markets is at the discretion of the regulators. China uses this discretion to help state enterprises get market funding and to favor certain private firms, at the expense of others. The underdeveloped nature of these markets, along with the lack of transparency, means that capital markets are a minor choice for households in determining where to put their very considerable savings. While Xi Jinping has not done much to reform domestic financial institutions, he has reined in the total amount of lending in the system. Overall leverage had been growing to a dangerous level, but it has largely been brought under control through Xi's de-risking campaign.

Foreign trade and investment

The rhetoric of China's industrial policy seeks self-sufficiency and development of indigenous technology in areas such as clean energy, new vehicles, semiconductors, and other machinery. This implies less reliance on the international market and foreign technology and some turning away from outward orientation. Paradoxically, under Xi Jinping external policies have not gone in this direction; just the opposite. China's trade policy was relatively stagnant during the Hu Jintao era. China's partners thought that its accession to the WTO in 2001 would be the beginning of a period of steady further liberalization. They were disappointed, however, when that did not materialize. China's average applied tariff rate, for example, fell from 14.7% to 7.7% when China joined the WTO, but it then remained stable at around 6% for the next ten years. A new wave of trade liberalization began shortly after Xi took power, with the tariff rate falling from 4.7% in 2014 to 2.5% in 2020 (see Figure). The tariff reductions occurred in the context of bilateral free-trade agreements that China signed with most of its neighbors, including ASEAN, Singapore, Korea, Pakistan, Australia, and New Zealand. Further tariff reductions went into effect this year as China was one of the parties to the largest free-trade agreement in history: the Regional Comprehensive Economic Partnership (RCEP) involving ASEAN, China, Japan, South Korea, Australia, and New Zealand. This agreement eliminates tariffs on 90% of items and has simple rules of origin that will put the countries in the partnership at the heart of most global

[7] Y. Huang, "Constructing a Modern Financial System for China's Future," in D. Dollar, Y. Huang, and Y. Yao, eds., *China 2049: Economic Challenges of a Rising Global Power*. Washington, DC: Brookings Press, 2020.

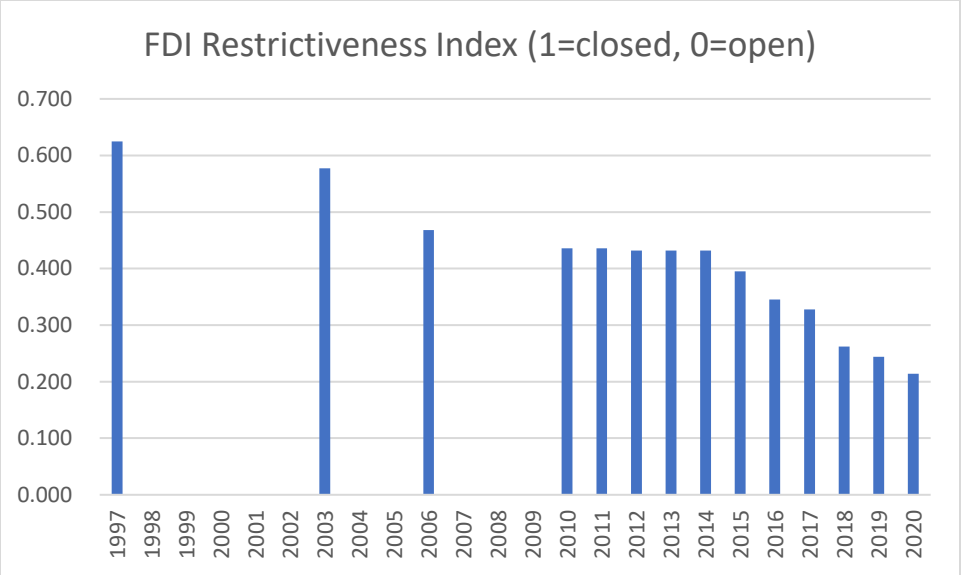
value chains.[8] Beyond the RCEP, China has applied to join the Trans-Pacific Partnership, a more ambitious agreement among a subset of Asia-Pacific economies led by Japan.



Source: https://data.worldbank.org/indicator/TM.TAX.MRCH.WM.AR.ZS?locations=CN

There has been a similar pattern in the closely related area of inward direct investment policy. Most global value chains are organized and managed by multinational firms so that trade is closely related to direct investment. As China was preparing to join the WTO, it liberalized inward investment to some extent. Sectors such as textiles and consumer electronics were opened to 100% foreign-owned firms. But many key parts of the economy remained restricted. In autos and financial services, for example, foreign investors could only enter as minority partners, usually paired with state enterprises. This arrangement led to complaints about "forced technology transfer": international firms in those sectors had to share their technology with domestic firms that became their competitors.

[8] P. Petri and M. Plummer, "RCEP: A New Trade Agreement That Will Shape Global Economics and Politics," Brookings Institution, November 2020.



Source: OECD, *FDI Regulatory Restrictiveness Index.* 2021.

Starting in 1997, the OECD has calculated an index of FDI restrictiveness for the major economies. China's restrictiveness, above 0.6, reflects the mix of open and closed sectors. This level of restrictiveness is far above OECD levels and also compares unfavorably to most other large emerging markets. Between 2006 and 2014 there was virtually no further investment liberalization in China. But since then, the level of restrictiveness has been cut in half, from above 0.4 to 0.2 (see Figure). Concretely, this reflects the opening of sectors such as autos and financial services to 100% foreign-owned firms. China now compares favorably to Asian emerging markets, such as India, Indonesia, or Thailand, in terms of openness to FDI. These policy moves are reflected in the FDI data. During the last few years, China has surpassed the U.S. as the Number 1 destination for direct investment: $253 billion of inflows in 2020 compared to $211 billion for the U.S. FDI surged further in 2021, powered by the services and hi-tech sectors. It is somewhat surprising that FDI has held up so strongly given the repeated COVID outbreaks in China, the harshness of the zero-tolerance policy, and the chaos in some supply chains. Most likely, investors are sticking with China because of its large and increasingly open domestic market and its ability, as well as any other country, to handle the supply-chain snarls. But it is also possible that there will be a tipping point if the COVID outbreaks continue and the zero-tolerance policy makes it difficult to travel in and out of the country. It is difficult to see China's global economic integration continuing at a high level if movement continues to be restricted in both directions.

Xi Jinping's policy of stepped-up industrial policy interventions combined with greater trade and investment openness entails some risks. China's major trade partners are not likely to accept large-scale Chinese exports in sectors that have been heavily subsidized by the state. Governments have not been particularly good at picking winners among technologies and firms, but it is certainly plausible that China will have some failures and some successes. The risk for China then is that the successes will be kept out of the major markets. The U.S. has already previewed some of the tools that it can use: export controls on hi-tech machinery and parts; investment restrictions on Chinese firms in the U.S. and on U.S. firms in China; and a broad across-the-board 25% tariff to reduce China's market share in the U.S. The EU is looking at

some similar measures for export and investment restrictions. It is likely that these measures are part of the explanation for the slowdown in productivity growth in China. An IMF study finds that complete tech decoupling would hurt both the Chinese and American economies, but more so the Chinese economy.[9] China is worried about technology dependence on the West, but there is a risk that steps aimed at decoupling and self-sufficiency will lead to less economic progress in China.

While China's trade and investment with the U.S. and the EU have hit some political bumps, its relations with the developing world have continued to thrive, thus keeping China's overall share of world trade at a high level. In terms of China's imports, which consist mostly of natural resources plus hi-tech inputs, there has been a gradual shift away from the West to China's RCEP partners. China now imports more than twice as much from these regional partners as it does from the U.S. and EU combined. In terms of markets for China's exports, there has also been a gradual shift away from reliance on the U.S. market. In 2012, the U.S. was the largest market for China's exports (19%). By 2019, China's exports to its RCEP partners were 56% more than its exports to the U.S., while exports to the EU were at about the same level as those to the U.S. All this was before implementation of the RCEP. The mutual tariff cutting now underway will only strengthen this trend.

But two aspects of this trade pattern should be worrying. First, there is evidence that for a developing country like China, as opposed to trade with other developing countries, trade with the more advanced economies has spillover benefits in terms of technology upgrading. A second concern is the sustainability of China's trade with its developing-world partners. Some of China's exports to other developing countries are connected to the BRI, funding infrastructure development, mostly using Chinese construction companies, steel, machinery, etc. But quite a few partners are facing debt-sustainability problems. They cannot service the debt that they have taken on from China, and they will struggle to take on new debt. The level of activity in the BRI seems to be slowing down. The difficulties that developing countries now face with the slowing global economy, rising dollar interest rates, and higher energy and food prices, may make them less attractive partners for the next few years.

Energy and climate change

Energy and climate change is a third area in which Xi Jinping has put his stamp on policy. China's energy policy is influenced by the fact that the only fossil fuel China has in abundance is coal. In recent years, China has received about two-thirds of its energy needs from coal, and 96% of that is mined domestically. China has major domestic petroleum and natural gas operations, but they are still limited relative to demand. In 2019 56% of China natural gas use was domestically produced, and only 29% of its petroleum consumption was domestic. As a result, China is the world's largest importer of both petroleum and natural gas.[10] In setting energy policies China does not want to become too dependent on imported resources in case there is a disruption to world trade or, in a worst case scenario, if there is war.

[9] International Monetary Fund, *Staff Report for the Article IV Consultation,* December 2021.

[10] U.S. Energy Information Administration, *China,* September 2020.

Aside from the reliance on coal, it is also the case that the Chinese economy is not very efficient in the use of energy. Although the U.S. and China have economies of comparable size, China uses much more energy: 151.6 quadrillion BTU in 2019 compared to American consumption of 100.4 quadrillion BTU. This partly reflects the stage of development, whereby China has a large manufacturing sector and much construction activity, both of which tend to be energy-intensive. The U.S. economy consists of primarily services so, compared to China, it can produce GDP with much less energy per unit. Aside from the structure of the economy, in heavy sectors such as steel, aluminum, or chemicals, Chinese plants use more energy per unit of output than plants in the U.S. or Europe. These heavy sectors are dominated by state enterprises in China and, as noted above, they tend to be much less efficient than private firms.

The combination of an energy-intensive development path and reliance on coal as the main energy source has severe environmental consequences. In terms of local pollution, the heavy reliance on coal has led to Chinese cities being among the most air-polluted cities in the world, with negative health consequences including premature deaths. Popular demand led to reductions in air pollution through the use of scrubbers on power plants and a shift from coal to gas in China's richest cities. Air quality as measured by PM2.5 concentrations improved by 35% between 2013 and 2017 in the highly polluted cities of northern China. Still, the concentration of fine particulate matter (PM2.5) was six times the WHO acceptable limit. There are over 1 million unnecessary deaths per year in China because of air pollution.[11]

In terms of the global environment, China's energy path resulted in the country emerging in 2007 as the world's leading emitter of greenhouse gases. In 2019 China accounted for 27% of global greenhouse gas emissions, more than the entire developed world combined.[12] Hence, China is one of the keys to reducing global emissions and limiting the global rise in temperature to 1.5 degrees C. China also has a strong incentive to cooperate because, according to the most recent report from the Intergovernmental Panel on Climate Change, it will be the biggest loser from climate change.[13] The pace of melting of the Himalayan glaciers will depend on how rapidly and how far global temperatures rise. If there is rapid melting, in the short run this will contribute to large seasonal variations in water flow in China's rivers and hence problems of flooding; in the long run, the disappearance of the glaciers will create an even more severe water crisis in China and in the South and Southeast Asian countries where water primarily flows off the Tibetan plateau. Temperature rise is also affecting rainfall in China, with more acute storms and flooding in the South and prolonged droughts in the North. If greenhouse gas emissions are not curbed, the North China Plain could be hit by temperatures so extreme that agriculture will be adversely affected. This raises serious questions about China's ability to feed itself in the future.

[11] H. Qin and M. Whitney, "How China is Tackling Air Pollution with Big Data," World Economic Forum, 2021. https://www.weforum.org/agenda/2021/02/china-tackling-air-pollution-big-data/

[12] K. Larsen, H. Pitt, M. Grant, and T. Houser, "China's Gas Emissions Exceeded the Developed World For the First Time Since 2019," Rhodium Group, May 2021.

[13] Intergovernmental Panel on Climate Change (IPCC), *Sixth Assessment Reports,* 2022.

Aside from the issues of freshwater availability within China, there is also the problem of the rise in sea level. Much of China's population and GDP is clustered in cities along the coast. Asian coasts are projected to see a higher sea level rise than the global average. Chinese cities along the coast will be at increasing risk of storm surges and high waves caused by tropical cyclones of higher intensity. One projection finds that, under a high emissions scenario, 340 million people worldwide live on land that will be underwater by mid-century. The greatest number of these people are in China.[14] There is a lot of uncertainty around any particular projection, but it would be a smart insurance policy to reduce emissions in order to ensure that the world does not experience these worst potential outcomes. Clearly, all the coastal cities of China will have to deal with flooding and saltwater incursion. Dealing with a rise in sea level will be an expensive proposition, with needs for relocation and investment to manage the rise in the water level.

As part of the UN process, China has made various commitments to reduce carbon emissions. These are a good start but they are not enough to limit the temperature rise to no more than 1.5 degree C. The most important commitments made by Xi Jinping are to reach zero net emissions by 2060 and to "strictly control" the increase in coal use over the next decade, reaching peak coal use and emissions by 2030.[15] The developed economies, such as the U.S., EU, and Japan, have set a net-zero target by 2050. China's position is that it is a developing country and thus requires more time. But on this issue China is losing from the results of its policies. It would be in the country's interest to peak coal use immediately and to start phasing it out, with the intention of reaching net-zero emissions by 2050. China has other good policies, such as increasing targets for the share of power generated by renewables. It currently has more installed solar and wind power than any other country and it plans to double this by 2030. The leaders see these technologies as important for the future and they want to ensure that China has a prime place both in developing and in deploying them. China is also converting its vehicle fleet away from oil to electricity, another technology that Chinese leaders see as key to the future.

The world as a whole is far from a path of emissions control that would limit temperature rise to 1.5 degrees C. With the current policies in place, emissions will not decline at all over the next few decades. The pledges that countries have made both pre- and post-COP26 make a considerable difference and are estimated to result in cutting CO_2 emissions by about one-half in 2050, which is still not enough to reach the 1.5-degree target. To meet such a target with confidence, emissions will have to start falling immediately and be down by about 40% by 2030. This is a global figure, but China is such a large part of this picture that reaching the global target will be impossible unless China, rather than having emissions continue to grow over the next decade, starts reducing them immediately. The China path consistent with a global target of 1.5

[14] S. Kulp and B. Strauss, "New Elevation Data Triple Estimates of Global Vulnerability to Sea-Level Rise and Coastal Flooding," *Nature Communications,* October 2019. https://www.nature.com/articles/s41467-019-12808-z

[15] Climate Action Tracker, "China: Country Summary," November 2021. https://climateactiontracker.org/countries/china/2021-11-03/

degrees C involves carbon emissions starting to decline immediately and sharply declining until a target of zero net emissions is reached by 2050.[16]

China in 2021 introduced a potentially powerful mechanism that would allow it to move efficiently to more stringent objectives for carbon reduction: an emission trading system (ETS) involving 2,200 enterprises, including all carbon-fueled power plants connected to the grid. Initially, emission permits are given out based on historical emissions and the total amount allowed leaves room for increased emissions over the near term. This kind of gentle start-up, such as that experienced in Europe and California as they introduced emission trading, is common in early ETS stages. In the initial year of operation the carbon prices in China reflected this gentle start-up, with prices per metric ton in the $6-9 dollar range.[17] Recent estimates indicate that global prices will need to be closer to $100 per metric ton and rising over time, if the 1.5-degree target is to be met.

The link between energy policy and climate change and economic growth is complicated. In the short run, a more ambitious program to reduce emissions could easily lead to slower economic growth as it will involve replacing coal-fired plants that still have a useful economic life. As we move toward the middle of the century, however, a 3-degree temperature rise is likely to have negative effects on growth as resources are diverted to prevent storm surges, flooding, and relocation of people, water scarcity makes agriculture increasingly less productive, and extreme heat reduces human productivity. Also, GDP is not a complete measure of human welfare. A rapid shift away from coal will save millions of lives lost to air pollution and lead to a healthier population.

Conclusion

The economic scorecard for Xi Jinping's ten years in office is mixed. He has opened up the economy further to foreign trade and investment, one of the keys to China's current and future prosperity. He has set a target date for China's peak carbon emissions and another date to reach net-zero emissions. Given that China will be the biggest loser from climate change, not to mention the ongoing health costs of continuing to burn coal, these measures will probably have the greatest effect on the long-term quality of life in China. Although GDP growth slowed down by more than four percentage points under Xi, it still has averaged over 6%, sufficient to complete the job of poverty elimination. According to the World Bank's extreme poverty line, almost one-third of China's population (31.7%) was poor in 2002. By 2012 that number had dropped spectacularly to 6.5%. Under Xi it declined further, to 0.1% in 2019.[18]

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[16] Asia Society Policy Institute, "U.S. and China Climate Goals: Scenarios for 2030 and Mid-Century," November 2020. https://asiasociety.org/policy-institute/us-and-china-climate-goals-scenarios-2030-and-mid-century

[17] C. Busch, H. Min, and C. Meian, "Next Steps for China's Carbon Emissions Trading System to Improve Efficiency, Achieve Climate Goals," Energy Innovation Policy and Technology, April 2022.

[18] World Bank, *World Development Indicators.*

On the negative side, the target for reaching net-zero emissions is not ambitious enough to prevent the worst effects of temperature rise and climate change. The emissions trading scheme is the right tool if China wants to become more ambitious about carbon reductions. The other mark against Xi's economic policy is the doubling down on industrial policy, increasing subsidies in an attempt to achieve technological dominance in key areas and to make China's economy less externally dependent. This is a risky gambit that no doubt will have some successes but at the cost of wasting a lot of resources that could be used to improve people's lives. Looking ahead to the future, this state interference in the economy, combined with the negative blowback from its trading partners, is likely to result in below-potential performance in China.

Finally, there are other important areas of reform that Xi Jinping has not tackled, perhaps distracted by the programs to build up technological prowess. Genuine *hukou* reform and facilitation of rural-urban movement would do a lot to reduce inequality of opportunity in China. Relatedly, a property tax could fund greater public services and help rationalize the property sector. These reforms have been talked about for years as measures to help China shift from an investment-heavy growth path to a more consumption-oriented path, but there has been little action so far.

About the contributor

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