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INTRODUCTION

Economic Truths Towards Resolving China-US Trade Conflict

Ha Jiming and Adam S. Posen

All of us, empirical reality-based economists, whether working in China or the United States, believe that outright trade war between the world's two largest economies would be devastating to the working people of both countries, as well as destructive to the future of the entire world economy. We would not say economic peace at any price, but we would say that at present the costs of conflict far outweigh the current causes of dispute in the China-US economic relationship. Those costs would be both direct, in terms of short-term losses of growth and employment, and indirect, in terms of long-term damage to the world trading system, diminishing investment and efficiency going forward. We all repudiate the view associated with the Trump administration that the international economic order—which the United States built and has led—is skewed to exploit the US economy. We all believe that China-US trade has on net been clearly win-win, and will continue to be so, if it is conducted by the rules of that order—and if those rules are consensually adapted to economic change. In fact, given the degree to which China has developed, the two economies have more fundamental economic interests in common now than before, including in safeguarding and abiding by that system.

Clearly, our beliefs, though justified by objective economic assessments, are not widely shared in the American body politic, or even in policymaking circles throughout the advanced economies. Some of this resistance to reality is an ideologically driven feeling of threat on the part of the Trump administration, but not all of it. There are points of genuine dispute between the United States and China over their economic interaction. Even if their economic significance is often exaggerated, these are legitimate points of contention, which have to be addressed in a constructive manner. That is why many of these points of dispute pre-date the Trump administration's unilateral actions against Chinese exports, why there is support well beyond the White House for some demands that China change behavior, and why even some multinational companies that have long invested in China are lining up with rather than against these measures. Meanwhile, China has its own popular suspicions of and complaints about American economic behavior, some of which are legitimate and some of which are baseless. Politically, many Chinese citizens are understandably

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offended by the confrontational and demanding tone that the Trump administration has publicly taken towards another sovereign country.

This is not to say simply, "both sides have a point," and throw up our hands. As policy economists, we do not assume that all complaints are equally valid. In keeping with that, we do not agree amongst ourselves on all the particulars regarding each government's complaints—there are some consistent differences between the CF40 and PIIE authors' points of view, perhaps reflecting their respective home biases and loyalties.[1] In this summary, we put forward what we do agree on, starting with the mutually beneficial priority of stopping short of a trade war, which no one could win. We hope that this will contribute to a more reality-based consideration of both countries' enlightened self-interests, which would yield progress on points of dispute in a manner consistent with keeping the world economy open for business.

Slowing economic growth is likely to be a persistent reality for both China and the United States, so international trade must be seen as helping against not causing the slowdown. There is a productivity growth slowdown across the advanced economies pre-dating the 2008–09 financial crisis, and US workforce expansion has also downshifted for the medium term. China's medium-term growth rate is slowing less sharply and from a much higher rate but just as lastingly (given demographics and diminishing room for catch-up urbanization). In both countries, this can feed political desires to scapegoat foreign competition or cheating as a cause of the slowdown. In fact, the opposite is the case—both China and the United States need the expanding markets and efficiency gains from global production and trade when internal growth engines slow. Policymakers must make this case rather than fan the flames of domestic opposition.

The Trump administration's unilateral approach to trade disputes is counterproductive. Whatever the merits of US economic complaints regarding trade with China, the use of unilateral tariff threats as a means to achieve economic ends is a mistake. In pure economic terms, tariffs will hurt downstream producers and global supply chains, as well as American consumers, far more than they will achieve (or cost China initially). In negotiating terms, this approach increases the risk of a tit-for-tat reaction, which could escalate uncontrollably between China and the United States. In diplomatic terms, it harms advanced economies (all US allies) in a host of ways as well as bystander emerging markets. And systemically, it breaks down the norms and rules of international economic conduct, which have led to greater prosperity and stability for all. This approach is even more counterproductive when conveyed in a confrontational manner with an arrogant tone to another sovereign country, as the Trump administration has chosen to use both in public and private. While the Trump administration has treated many of its important trading partners, such as Germany and Mexico, in this manner, not just China, it is particularly ill-advised here, given the geopolitical and historical background of the China-US relationship.

The economic disputes that can be addressed using the World Trade Organization (WTO) and other multilateral mechanisms should be addressed using those mechanisms. China has complied with the overwhelming majority of WTO decisions, including those against it in particular disputes. The United States has won the overwhelming majority of WTO cases in which it has been involved. The disagreement over market economy status for China has no effect on the utility and basic fairness of WTO dispute adjudication. Clear decisions with legal status prevent tit-for-tat escalation by delinking issues.

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1. Papers by PIIE authors are in US-China Economic Relations: From Conflict to Solutions—Part I, PIIE Briefing 18-1 (June), https://piie.com/publications/piie-briefings/us-china-economic-relations-conflict-solutions-part-i.

Some current disputes, notably over technology transfer, cannot be resolved in the WTO, so new agreements must be made. The WTO was designed to deal with clearly trade-related issues, and its capabilities reflect those that were most salient when the transition from the General Agreement on Tariffs and Trade (GATT) took place. In the intervening decades, many new aspects of economics, and thus many new aspects of trade, have become important. Most of the issues having to do with technology, including intellectual property rights, internet and data privacy, and social concerns about trade, need new forms of agreement. This will not be easy, and it will require a start in bilateral or plurilateral negotiations, but there are models out there. These can be pursued with an eye towards eventual adaptation of WTO frameworks to include these issues. False issues, such as claiming national security exceptions with regard to normal commercial disputes like on steel overcapacity, however, must not be used as excuses to go around the WTO.

Bilateral trade deficits are not a reasonable or useful goal for trade policy to target. There are no good economic reasons for the Trump administration to make reduction of the bilateral current account imbalance between the United States and China a policy goal. Global imbalances do matter, but China is not running a persistent large global surplus the way it was in the early 2000s. Meanwhile, the surest and best way for the United States to reduce its own global trade deficit is to increase net national saving through domestic policy changes. The unfunded large-scale procyclical fiscal expansion now under way in the United States will make matters worse. It will increase the bilateral trade deficit with China as well, assuming that China's share of total US imports does not shrink (not that it matters). Chinese leaders should not resort to managed trade offers to attempt to placate the Trump administration on this point—so doing would legitimate this mistaken pursuit, would fail to change the net bilateral imbalance anyway (given the US fiscal stance and likely tightening of the Federal Reserve's monetary policy), and would induce significant economic distortions.

Agreements should be about commercial and government behaviors, not about economic outcomes (also known as managed trade). Many factors go into economic outcomes in any given industrial sector, let alone for large national economies. It is folly to have trade agreements target economic variables that cannot be controlled. Circumstances may quickly shift, making even once desirable outcomes suboptimal, even if they were achievable. In contrast, there clearly are behaviors—by companies or state-owned enterprises, or by governments—that are prima facie unfair to trading partners. Behaviors can be verifiably observed and controlled through policy and enforcement of laws. And behaviors that are harmful due to unfairness or distortionary are likely to remain harmful even as economic circumstances change. Hence the subject of China-US negotiations should be what behaviors to restrict, not what industries to protect.

Where China and the United States can agree on economic opening in China, subject to verifiable rules, it will benefit both economies. The bulk of China's astonishing growth has come through the liberalization of its private sector. A key part of this private-sector-led growth was profitable commercial agreements for American and other multinationals to transfer production and some technology to Chinese partners and investments. Just as in every economy, part of the benefit of opening also comes from the competitive pressures that foreign entrants put on domestic incumbents. There are substantial gains to be had for Chinese households and the overall economy were China to truly liberalize parts of its service sector. All of this requires agreement on enforceable rules of conduct for Chinese and American companies. It does not comprise an attack on Chinese approaches to state-owned enterprises per se nor seek to impose an "American model" on the Chinese economy. It does, however, require that in sectors where foreign firms are to compete, they truly be allowed to compete and take market share.

Chinese companies have a right to compete with US companies and succeed in any sector, including in high-tech, but they do not have a right to transfer of US technology. The same holds true for the United States with respect to Chinese competition. Where Chinese private-sector firms fairly compete, they must be allowed to take market share they earn, even in high-tech sectors. While much has been made of Made in China 2025 and the earlier "indigenous innovation" programs, Chinese government' aspirations to make China a technological leader in some fields should not be considered a threat to the United States. Even some government subsidization of relevant R&D or technical education in this pursuit should not be inherently contentious, as the US, European, and Japanese governments also indulge in such general support policies (though some frictions over specific measures, as in Airbus vs. Boeing, are inevitable). But any technology transfer from the United States must come through open source or voluntary commercial agreements, and this must be true in fact, not just lip service. The United States not only has the right but also is justified in pressing the Chinese government on enforcement of intellectual property rights, if it documents specific cases of illegal appropriation. US decisions to restrict what technologies are exported to China (or to any other country not a US treaty ally) may be frustrating, and can be argued with, but ultimately must be accepted, not gotten around.

The United States should not be vetoing or trying to block China's increasing role in international economic governance, and it should not withdraw from the international institutions it led in creating. The rules-based international economic system, which the United States led in building, is in everyone's interest, and it remains so. There are rules, norms, and responsibilities that go with membership, which China must comply with like any other member of the system. But on those terms, there is nothing to fear from China's participation. In fact, it is in the interest of the United States and the world that China shoulder a share of the leadership burden and of contributions to support public goods commensurate with its global economic weight. Failure to give China that voice and vote not only overburdens the United States but also diminishes the legitimacy and reach of the international institutions, unnecessarily restricts the views expressed in decision-making, leading to blind spots, and encourages China and others to go outside the system. By engaging further in the system China will not displace the United States from global leadership anytime soon and will not undermine the liberal values built into the rules-based system. If anything, the opposite would happen: The United States choosing to withdraw from its role as chair of the system, whether before or after China gets expanded voice, is the only thing that could displace it from leadership. That would be truly self-defeating, as well as a loss for China and the world.

Expanded two-way cross-border direct investment should play a role in improving China-US economic relations in the long term. The previous window for concluding a bilateral investment treaty between China and the United States has closed. At present, there is widespread support in both parties in the US Congress to expand the powers of the Committee on Foreign Investment in the United States (CFIUS) and significantly restrict Chinese foreign direct investment (FDI) into the United States. Limits on foreign ownership in China are tipped to be increased but not removed. Ultimately, however, both countries need more rather than less FDI from each other, with clearer ownership rights. The efficiency and employment gains from such economic integration would be substantial. As Japan's experience in the United States shows, such an expansion would also help defuse economic tensions both at the popular level (by creating tangible jobs associated with the other country) and among policymakers (by leading to an "exchange of hostages" to keep the relationship on track).

CHAPTER 1

Can China and the United States Avoid a Full-Blown Trade War?

Yu Yongding

On March 8, 2018, President Donald Trump fired the first shot in a trade war by threatening to impose 25 percent of tariff on steel imports and 10 percent on aluminum. On March 22, the US Trade Representative (USTR) released the report of a Section 301 investigation into China's trade practices that found that "the acts, policies, and practices of the Chinese government related to technology transfer, intellectual property, and innovation are unreasonable or discriminatory and burden or restrict US commerce" (USTR 2018). The same day, President Trump signed a memo slapping tariffs on some 1,300 Chinese products, worth about $50 billion.

To retaliate, on April 2 China imposed tariffs on $3 billion of US exports to China. The 128 products included pork, fruit, and steel pipes. On April 4 the USTR published the list of the 1,333 Chinese products worth $50 billion subject to the additional 25 percent tariff. Within hours, China hit back with a plan to impose a 25 percent tariff on 106 US products worth $50 billion, including soybeans and Boeing planes. The next day President Trump threatened to impose tariffs on another $100 billion of Chinese products. In response, China vowed to fight back with fresh trade measures "at any cost."

Trade friction has long been a serious problem in the bilateral relationship between China and the United States. But few people had expected that the friction would escalate to a trade war, not least because economists widely view trade wars as damaging to all parties. How did the two countries get to this point? Is it possible to turn back before it's too late?

President Trump has said, "We have a trade deficit of $500 billion a year, with intellectual property theft of another $300 billion. We cannot let this continue!" Then what is the solution? Trade war, according to President Trump. He pointedly declared that "trade wars are good, and easy to win."[1]

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1. "Trump tweets: 'Trade wars are good, and easy to win'," Reuters, March 2, 2018, www.reuters.com/article/us-usa-trade-trump/trump-tweets-trade-wars-are-good-and-easy-to-win-idUSKCN1GE1E9.

Indeed, China has run a large current account surplus against the United States since the early 2000s. The United States has run a trade deficit persistently since 1980. At different times, it has blamed Germany, Japan, and East Asian countries for its deficit. Beginning in 2003 it found a new target: China.

Why does the United States run a trade deficit against the rest of the world? One school of thought attributes the deficit to the secular decline of the United States' competitiveness, which started in the late 1970s. Another argues that the fundamental cause of the US trade deficit is its savings deficiency. As Hufbauer and Lu (2016) note, "The United States is bound to run an overall trade deficit with the rest of the world when combined US savings of the household, business, and government sectors are negative, as they have been for some years. To finance the trade deficit, the United States is obliged to borrow or attract investment from the rest of the world, making a global US trade deficit inevitable."

These two explanations are two sides of the same coin—independent of but conditional on each other. For example, if the US saving deficiency were eliminated by cutting government expenditure, the trade deficit would disappear. On the other hand, if American trade deficit were eliminated through whatever means, it implies that America's savings deficiency would disappear. Without its savings deficiency, the United States would not be able to run a trade deficit and vice versa. This is a matter of identity. Whatever the causality, trade policy alone cannot solve the problem of the US trade deficit.

Another important point is that the US trade deficit is not just a bilateral problem. China runs large trade deficits with East Asian economies. As the final assembler and manufacturer in global value chains, China runs a trade surplus with many other countries that export parts and components to China. The geographical pattern of the US trade deficit thus reflects resource allocation consistent with comparative advantages. Twenty years ago Japan was the United States' largest trade surplus country. Following changes in comparative advantage, China replaced Japan in the 2000s. As a result of aging, which will increase labor costs, China's position in the United States' trade structure will change.

China's bilateral trade surplus against the United States is too large. Although trade policy cannot reduce the overall US trade deficit without a simultaneous reduction in the US savings deficiency, it could reduce bilateral trade imbalances between China and United States. Relaxation by the United States of the ban on exporting high-tech products to China would immediately reduce the bilateral trade imbalance. Unfortunately, this seems not to be an option for the United States.

China could reduce its trade surplus with the United States, which might require it also to reduce its trade deficit with Japan, Korea, and other East Asian economies. For many years, China has pursued a trade policy with a mercantilist flavor, characterized by an inflexible exchange rate regime. This policy resulted in the accumulation of some $4 trillion of foreign exchange reserves in mid-2014[2] and the overdependence on foreign demand in general and demand from the US market in particular.

China has made efforts to address the imbalance, as evidenced by the fact that the renminbi appreciated by 41 percent in trade-weighted terms between 2005 and 2017. In real (inflation-adjusted) terms, it appreciated 48 percent during the same period (DBS Bank 2017).

Since 2008, China's overall trade surplus-to-GDP ratio has fallen steadily, declining from almost 10 percent in 2007 to just above 1 percent in 2017.[3]

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2. State Administration of Foreign Exchange, www.safe.gov.cn/safe/2015/0128/5841.html.

3. State Administration of Foreign Exchange, February 8, 2018, www.sohu.com/a/221678862_561670.

President Trump complains endlessly that the United States has being taken advantage of by its trade partners who run trade surpluses against it. His complaints expose his ignorance. Running a large trade account deficit implies that the United States has sucked in large volumes of foreign capital over the years, obtaining huge real resources in return for pieces of papers, greatly benefiting Americans. Running persistent trade deficits and hence persistent current account deficits against the rest of the world is a reflection of the strength of the US financial system and the US dollar in particular. If President Trump continues to act wantonly, America may no longer be able to enjoy such an advantage.

Another important flash point of trade friction is China's alleged failure to comply with the requirements of the World Trade Organization (WTO). Some Americans assert that after almost 15 years in the WTO, China still fails to follow through on many of the trade-liberalizing commitments it made. According to them, these broken promises have harmed the global trading system as well as both economic growth and the health of innovative industries across the United States and Europe (Ezell 2015).

What is the truth of the matter? Since its entry into the WTO, China has tried its best to fulfill its WTO commitments. WTO Director-General Pascal Lamy had noted that "China has done really well in terms of implementing its long list of commitments. But no country is above criticism. . . . What I can say is that members have complained about certain services sectors not being open sufficiently and that intellectual property rights protection needs to be improved" (Baden 2011).

The US government has kept a close eye on China's WTO compliance since China's entry. The USTR has sent 16 reports to Congress on China's WTO compliance. They cover all important issues, including trading rights, import regulation, export regulation, investment, agriculture, intellectual property rights, services, and the legal framework.

Although the reports expressed some reservations and dissatisfaction, the assessment of China's WTO compliance in all but the 2017 report was positive. In its 2016 report, the USTR told Congress that China appeared to be in compliance with its trading rights commitments in most areas. According to the report, it had implemented its tariff commitments for industrial goods, taken measures that brought its legal regime for determining customs valuation into compliance with WTO rules, adhered to the agreed schedule for eliminating nontariff measures, issued laws and regulations bringing its legal regime on antidumping and countervailing duties largely into compliance with WTO rules, and brought its legal regime on safeguards largely into compliance with WTO rules.

The USTR expressed its dissatisfaction with China's export regulation. It censured China for maintaining export restraints on antimony, bauxite, coke, fluorspar, indium, lead, magnesium carbonate, manganese, molybdenum, phosphate rock, rare earths, silicon, silicon carbide, talc, tin, tungsten, yellow phosphorus, and zinc, all of which are of interest to US producers.

The USTR was unhappy with China's performance in the area of international policy affecting trade, which involves issues such as nondiscrimination, taxation, subsidies, price control, standards, technical regulations and conformity assessment procedures, state-owned and state-invested enterprises, and government procurement. Issues in this area are related to a developing county's pursuit of industrial policy. This is a gray area in WTO agreements, making it difficult to judge whether a country's internal policy affecting trade is WTO inconsistent. More negotiations are needed in this area. Despite concerns, industrial policy is not the top issue in the USTR's litany of complaints.

With regard to foreign investment in China, the USTR noted that "China has revised many laws, regulations and other measures on foreign investment to eliminate WTO-inconsistent requirements relating to export performance, local content, foreign exchange balancing and technology transfer" (USTR 2015, 32).

The USTR's tone on China's WTO compliance on agriculture was more or less the same. The USTR did not accuse China of theft of intellectual property, let alone come up with the $300 billion figure presented by the Commission on the Theft of American Intellectual Property in 2013, which cited it without basis (National Bureau of Asian Research 2013). In its 2016 report, the USTR noted that despite ongoing revisions of laws and regulations relating to intellectual property rights, and greater emphasis on rule of law and enforcement campaigns in China, key weaknesses remain in China's protection and enforcement of intellectual property rights, particularly in the area of trade secret misappropriation. Intellectual property rights holders face not only a complex and uncertain enforcement environment but also pressure to transfer intellectual property rights to enterprises in China through a number of government policies and practices. The difference between intellectual property "theft" and "weakness" of protection is clear.

With respect to the opening up of service sectors, the USTR's assessment was that "while China has implemented most of its services commitments, concerns remain in some service sectors" (USTR 2016, 35).

Any WTO member that has grievances against its trade partners can avail itself of the Dispute Settlement Body (DSB) of the WTO. Once the DSB rules on a case, it may direct the member to take action to bring its laws, regulations, or policies into conformity with WTO agreements. How China has responded to the decisions made by the DSB is an important indicator of China's willingness to comply with WTO rules and rulings. Since its entry into the WTO, China has seen 43 cases brought against it by trade partners. In all cases, China accepted the decisions of the DSB.

Its acceptance of the DSB decision on rare earths is a case in point. In March 2012, the Obama administration filed a case with the DSB regarding China's restriction of rare earths exports. China argued that its restrictions were legal because WTO regulations allow countries to impose export duties and quotas for reasons of conservation and to protect plant, animal, and human safety. The panel ruled against China, arguing that once the material is out of the ground, WTO members cannot discriminate between domestic and foreign firms in giving access to the mined resource. China's restrictions gave its domestic firms preferential access to the rare earths, violating the principle of nondiscrimination. On August 13, 2014, the WTO Appellate Body upheld the DSB's ruling. Although China was very unhappy with the decision, it dropped its export quotas in 2015.

During the same period, 95 cases against the United States were brought to the DSB. In many cases, the United States refused to comply.[4] In addition, several vacancies on the WTO Appellate Body remain unfilled because of the United States' obstruction. The United States thus does not command the moral high ground in accusing China of failing to fulfill its WTO commitments.

Based on its performance since 2001, China deserves a score of at least three on a five-point scale. This observation should not be controversial and indeed was not so before 2017.

In its 2016 report, the USTR stated that "the data confirm a dramatic expansion in trade and investment among China and its many trading partners, including the United States, since China joined the WTO. . . . US exports of goods to China totaled $116 billion in 2015, representing an increase of 505

4. World Trade Organization, Disputes by Member, www.wto.org/english/tratop_e/dispu_e/dispu_by_country_e.htm.

percent since 2001, and US services exports reached $48 billion in 2015, representing an increase of 802 percent since 2001." Only after having acknowledged these positive results did the report note that "the overall picture currently presented by China's WTO membership remains complex."

The tone of the 2017 USTR report changed dramatically. It cited no positive results, instead claiming that "the United States erred in supporting China's entry into the WTO on terms that have proven to be ineffective in securing China's embrace of an open, market- oriented trade regime." This statement implies that for the United States the issue is not only whether China has fulfilled its WTO commitments but also how to reset rules to constrain China.

China's fulfillment of its WTO commitments is not impeccable, and the problems raised by the United States are not entirely unreasonable or nonnegotiable. A puzzling question is why the US government decided to start a trade war with China, despite the potentially dire consequences for both economies and the rest of the world.

The USTR reports compiled in different years reveal the shift in focus. In earlier years, the USTR's complaints concerned pure trade issues, such as tariffs, quotas, and intellectual property protection. In more recent reports, especially in the 2017 report, the focus was on China's industrial policies, which to a large extent is beyond the scope of the WTO.

In May 2015, China's State Council released a document titled *Made in China 2025*. It targets 10 strategic industries, including advanced information technology, automated machine tools and robotics, aviation and spaceflight equipment, maritime engineering equipment and high-tech vessels, advanced rail transit equipment, new energy vehicles, power equipment, farm machinery, new materials, biopharmaceuticals, and advanced medical device products. Is there anything wrong with setting long-term goals for development of certain industries? Ironically, this so-called Made in China 2025 was inspired by Germany's Industry 4.0, launched three years earlier. Many economists in China criticized it as unnecessary and bound to fail.

In fact, while attacking Made in China 2025, the US government itself spends a large amount of money on R&D. According to the Executive Office of the President, "(w)hile the private sector funds and performs the majority of US R&D, the Federal government has an important role in funding R&D in areas that industry does not have a strong incentive to invest in and in areas of critical importance to national and economic security." "The US President's 2019 Budget provides $118.1 billion for Federal R&D, including the conduct of R&D and investments in R&D facilities and equipment" (Executive Office of the President, Office of Management and Budget 2018, 203).

The Trump administration was very unhappy with the program, because "the final goal of Made in China 2025 is to capture much larger worldwide market shares in the 10 targeted, strategic industries" (USTR 2017, 18). This position reminds one of the old saying, "One man may steal a horse while another may not look over a hedge." China has much smaller market shares in these industries than the United States does; why it has no right to capture much larger markets shares is unclear. The ambition of Made in China 2025 is much more modest than the USTR described. It is to raise China's manufacturing ability to the average level of the major manufacturing powers in the world in 2035 (not 2025).

The 2017 USTR report asserted that the policy tools used by the Chinese government to achieve the goals of Made in China 2025 "are largely unprecedented, as other WTO members do not use them, and include a wide array of state intervention and support designed to promote the development of Chinese industry in large part by restricting, taking advantage of, discriminating against or otherwise creating disad-

vantages for foreign enterprises and their technologies, products and services." The report fails to identify the "wide array of state intervention and support," let alone indicate whether they are WTO consistent. China's State Council itself has yet to provide a clear idea of the policy tools it plans to use.

It seems that the Trump administration realized that it is difficult to charge China with a WTO violation and therefore changed its tactic to resort to domestic laws (Section 301 rather than the WTO trade dispute settlement mechanism). In a report entitled *Findings of the Investigation into China's Acts, Policies, and Practice Related to Technology Transfer, Intellectual Property and Innovation under Section 301 of the Trade Act of 1974*, released on March 22, 2018, the USTR launched a vigorous attack on China's technology transfer regime. The Section 301 investigation report rarely mentions the WTO. It cites two key aspects of the regime for inbound foreign investment: imposition of foreign ownership restrictions and restrictive administrative licensing and approval processes.

According to the report, in some cases the Chinese government directly pressures foreign companies to transfer technology; in other cases the demand comes from a Chinese partner. Foreign companies often understand that the demand originated from the government. China claims that technology transfer decisions are products of "voluntary agreements" without "government intervention."

The report claims that "the weight of the evidence shows that China [the report does not distinguish between Chinese companies and the Chinese government] uses foreign ownership restrictions, including joint venture requirements and equity limitations, and other investment restrictions to require or pressure technology transfer from US companies to Chinese entities." Is there evidence to support this claim?

China entered the WTO as a developing country and still enjoys some of the privileges accorded to developing countries. It is entirely legitimate for Chinese enterprises to seek technology transfer from their foreign partners on a commercial and voluntary basis.

China also has a large savings glut, as evidenced by its large and persistent current account surplus against the rest of the world. Normally, the availability of capital is not a problem for Chinese enterprises, and if it is not for foreign technology, why would Chinese enterprises have to take so much trouble to seek foreign investors? It is a stretch to suggest that Chinese enterprises need government instruction or pressure to demand for technology transfer from their potential partners. With so many foreign corporates eager to enter Chinese markets, Chinese enterprises certainly would have some leeway on bargaining tables in demanding technology transfers. This basically is a matter of competition rather than one of government-forced technology transfer. Only if governments (central or local) demand technology transfers does the issue of WTO inconsistency arise.

The evidence of government intervention in technology transfers provided by the USTR is weak. All witnesses are anonymous, and all evidence is indirect and essentially hearsay or guess work. It is hard to believe that any court of law would admit this evidence. Moreover, even if the evidence were true, it would still not establish that the practice of forcing foreign enterprises to transfer their technology to China is prevalent.

The USTR's Section 301 investigation makes four claims about China's alleged forced transfer of technology:

1. According to a 2017 member survey by the US-China Business Council (USCBC 2017), "19 percent of responding companies stated that in the last year they had been directly asked to transfer technology to China. Of these, 33 percent said that the request came from a central government entity and 25

percent that it came from the local government." This claim is based entirely on hearsay; no evidence (documents, recordings, witness testimonies) is provided. Moreover, 19 percent is not a large number, and without knowing how many companies were surveyed, it is impossible to know how widespread a problem it describes. Businesses that failed to respond probably harbor no grievances against China on the issue of forced technology transfer.

2. According to a survey conducted by AmCham China in 2013, "42 percent of respondents in advanced technology sectors (including aerospace, automotive, chemical, and information technology) were concerned about 'de facto technology transfer requirements as a condition for market access.'" As in the previous point, it is not clear how many companies received the questionnaires but did not respond; the figure is therefore meaningless. Moreover, respondents said simply that they were "concerned about de facto technology requirements." Such a vague statement could never be used to prosecute a defendant in court.
3. One participant testified in the hearing for this investigation that through "many, many private interviews with companies. . . we did not find a single instance in which companies had not felt pressure and in many cases caved into the pressure to share technology" (USTR 2018, 22). This "evidence" is not compelling.
4. According to a 2017 US Department of Commerce, Bureau of Industry and Security survey (Botwin et al. 2017) of the US integrated circuit design and manufacturing industry, 25 US companies responded that they were required to form joint ventures (JVs) with Chinese entities and transfer intellectual property to obtain or maintain access to the China market. This evidence proves nothing, because those companies said nothing about the governments' role.

The USTR (2018) report states that "foreign ownership restrictions such as JV requirements and foreign equity limitations are a cornerstone of China's technology transfer regime" and devotes much space to the evolution of China's policy on foreign ownership restrictions in different sectors. China does impose restrictions on foreign ownership. The government's *Catalogue of Industries for Guiding Foreign Investment*, or foreign investment catalogue, governs whether foreign investment in a sector or industry is "encouraged," "permitted," "restricted," or "prohibited." Encouraged sectors are industries China believes would benefit from foreign investment and technology transfer, often in line with industrial policy goals. Restricted and prohibited sectors are sensitive sectors, possibly touching on national security concerns or at odds with the industrial goals of China's economic development plans (US Department of Commerce 2017). Restrictions on foreign ownership are applied more or less in line with the catalogue. The foreign investment catalogue is not negotiable and hence cannot be used as a bargaining chip. It is difficult to see how China could use the catalogue as leverage to force foreign investors to transfer their technology to their Chinese partners.

The USTR quotes the US Chamber of Commerce as saying that "these restrictions either block opportunities for foreign companies to operate in the market, or, in some cases, create a de facto technology transfer requirement to the Chinese partner as a precondition for market access" (USTR 2018, 27). It is true that these restrictions block opportunities for foreign companies to operate in the market. But virtually all countries, including the United States, impose restrictions on market access for foreign investment in their own countries.

The question is whether China violated its obligations under the WTO by maintaining ownership restrictions. Foreign ownership restrictions are a common practice among developing countries, and they are totally consistent with the WTO. The United States, the most advanced country in the world, also practices foreign ownership restrictions, e.g., in broadcasting (47 USC §310(a)).

The USTR failed to cite the gradual loosening of restrictions on foreign entry by the Chinese government. In December 2016, the Ministry of Commerce of the People's Republic of China (MOFCOM) and the National Development and Reform Commission (NDRC) jointly issued an updated draft of the foreign investment catalogue for public comment and proposed further liberalizing 20 sectors of the economy. The foreign investment catalogue has been replaced by a nationwide negative list that contains two categories of sectors: restricted and prohibited. All foreign investments not on the negative list are no longer subject to preapproval from MOFCOM.

In July 2017, MOFCOM published the *Catalogue of Industries for Guiding Foreign Investment (Revision 2017)*, with an appendix of the "Negative List for Foreign Investment Access." Restrictions on foreign ownership apply only to "restricted" sectors. The revised catalogue may fall short of the expectations of the US business community, and more could have been done. But it is fair to say that China has gone beyond its WTO commitments.

The USTR's Section 301 report claims that "even if China dropped its JV and other foreign ownership requirements, foreign investors would still continue to face pressures to transfer technology or disclose technical information through China's licensing and administrative approvals regime"(USTR 2018, 14). The report devotes much space to the investment restrictions the Chinese government set to extract technology transfers from US partners in joint ventures in the automobile and aviation industries. But there is nothing wrong with Chinese partners demanding technology transfers from their foreign partners, and doing so does not violate WTO rules, as the agreement on trade-related investment measures (TRIMs) is silent on demand for technology transfer.

The USTR knows that the actions of Chinese companies have not violated any WTO rules, particularly TRIMs. It therefore seeks to show that China's conduct is "unreasonable." Under Section 301, an "unreasonable" act, practice, or policy is one that "while not necessarily in violation of, or inconsistent with, the international legal rights of the United States is otherwise unfair and inequitable" (USTR 2018, 109). In determining unreasonableness, the USTR shall take into account, to the extent appropriate, whether foreign companies in the United States have access to reciprocal opportunities to those denied to US companies.

The United States is the most advanced country in the world in terms of technological superiority. A developing country cannot implement a foreign investment regime as open as the United States' if it does not wish to be permanently stuck in the lower rung of the global division of labor.

China could do more to meet its WTO commitments, especially in the areas of financial services and intellectual property rights protection. Upon accession, China agreed that "foreign financial institutions will be permitted to provide services in China without client restrictions for foreign currency business. For local currency business, within two years of accession, foreign financial institutions will be permitted to provide services to Chinese enterprises. Within five years of accession, foreign financial institutions will be permitted to provide services to all Chinese clients."[5] It failed to honor this commitment properly.

Many Chinese fear that if China opened its financial services sector, cross-border capital flows would surge, causing macroeconomic and financial instability. This worry is not entirely unwarranted. But the opening of the financial service sector is different from the liberalization of the capital account (though the two are interrelated). Whether China should allow capital to flow freely across borders is a matter under

5. China's Schedule of Specific Commitments, fta.mofcom.gov.cn/pakistan/xieyi/chinachengruo_en.pdf, p. 32.

the jurisdiction of the International Monetary Fund, not under the WTO. If Chinese financial institutions are subject to capital controls, foreign financial institutions in China must also be subject to them. Allowing foreign institutions to do business in China would increase competitive pressure on China's financial institutions for better services. As long as the Chinese monetary authorities can manage cross-border flows effectively by capital control measures and macro prudential regulations, opening up the financial services sector will not pose a serious threat to China's financial stability.

China has made headway in the protection of intellectual property rights, but it should have taken the issue more seriously from the start. It could do more in this area. The United States, not China, intended to violate the spirit, if not the letter yet, of the WTO. China has changed greatly since its entry into the WTO. It is still a developing country, but it is also the world's second-largest economy and largest trading nation. In the late 1990s, when it signed the deal with the United States for WTO entry on November 15, 1999, it was the 7th largest economy and 10th largest trading nation.

It is reasonable that China should bear more international responsibility and open its economy wider and protect intellectual property rights more vigorously. Doing so implies the need to renegotiate the terms of contract that guide China's trade-related activities. The negotiations should be conducted under the WTO umbrella.

The United States has committed itself to resolving trade disputes with other WTO member countries through the WTO dispute settlement mechanism. Let's wait and see whether the US government will take any enforcement action against China without first securing approval under the WTO dispute settlement mechanism.

Why did the US government make such a fuss about Made in China 2025? Why did it launch an all-out attack on China's technology transfer regime? The answers can be found in the *National Security Strategy Report of the United States of America* released in December 2017 (White House 2017). According to the report, the United States "will respond to the growing political, economic, and military competitions we face around the world. . . . The competitors that challenge American power, influence, and interests attempting to erode American security and prosperity" are China and Russia, followed (in order of importance) by North Korea, Iran, and transnational groups, from jihadist terrorists to transnational criminal organizations. This report is ushering in a Second Cold War—a war that would be far worse than the looming trade war.

Might China and the United States fall into the Thucydides trap? On April 5, 2018, the WTO announced that China had requested consultations with the United States under the WTO's dispute settlement mechanism regarding US tariff measures on certain Chinese goods, which would allegedly be implemented through Section 301 of the US Trade Act of 1974. The US government accepted China's request. At the Boao Forum on April 11, Chinese President Xi Jinping made a conciliatory gesture to dampen the trade dispute with the United States by pledging to "significantly lower" tariffs on imported American cars and further open China's financial services sector. On April 13, President Trump said that trade negotiations with China were going "very well," asserting that the two countries had made a lot of progress. These developments are encouraging.

One hopes that the trade war will be avoided through negotiation and mutual concessions. Then US and Chinese leaders can turn their attention to the broader problem of avoiding the Thucydides trap, thereby preventing a clash with consequences that would dwarf those of a trade war.

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CHAPTER 2

The China-US Trade Conflict and Its Impact

Ha Jiming and Deng Yangmei

In recent years, the United States has become increasingly discontent with its trade imbalance with China and has taken protectionist measures to change the situation. Against this background, potential conflicts between China and the United States, and their impact on the Chinese economy, have received significant attention from policymakers and academics.

Since about a year into Donald Trump's presidency, China and the United States have experienced constant trade friction. The United States has adopted a series of protectionist policies on certain Chinese products (table 2.1). President Trump has also threatened to make China reduce its trade surplus with the United States by $100 billion. The US Congress' Committee on Foreign Investment in the United States may impose even stricter restrictions on Chinese companies investing in the United States and limit US technology exports to China.

This chapter discusses the China-US trade imbalance and its evolution. It explores the causes of this imbalance, estimates the possible effects of US trade protection policies on both economies and the world economy, analyses the trade tactics adopted by the two countries, and predicts future trends.

CHINA–US TRADE IMBALANCE: EVOLUTION AND CURRENT STATUS

China largely maintained its trade balance ten years ago. Its current account surplus declined from 10 percent of GDP in 2007 to 1.4 percent in 2017. Although China has maintained a surplus of trade in goods for years, it has run a deficit in services trade, which increased significantly in recent years (figure 2.1).

In many ways, US trade is the exact opposite. US trade in goods has registered a continuous deficit since 1975, and its share of GDP continued to rise before 2000. However, trade in services has maintained a long-term surplus (figure 2.2).

From the perspective of bilateral trade, the huge trade deficit in US goods contrasts starkly with China's large surplus. The US trade deficit in goods reached $811.2 billion in 2017, of which $375.2 billion was with

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Table 2.1 Timeline of trade conflicts between the United States and China since President Trump took office

Date	Event
August 14, 2017	Trump signs executive memo directing US Trade Representative Robert E. Lighthizer to launch an investigation into China's unfair trade practices, in order to safeguard US intellectual property and technology (Section 301 Investigation).
January 22, 2018	Trump approves tariffs of up to 50 percent on solar panels and 30 percent on washing machines.
March 1, 2018	Trump imposes a 25 percent tariff on all imports of steel and a 10 percent tariff on all imports of aluminum. He later issues a temporary reprieve on tariffs for steel and aluminum imported from the European Union, Argentina, Australia, Brazil, Canada, Mexico, and South Korea.
March 22, 2018	Following the release of the Section 301 report, the United States announces that it will apply tariffs on $50 billion of Chinese imports (a 60-day period for public comment applies before the plan takes effect), impose restrictions on Chinese investment in the United States, and pursue World Trade Organization challenges to China's discriminatory licensing practices. The action targets Chinese products related to the "Made in China 2025" plan, including high-performance medical devices, biomedicine, new materials, agricultural machinery equipment, industrial robots, new-generation information technology, new energy vehicles, aviation products, and high-speed rail equipment.
March 23, 2018	China's Ministry of Commerce releases a list of discontinuation concessions in response to US Section 232 measures. The intention is to impose tariffs on certain products imported from the United States to balance losses caused by additional tariffs levied by the United States on steel and aluminum. The list tentatively contains 128 tax products across seven categories.
April 3, 2018	The United States unveils a proposed list of Chinese products subject to a recommended tariff of 25 percent as a result of the Section 301 investigation. The list includes aerospace, information and communication technology, robotics, and machinery products.
April 4, 2018	China announces the imposition of an additional 25 percent tariff on US products worth $50 billion, including soybeans and other agricultural products, automobiles, chemicals, aircraft, and other products. The date of implementation will depend on when the United States imposes tariffs on Chinese products.
April 4, 2018	Bloomberg reports that Trump instructed the US Trade Representative to study tariffs on an additional $100 billion of Chinese goods.
April 8, 2018	At the Boao Asia Forum, President Xi announces that China will expand market access, create a more attractive investment climate, strengthen intellectual property protection, and actively increase imports.
April 9, 2018	The Governor of the People's Bank of China, Yi Gang, announces several detailed measures to further open up the financial sector. They include the following: ■ lifting the cap on foreign holdings in banks and wealth management firms operating in China ■ raising the cap on foreign shares in securities companies, funds, futures companies, and insurance companies to 51 percent and removing the cap after three years ■ removing the requirement that among the domestic shareholders of a securities company with foreign shareholders, at least one shall be a domestic-funded securities company ■ increasing the quota of the Hong Kong–Shanghai Stock Connect by four ■ allowing qualified foreign investors to invest in China's insurance agency and insurance assessing businesses ■ allowing foreign insurance brokerage companies the same scope of business activity as Chinese companies.
April 12, 2018	Trump orders top officials to assess the possibility of joining the Trans-Pacific Partnership (TPP), saying that he would do so only if the deal were substantially better than that offered to President Obama.
June 15, 2018	The US government announces a list of $50 billion worth of goods imported from China on which it plans to impose a tariff of 25 percent. The list includes goods worth about $34 billion on which the tariff would be imposed starting from July 6, 2018; the list of the remaining about $16 billion worth of imports will undergo further review in a public notice and comment process. China decides to impose an additional 25 percent tariff on 659 items worth approximately US$50 billion imported from the United States, including 545 items worth approximately US$34 billion covering agricultural products, automobiles, and aquatic products starting on July 6, 2018. The implementation time of additional tariffs on other goods will be announced separately.

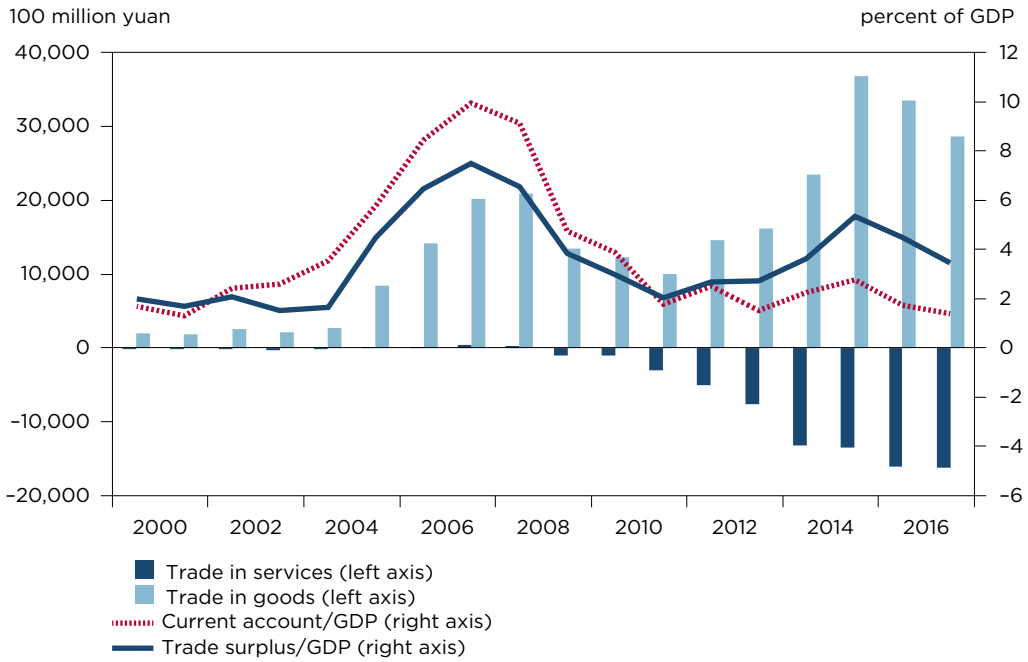
(table continues)

Table 2.1 Timeline of trade conflicts between the United States and China since President Trump took office (continued)

August 2, 2018	The US Trade Representative states that it intends to increase the tariff rate from 10 to 25 percent on the list of $200 billion of imports from China released on July 10.
August 3, 2018	China decides to impose tariffs of 5 to 25 percent on about 5,207 items worth about $60 billion originating in the United States. If the United States is to implement the announced tariffs, China will enforce the above-mentioned tariffs at once.
August 7, 2018	The Office of the US Trade Representative announces that it will impose a 25 percent tariff on approximately $16 billion of goods imported from China starting from August 23.
August 8, 2018	China decides to impose a 25 percent tariff on US$16 billion worth of imports from the United States as soon as the Trump administrations tariffs go into effect on August 23.

Sources: Statement by US Trade Representative Robert Lighthizer on Section 301 Action, https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/july/statement-us-trade-representative; USTR Finalizes Second Tranche of Tariffs on Chinese Products in Response to China's Unfair Trade Practices, https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/august/ustr-finalizes-second-tranche; China's State Council Tariff Committee, http://gss.mof.gov.cn/zhengwuxinxi/zhengcefabu/201808/t20180803_2980950.html and http://gss.mof.gov.cn/zhengwuxinxi/zhengcefabu/201808/t20180808_2983770.html.

Figure 2.1 China's trade in goods and services and current account status, 2000–17

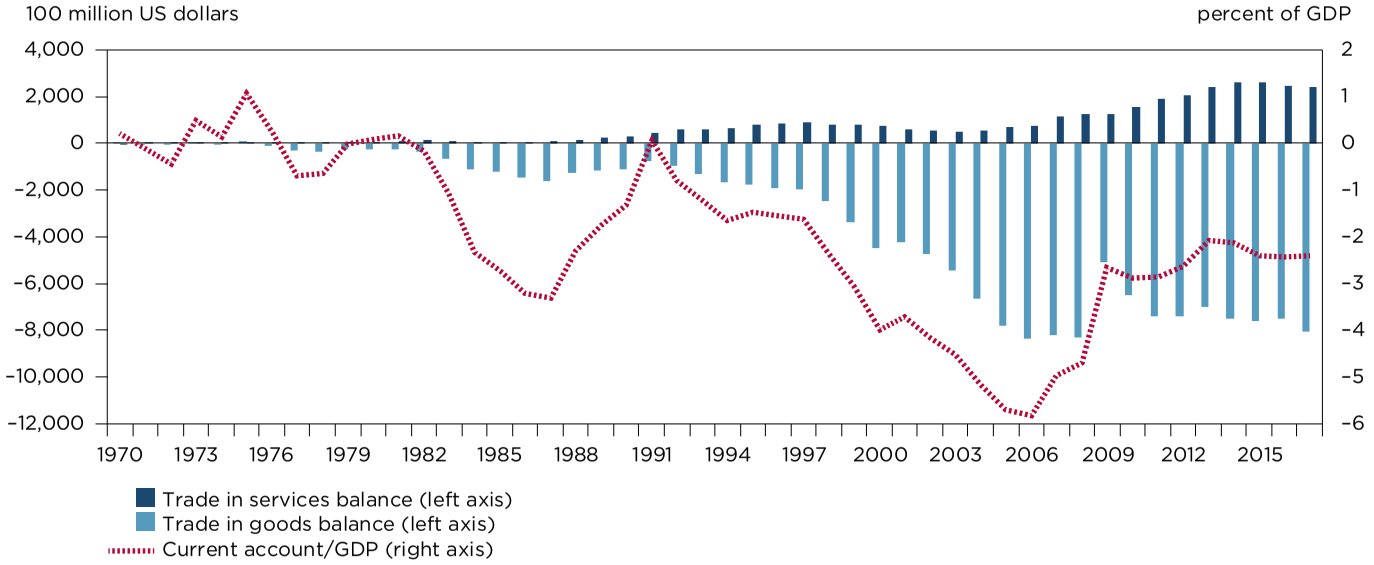


Source: Wind Financial Information.

China (46.3 percent of the total) (figure 2.3). The US deficit in goods with China was larger than that of the eight countries listed in figure 2.3 combined. However, the US services trade surplus with China increased significantly in recent years, accounting for 11 percent of the US-China trade deficit in goods in 2016.

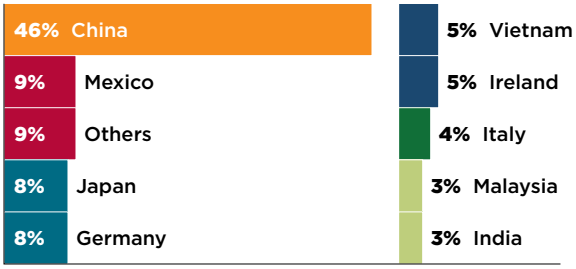
The US-China trade deficit is analyzed here from three perspectives. First, because of the global value chain, even though China has a large trade surplus with the United States, a large proportion of raw materials or intermediate products used for exports is purchased from other countries. Therefore, it is necessary to estimate the value added of China's exports. According to Goldman Sachs (2017), the value added of exports

Figure 2.2 US trade in goods and services and current account status, 1970–2017



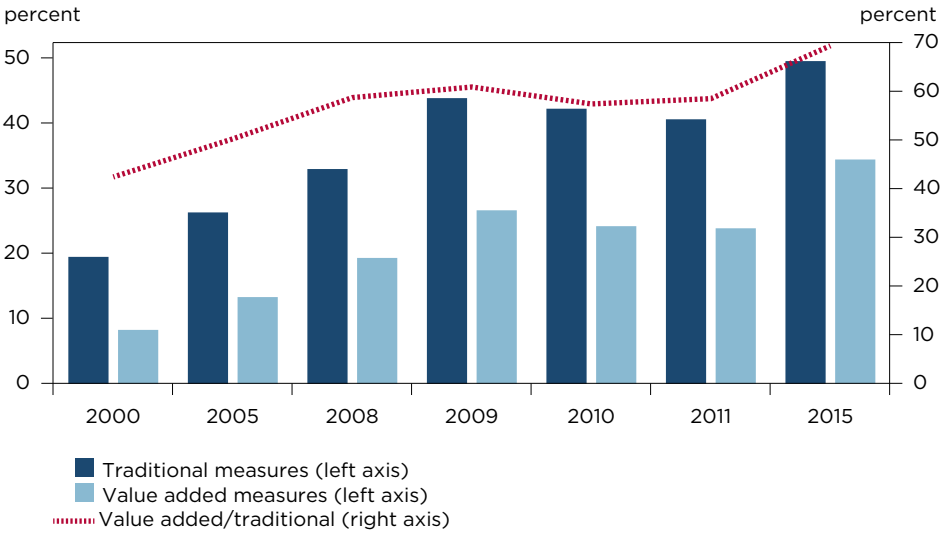
Source: Wind Financial Information.

Figure 2.3 Composition of US trade deficit in goods, by country, 2017



Source: Wind Financial Information.

Figure 2.4 China's share of US trade deficit in goods, 2000–15



Source: Goldman Sachs.

accounted for one-third of China's trade surplus with the United States (figure 2.4).

Second, foreign-funded enterprises account for almost half of the imbalance. In the past few years, foreign companies accounted for about 45 percent of China's trade surplus (figure 2.5).

Third, trade between China and the United States has remained largely in balance from the perspective of aggregate sales. According to a Deutsche Bank report (Zhang 2018), in 2015 the aggregate sales of Chinese companies to the United States (defined as Chinese exports of goods and services to the United States plus sales of goods and services in the United States by subsidiaries of Chinese companies) amounted to $402 billion ($393 billion in exports and $10 billion in subsidiary sales of goods and services). The aggregate sales of US companies to China in 2015 were $372 billion ($150 billion in exports and $220 billion in sales by US subsidiaries in China). The US deficit with China in 2015 thus amounted to only $30 billion in terms of aggregate sales.

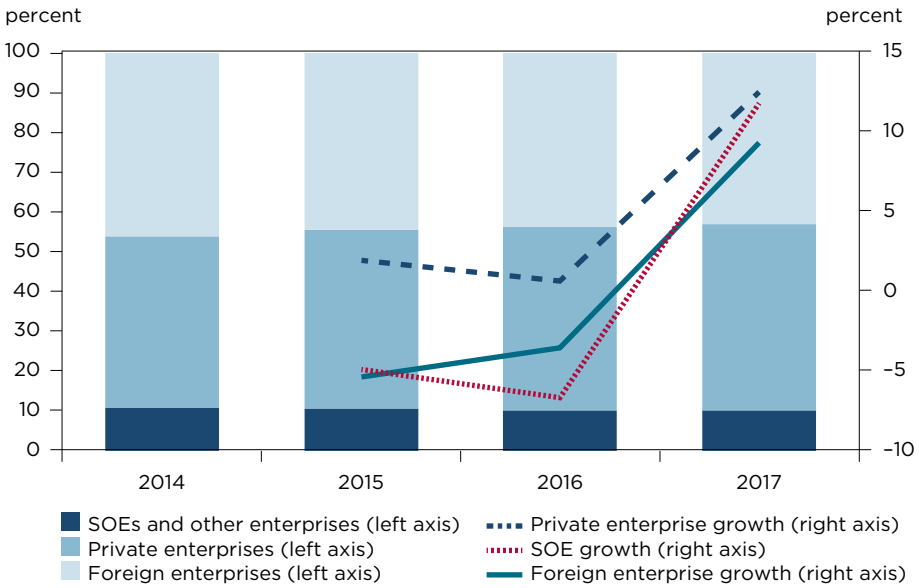
China's exports to the United States are concentrated in products such as computers, machinery, electronic equipment, clothing, furniture, toys, shoes, and plastic products (figure 2.6). Its most important imports from the United States include airplanes, automobiles, agricultural products, and timber and timber pulp (figure 2.7). The automotive and aircraft industries employ the largest number of people.

CAUSES OF THE TRADE IMBALANCE

Many factors have led to the trade deficit between China and the United States. First, the dollar has decoupled from gold but maintained its status as an international reserve currency. Under the Bretton Woods system, the dollar was convertible into gold; the US deficit in foreign trade therefore led to monetary contraction and lower demand, which suppressed imports and promoted exports. As a result, a self-correcting mechanism was formed and the trade deficit shrank.

Since the dollar's decoupling from gold, in 1971, the United States has been able to pursue its mon-

Figure 2.5 Exports of goods by China, by type of ownership, 2014–17



SOE = state-owned enterprise

Source: Wind Financial Information.

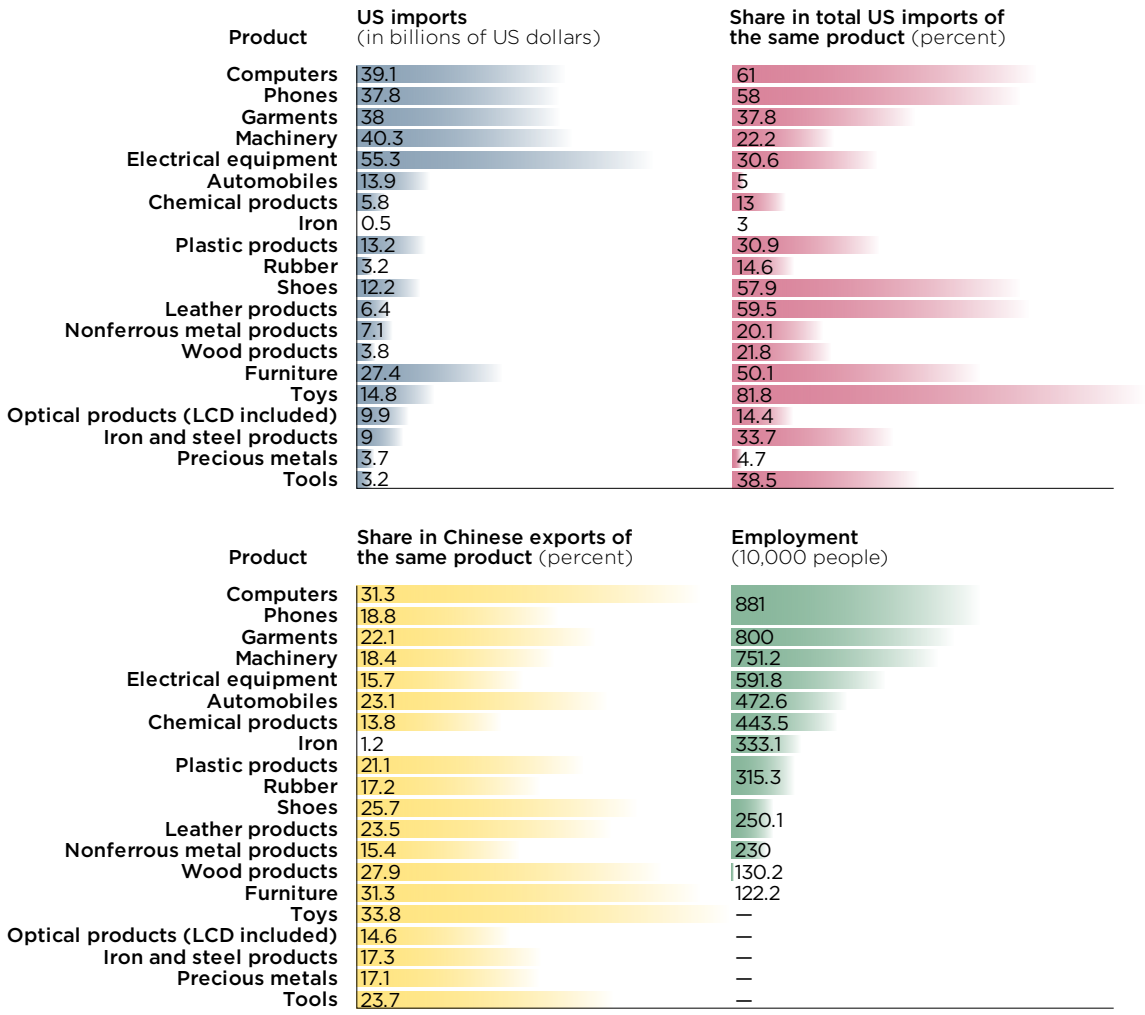
etary policy freely, and the self-correcting mechanism has disappeared. Moreover, surplus countries, such as China and Japan, have been investing heavily in US Treasury bonds and other assets with the dollars they earn from exporting. These dollars are then channeled back to the United States, where they support American purchases of foreign goods. It is not a coincidence that except in 1973 and 1975, the United States has registered a trade deficit since 1971, when the dollar was decoupled from gold (figure 2.8).

Second, developed countries, including the United States, shifted their industries to China in the context of globalization. China's relatively low-cost labor made the country a world factory. Production factors in developed countries flow to high value-added sectors, such as services and high technology; developing countries (led by China) process, assemble, and export low-end consumer products to the rest of the world. As China gradually established a complete industrial chain with supporting facilities from both upstream and downstream sources, the added value of its exports increased. Simultaneously, traditional manufacturing in the United States gradually weakened, as a result of higher labor costs.

Third, resource endowments and technological advances have given US trade an edge in natural resources and high tech. Natural resources such as land and climate give the United States a comparative advantage in agriculture. Additionally, its high level of agricultural mechanization and automation has lowered the cost of agricultural products, making US energy and agricultural products highly competitive. US companies have strong innovation capabilities and are very competitive in high-tech fields. Although exporting high-tech products can help the United States reduce its trade imbalance, the US government restricts the export of high-tech products to China.

Fourth, the saving rates of the two countries differ markedly. China's national saving rate began to rise sharply in the 1990s, peaking at 51 percent of GDP in 2011 (the household saving rate was as high as 28.2 percent), before gradually falling back to 46 percent in 2016 (still a very high rate). International compari-

Figure 2.6 China's exports to the United States, by product, 2016



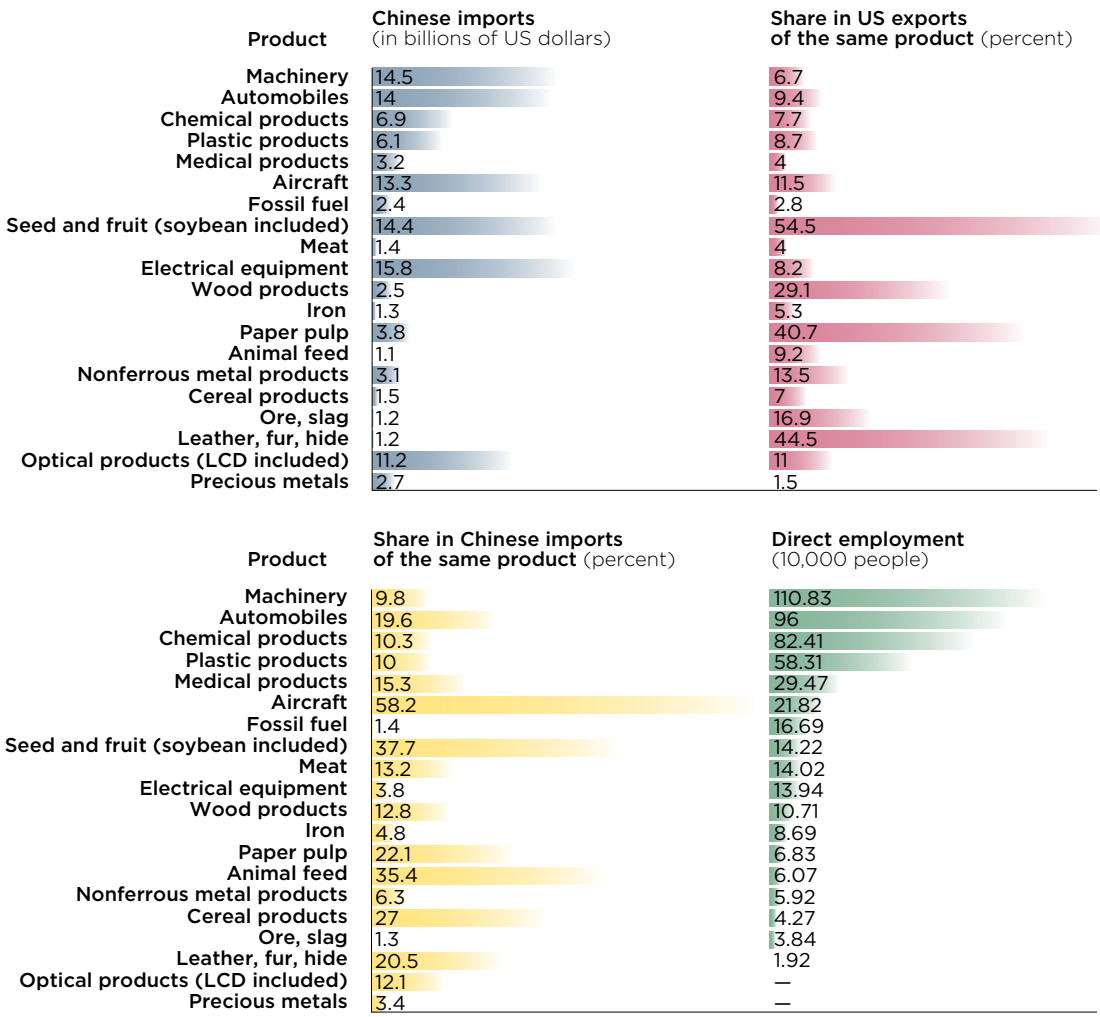
Note: China employs about 8.8 million people in computers, communications, and other electronic equipment; 8 million in garments and textiles; 3.2 million in plastic and rubber products; and 2.5 million in leather products and footwear. Employment in the metal industry includes processing and smelting.

Sources: Deutsche Bank, CEIC database.

sons suggest that a country's saving rate is highly correlated with its foreign trade balance. Countries with low saving rates and strong consumer demand usually run trade surpluses (figure 2.9).

China's saving rate will decline as its population ages (figure 2.10). Unless investment slows significantly, the trade surplus-to-GDP ratio will further decrease. The decline of China's current account surplus-to-GDP ratio in recent years is closely related to the increase in labor costs caused by the country's aging population. With the dramatic increase of wealth in US households in recent years, its saving rate may fall further. In the meantime, tax cuts could stimulate business investment and possibly accelerate infrastructure investment. These trends mean that the US trade imbalance is likely to continue deteriorating. Even if

Figure 2.7 China's imports from the United States, by product, 2016



Note: Employment in seed and fruit includes employment in the fruit, vegetable, cereal, and soybean subsectors. Employment in cereal products includes employment in the cereal and soybean subsectors.

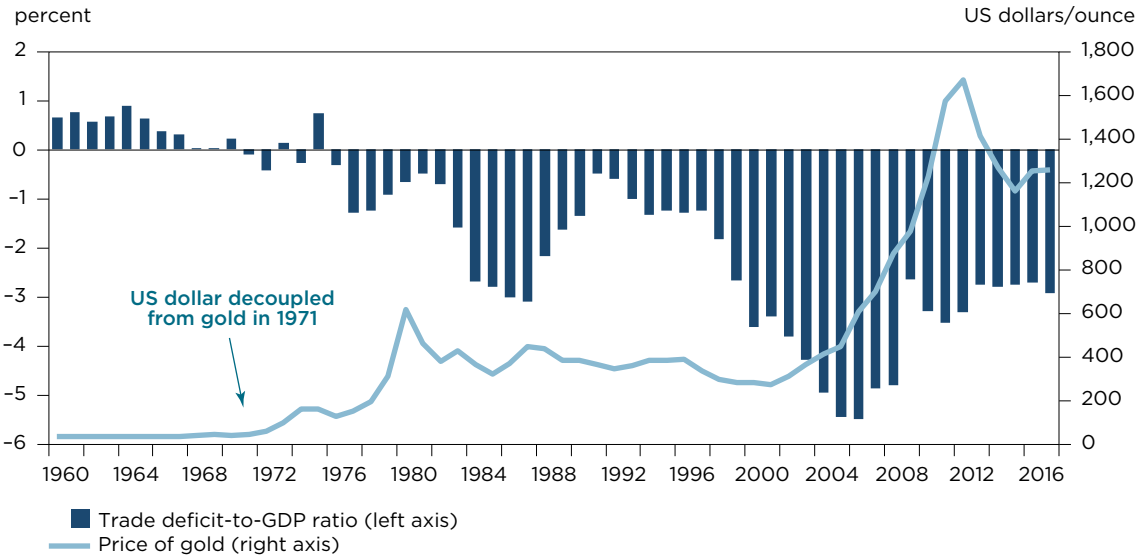
Sources: Data in the first three columns are from Deutsche Bank (2018). Data in the fourth column are from CEIC database.

China reduces its surplus with the United States, the expected increase in the investment-saving gap implies that the US trade deficit with other countries may expand.

A popular view holds that the Chinese government's subsidies to state-owned enterprises and undervalued exchange rates are responsible for China's trade surplus with the United States. Our research shows that this view is ill-founded. Private and foreign-funded enterprises accounted for 46.5 and 43.2 percent, respectively, of China's trade surplus; state-owned and other enterprises accounted for only 10.3 percent (see figure 2.5).

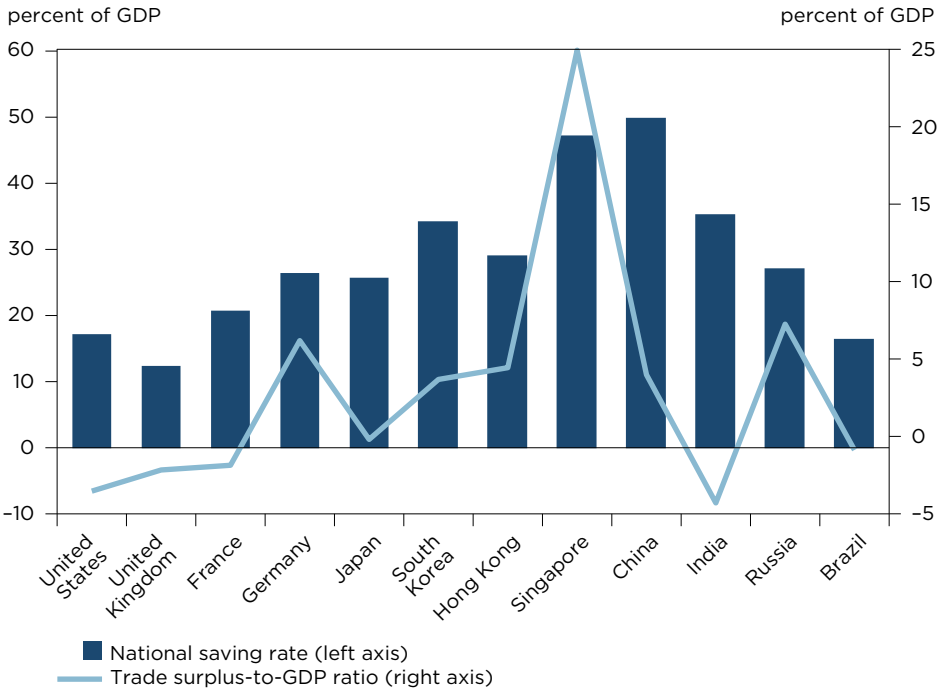
Regarding the exchange rate, although the renminbi appreciated significantly against the US dollar since 2005, the share of China's exports in global total exports increased (figure 2.11). China's trade surplus with

Figure 2.8 US trade deficit-to-GDP ratio and gold prices, 1960–2017



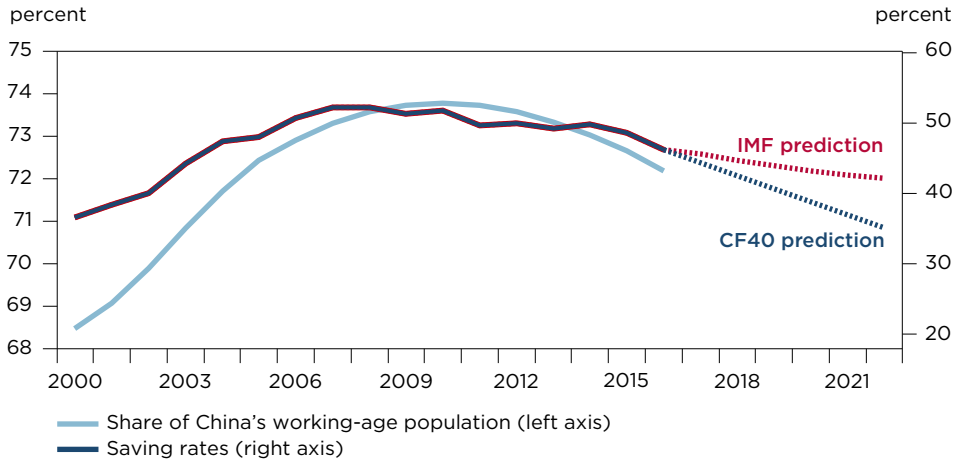
Source: Wind Financial Information.

Figure 2.9 Average national saving rates and trade balance-to-GDP ratios in selected economies, 2007–16



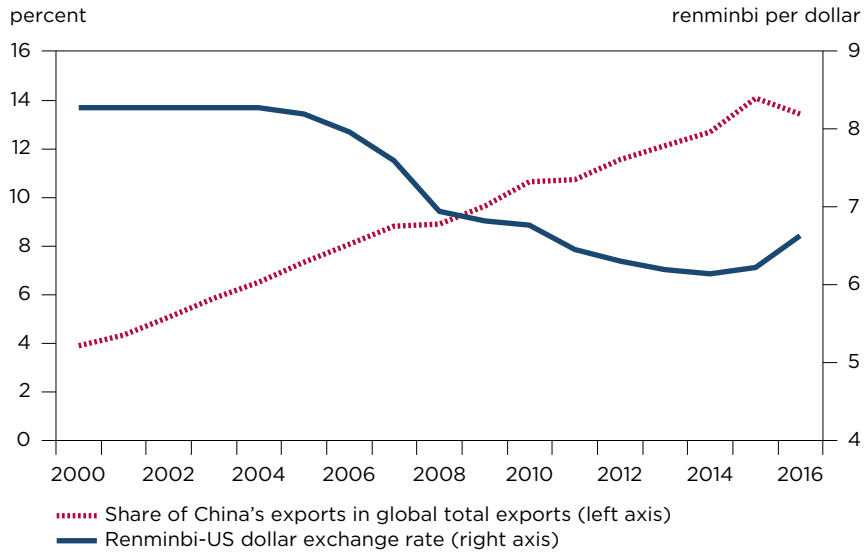
Sources: Wind Financial Information; national saving rate data from World Bank.

Figure 2.10 Actual and projected share of China's working-age population and China's saving rate, 2000–22



Sources: Wind Financial Information; World Bank; International Monetary Fund.

Figure 2.11 Share of China's exports in global exports, 2000–16



Sources: China's exports and exchange rate data are from Wind Financial Information; global exports are from CEIC database.

the United States also expanded (figure 2.12), except in 2015–16, when the renminbi depreciated against the US dollar. These results indicate that the exchange rate is not a determining factor of China's trade surplus.

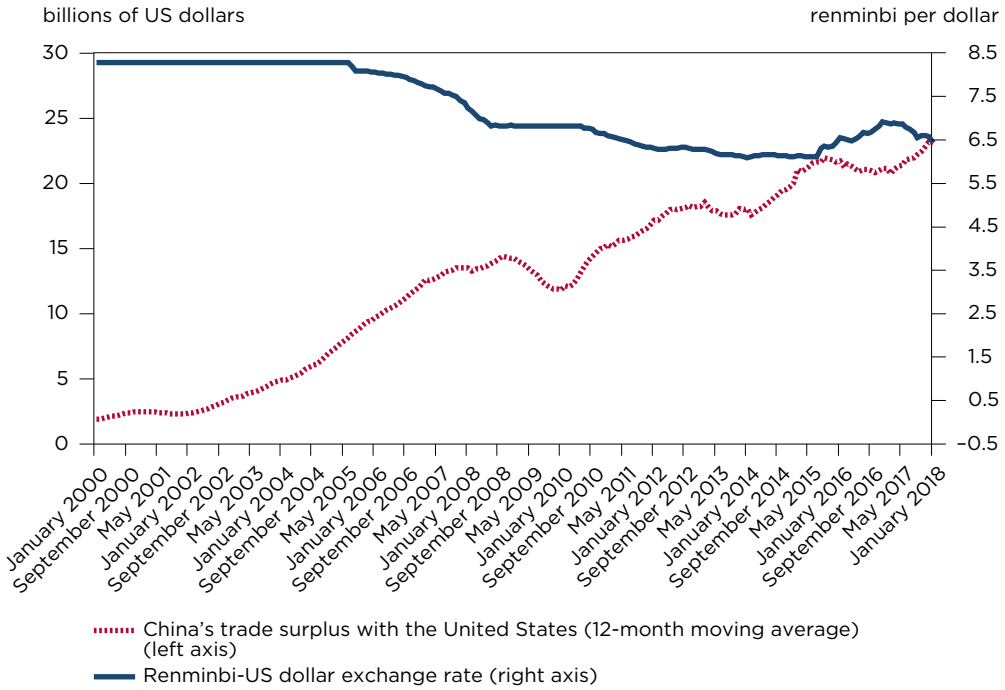
IMPACT OF TRADE SANCTIONS

Once the United States imposes trade sanctions on China, the Chinese economy will experience greater pain than the US economy, even if China takes countermeasures, because China's exports to the United States account for 20 percent of its total exports (4.1 percent of its GDP), whereas US exports to China account for only 8.4 percent of its total exports (0.6 percent of its GDP). Moreover, US imports from China (mostly consumer goods) can be more easily substituted than Chinese imports from the United States (soybeans, machinery, high-end components). China can find substitutes for the aircraft and automobile products it imports from the United States.

We assess the effect of trade measures on the Chinese economy under three scenarios:

- *Baseline scenario*: The United States imposes tariffs of 25 percent on China's steel and 10 percent on its aluminum and imposes a 25 percent tariff on $50 billion to $60 billion worth of Chinese products, following the Section 301 investigation. China responds with a 15 percent tariff on 120 items imported from the United States and a 25 percent tariff on eight others, including pork. In retaliation for the Section 301 investigation, China imposes a 25 percent tariff on US products worth $50 billion.

Figure 2.12 China's trade surplus with the United States, 2000–18



Source: Wind Financial Information.

- *Worst-case scenario*: The trade war continues to escalate, and both sides increase tariffs and adopt other sanction measures. As a result, both China's exports to and imports from the United States decline, and China's trade surplus with the United States drops by $100 billion. The United States increases restrictions on technology exports to China and China's investment in the US technology sector.
- *Best-case scenario*: China and the United States reach an agreement through negotiations. China agrees to further open up its services sector and increase imports from the United States while investing in low-end manufacturing and infrastructure in the United States. The two countries subsequently withdraw the tariff measures introduced in 2018.

Impact on the Chinese Economy

The introduction of a 25 percent tariff on steel and a 10 percent tariff on aluminum would have minimal effect on China's exports and economy, as these goods account for only 0.2 and 0.5 percent of China's total exports, respectively, and their influence on China's GDP growth is negligible.

In the baseline scenario, a 25 percent tariff on products worth $50 billion would have no significant effect on the Chinese economy (the tariff amount of $12.5 billion accounts for only about 2.5 percent of China's total export of goods to the United States, and the targeted products are concentrated in high-tech industries covered by "Made in China 2025" rather than in labor-intensive industries). Our back-of-the-envelope partial equilibrium estimate suggests that the move would cost 0.1 percentage points of China's GDP growth in the short term.

In the worst-case scenario, mutual sanctions between China and the United States could result in a $100 billion reduction in China's trade surplus with the United States, costing 0.8 percentage points of China's GDP growth rate.[1] US sanctions against China may extend to labor-intensive industries such as machinery and electrical equipment, garments, furniture, toys, and shoes and leather, affecting China's employment and consumption.

In the best-case scenario, expanding imports and opening the services sector (finance, education, medical care, tourism, and intellectual property services) boosts China's consumption and effectively reduces China's trade surplus with the United States. Chinese investment in US manufacturing boosts US employment and consumption and reduces the US trade deficit with China. In the long term, increased competition improves productivity in China's manufacturing and services industries, increasing the quality of economic growth. In this scenario, the trade conflict may not be a bad thing.

Impact on the US Economy

Trade sanctions could have three effects on the US economy. First, the new tariffs could lead to rising inflation expectations. Strong economic and employment growth, as well as rising oil prices, have already raised inflation expectations. Since the second half of 2017, the core personal consumption expenditures index has continued to rise. The Federal Reserve predicts that core personal consumption expenditures in 2018 and 2019 will reach 1.9 and 2.0, respectively. Meanwhile, improvement in the US job market has begun to push up wages, and Trump's tariffs will accelerate inflation.

Second, the sanctions could signal the end of the long bull market and booming US economy. The new tariffs on Chinese products will force US consumers to pay more for the products they buy. Rising inflation expectations would force the Fed to accelerate rate hikes, which could lead to a slump in stock and property prices.

More important, US tariff moves would inevitably lead to Chinese countermoves against industries in the United States, such as agriculture, automobiles, and airplanes. The US stock market has risen by a factor of four since March 9, 2009; the commercial real estate market is up 87 percent over the low point in 2009. Bull market conditions have continued for the second-longest period since World War II (the longest was before the dot.com bubble burst in 2000) (figure 2.13), and equity evaluations are higher than at 90 percent of the time since World War II.[2]

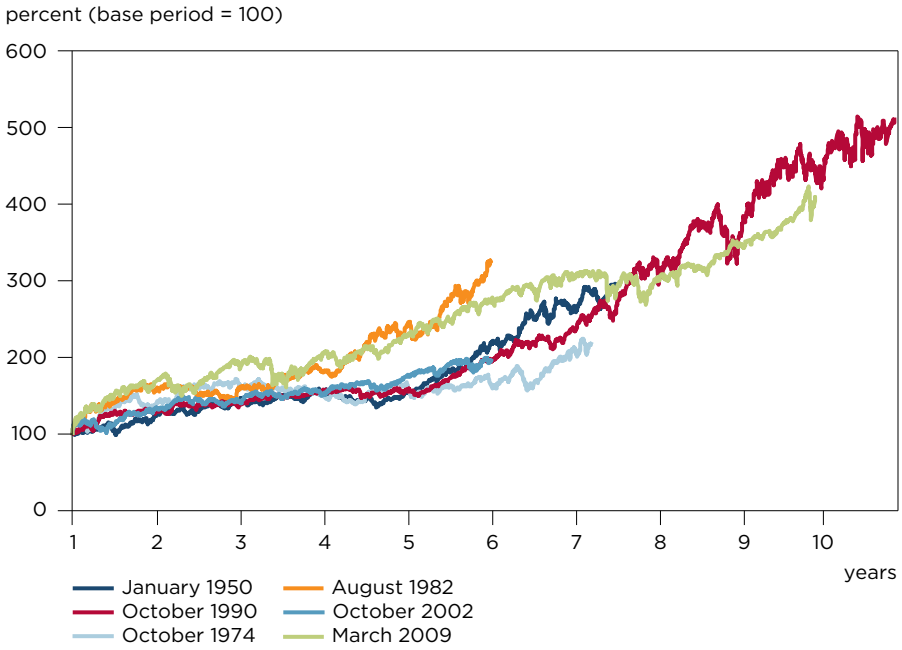
US listed companies depend on their Chinese business revenues four times more than Chinese listed companies depend on their US business revenues. For example, the MSCI US Index shows that about 70 US listed companies—with a combined market value of 9.2 percent of the index—generate more than 10 percent of their total revenue from the Chinese market. In contrast, the MSCI China Index shows that only about 30 companies, with a total market value of just 2 percent of the index, generate more than 10 percent of their revenue from the US market. Given that the risk exposure of US corporate interests in China is far greater

1. If the United States imposes a 25 percent tariff on $50 billion of Chinese goods, which amounts to about $12.5 billion, it accounts for a ratio of 12.5 to 12240 = 0.1% of China's GDP. If the US-China deficit decreases by $100 billion, the impact can be measured at 100/12240 = 0.8%.

2. Based on four valuation metrics for the S&P500, beginning in September 1945: price/peak earnings, price/past 12-month earnings, the Shiller cyclically adjusted price/earnings ratio (CAPE), and the price/10-year average earnings. These metrics are ranked from least expensive to most expensive and divided into 10 valuation buckets (deciles). The realized annualized five-year price return is then calculated for each observation and averaged within each decile.

than that of Chinese companies in the United States, an escalation of trade tensions would cause concerns among investors in the United States and trigger strong reactions, which would then affect the US economy through wealth effects and tightening financial conditions. The effect of rising interest rates on corporate investment costs and the effect of rising prices and asset price fluctuations on household consumption would suppress US economic growth, possibly even ushering in a recession. Between March 1, 2018, when President Trump first announced tariffs on steel and aluminum, and April 6, 2018, when China declared the second round of countermeasures, the US stock market contracted by about $1 trillion—about 5 percent of GDP (the US economy is growing at only about 2 percent a year).

Figure 2.13 The current bull market is the second-longest after World War II



Note: Taking January 3, 1950; October 3, 1974; August 12, 1982; October 11, 1990; October 9, 2002; and March 9, 2009 as the start dates of bull markets and the S&P500 value on the start day of each bull market as base numbers, every data point equals the S&P500 on that day divided by the S&P500 on the incipient day.

Source: S&P500 data from Yahoo Finance.

A survey of household financial assets in China and the United States shows that the share of equity assets to total household assets in the United States is much higher than in China. In this regard, stock market volatility has a greater effect on US household assets than it does on China's (table 2.2).

Table 2.2 Structure of household assets in China and the United States, 2017 (percent)

Item	China	United States
Composition of household assets		
Nonfinancial assets	6	6
Real estate	54	24
Financial assets	41	71
Composition of household financial assets		
Cash and savings	75.7	14.4
Stock	15.5	21.7
Wealth management products of banks and funds	6.5	10.2
Insurance	n.a.	28.9
Other	2.3	24.8

n.a. = data not available

Sources: Wind Financial Information; US Federal Reserve, China Household Finance Survey 2017; Morgan Stanley.

Third, trade frictions could undermine global confidence in US economic policies and the international trading system. Trump's tax cuts are considered conducive to US economic growth and capital market performance, at least in the short term. At Davos in January 2018, Trump mentioned that the United States was considering joining the TPP, suggesting that he still considers international cooperation and trade rules important. His policies could be regarded as pragmatic. However, the unexpected tariffs

give the US business community, and the rest of the world, a sense that US economic policies lack consistency. Arbitrarily imposing tariffs on grounds of national security will harm the global trading system significantly and could lead to trade wars.

Impact on the Global Economy

China is the world's largest exporter and the United States the world's largest consumer; together the two countries account for 40 percent of the world economy. The impact of a trade war on the global economy cannot be underestimated. It has the potential to drag the global economy into recession, a concern many countries expressed at the Spring 2018 Meetings of the International Monetary Fund.

An analysis of China's trade structure shows that economies exporting intermediate products and raw materials to China, such as South Korea and Taiwan, will be hardest hit. Certain industries in some countries may benefit, by offering an alternative to China. We analyze the top eight products the United States imports from China and China imports from the United States and list the six major exporting countries of each product. Tables 2.3 and 2.4 show the economies that would benefit from import restrictions caused by

Table 2.3 Major products imported by the United States from China and alternative exporters of those products

Product	Rank	Economy	Percent of total US imports	Product	Rank	Economy	Percent of total US imports
Electrical equipment	1	China	39.2	Toys	1	China	81.8
	2	Mexico	18.5		2	Mexico	3.2
	3	Malaysia	7.3		3	Taiwan	3.2
	4	Japan	4.9		4	Vietnam	1.7
	5	South Korea	4.8		5	Canada	1.4
	6	Taiwan	4.2		6	Thailand	1.0
Mechanical equipment	1	China	31.7	Automobiles and parts	1	Mexico	26.4
	2	Mexico	16.2		2	Canada	20.5
	3	Japan	9.4		3	Japan	17.7
	4	Germany	7.4		4	Germany	10.2
	5	Canada	6.1		5	South Korea	7.6
	6	South Korea	3.3		6	China	5.0
Furniture	1	China	31.7	Plastic and other products	1	China	30.9
	2	Mexico	16.2		2	Canada	21.0
	3	Japan	9.4		3	Mexico	9.5
	4	Germany	7.4		4	Germany	5.6
	5	Canada	6.1		5	Japan	4.5
	6	South Korea	3.3		6	South Korea	4.2
Garments	1	China	34.9	Shoes and socks	1	China	57.9
	2	Vietnam	13.2		2	Vietnam	19.2
	3	Bangladesh	6.3		3	Indonesia	5.7
	4	Indonesia	5.8		4	Italy	5.2
	5	India	4.5		5	India	2.0
	6	Mexico	4.2		6	Mexico	1.6

Sources: CF40; UN Comtrade database.

Table 2.4 Major products imported by China from the United States and alternative exporters of those products

Product	Rank	Economy	Percent of total China's imports
Seeds and fruits	1	Brazil	40.6
	2	United States	37.7
	3	Argentina	8.5
	4	Canada	5.9
	5	Uruguay	1.8
	6	Ethiopia	0.9
Aircraft and parts	1	United States	58.2
	2	Germany	18.0
	3	France	17.2
	4	Canada	2.1
	5	Brazil	1.6
	6	United Kingdom	0.9
Electrical equipment	1	Taiwan	21.5
	2	South Korea	17.8
	3	Japan	9.8
	4	Malaysia	7.7
	5	United States	3.8
	6	Vietnam	3.1
Mechanical equipment	1	Japan	18.4
	2	Germany	12.0
	3	South Korea	10.4
	4	United States	9.8
	5	Taiwan	5.8
	6	Thailand	4.8
Automobiles and parts	1	Germany	28.1
	2	United States	19.6
	3	Japan	19.4
	4	United Kingdom	9.1
	5	South Korea	6.2
	6	Slovakia	2.5
Optical equipment	1	South Korea	18.7
	2	Japan	15.4
	3	Taiwan	14.7
	4	United States	12.1
	5	Germany	9.0
	6	Thailand	2.7
Plastic materials and products	1	South Korea	16.6
	2	Japan	14.3
	3	Taiwan	12.3
	4	United States	10.0
	5	Singapore	5.1
	6	Thailand	4.9
Wood pulp and waste paper	1	United States	22.1
	2	Canada	15.2
	3	Brazil	15.1
	4	Indonesia	6.9
	5	Chile	6.9
	6	Russia	4.6

Sources: CF40; UN Comtrade database.

an escalation of China-US trade tension. For the United States, countries that could replace China include Mexico, Vietnam, Canada, and Malaysia. China could replace imports from the United States with imports from Brazil, Germany, Japan, France, and Canada.

China and the United States import electrical and mechanical equipment from each other. Most of China's imports are parts and components, whereas the United States imports more finished products. China imports a large number of integrated circuits, transistors, and diodes from the United States; mobile telephones constitute the United States' most-imported electronic product from China.

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CHAPTER 3

Facts Speak Louder than Words: Review of and Prospects for China's Foreign Exchange Policy

Guan Tao

In coping with capital flow shocks, foreign exchange policy faces the "impossible trinity": At least one of three tools—increasing foreign exchange rate flexibility, using foreign exchange reserves to intervene in the market, and strengthening control of capital flows—must be used (Guan 2016). This chapter reviews China's exchange rate policy, foreign exchange market intervention, and capital flow management.

EXCHANGE RATE POLICY

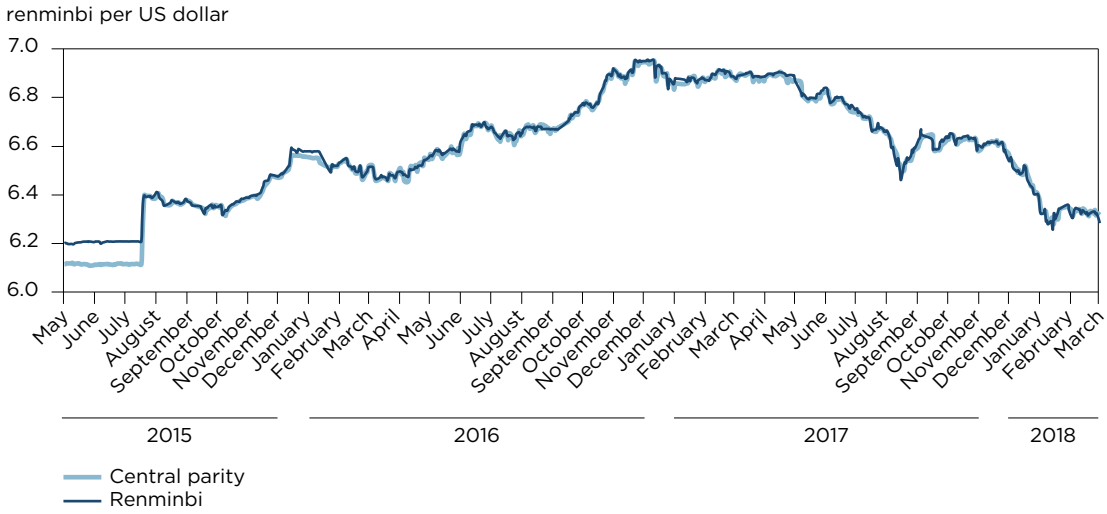
Rebuilding Credibility to Reestablish Exchange Rate Stability

After the exchange rate reform of August 11, 2015 (the "8.11 reform"), the renminbi plummeted continuously until the end of 2016. Its decline triggered a debate over whether the authorities should prop up the exchange rate through market intervention or preserve foreign exchange reserves and allow the currency to depreciate. In 2017, the renminbi exchange rate against the US dollar did not move above 7 (as some expected); it appreciated by more than 6 percent (figure 3.1).

The change from a strong to a weak dollar was a necessary condition for the rise in the renminbi exchange rate. It is not, however, a sufficient condition. During the first half of 2016, the dollar index fell 5 percent before the referendum in the United Kingdom in late June on whether to leave the European Union. As a result of procyclical market behavior, the closing renminbi price was weak relative to the central parity price at the time, decreasing the central parity price. A similar phenomenon was evident in early 2017. The renminbi started to appreciate only after the introduction of the "countercyclical factor" at the end of May (Monetary Policy Analysis Group 2017).

Guan Tao is a senior fellow at CF40. All remaining errors are his own.

Figure 3.1 Renminbi-US dollar exchange rate is back to the starting point two years after the 8.11 reform



Sources: State Administration of Foreign Exchange; China Foreign Exchange Trade System; CF40; Wind Financial Information.

A managed floating exchange rate system lacks market transparency and policy credibility. During currency attacks, multiple equilibria often result in negative outcomes, and the exchange rate eventually collapses (Yi and Tang 2001, Guan 2017a).

If the dollar had appreciated in 2017, a further depreciation of the renminbi might not have been a desirable result. As in the second half of 2016, the renminbi fell sharply against the dollar when the dollar exchange rate was strong. Although the renminbi exchange rate index remained steady, it failed to stabilize market expectations.

In 2017 the renminbi appreciated, based on the midprice pricing mechanism, which is key to regaining exchange rate stability. In the presence of a short supply of foreign exchange in the market (figure 3.2), the renminbi appreciated by more than 6 percent against the US dollar for the year. As a result, renminbi long positions profited and short positions suffered losses. The credibility of the exchange rate policy was enhanced, market fears eased, and cross-border capital flows got back in line with fundamentals (Guan 2017b).

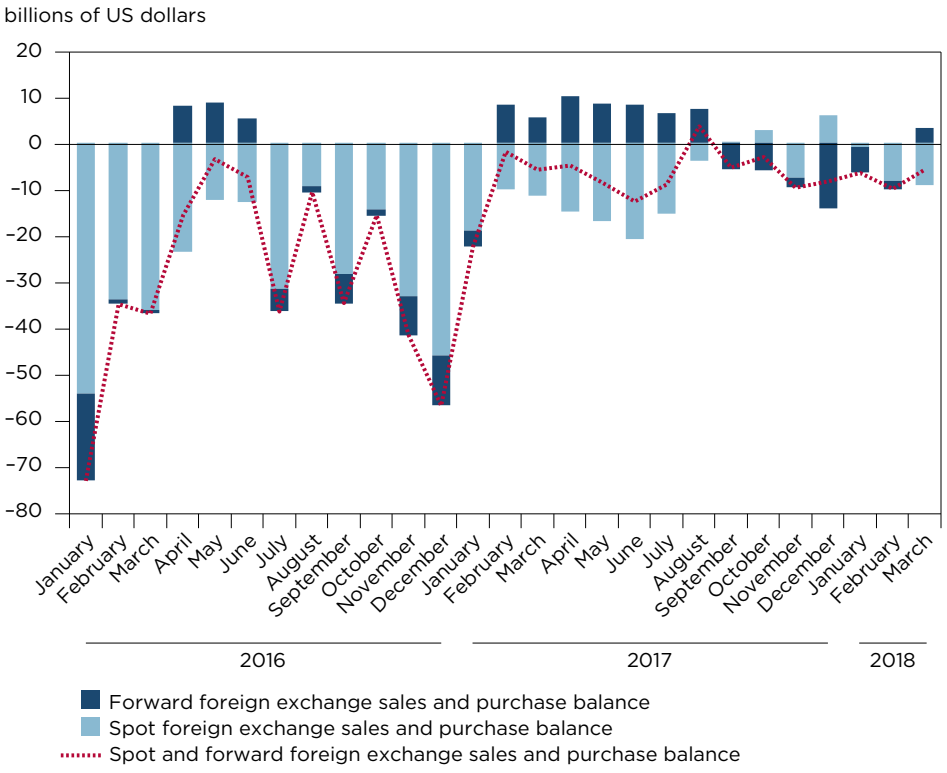
Risk Associated with Exchange Rate Devaluation under Initial Depreciation Pressure

Yu, Zhang, and Zhang (2016) argue that after the 8.11 exchange rate reform, the renminbi should be allowed to depreciate freely. This view should not be dismissed. The consensus on the optimal exchange rate regime choice is that no single currency regime is right for all countries or at all times (Frankel 1999). Fixed, floating, and managed floating exchange rates all have advantages and disadvantages, but they are difficult to assess in advance. If floating is used to stop capital outflow and a drop in reserves, it is necessary to estimate in advance any risks that may arise.

Excessive devaluation of the renminbi (i.e., overshooting after a float) is highly probable. Therefore, the following risk factors should not be underestimated.

First, the Chinese economy faces a structural imbalance. The exchange rate is just one factor—and

Figure 3.2 Foreign exchange supply in China has fallen short of demand since the 8.11 exchange rate reform



Sources: State Administration of Foreign Exchange; CF40; Wind Financial Information.

not even a major one—contributing to the imbalance. Therefore, the renminbi exchange rate cannot easily reach the bottom before the economy stabilizes.

Second, renminbi devaluation can boost exports, but it may cause competitive devaluation internationally and incur more trade protection measures against China. The negative overflow effect of a disorderly renminbi exchange rate adjustment was a central concern of the international community in late 2016.

Third, a sharp renminbi devaluation may trigger panic buying of foreign exchange in the domestic market, threatening the security of the banking system. The 2016 approach showed that under depreciation pressure, the effect of using capital controls to curb capital outflows was not ideal. It was particularly sensitive with respect to the personal use of foreign exchange.

Fourth, although China's official statistics did not indicate a serious overall currency mismatch, the risk of large-scale external debt repayment after a sharp depreciation cannot be taken lightly. Unexpected situations may arise (Guan et al. 2017).

Empirical research shows that financial stability is an important prerequisite for successful exchange rate regime transition (Mancini-Griffoli 2017). The United Kingdom and Singapore did not experience banking crises after sharp currency depreciations during the European currency crisis and the Asian financial crisis, respectively, because they had sound financial systems. China's situation was different.

With two-way exchange rate fluctuations and divided market expectations, the demand for and supply of foreign exchange are largely balanced. Since the end of 2016, the focus of China's macro-control has changed from "steady growth" to "risk prevention," monetary policy has been prudent and neutral, and financial supervision has been fully strengthened and financial risks resolved to some extent (IMF 2017b). These developments have opened up a window for reform of the market-based exchange rate system. However, reform means change, and change brings uncertainty, which increases risk. Therefore, to propel exchange rate system reform, it is necessary to create a contingency plan based on scenario analysis and stress testing, preparing for the worst and striving for the best.

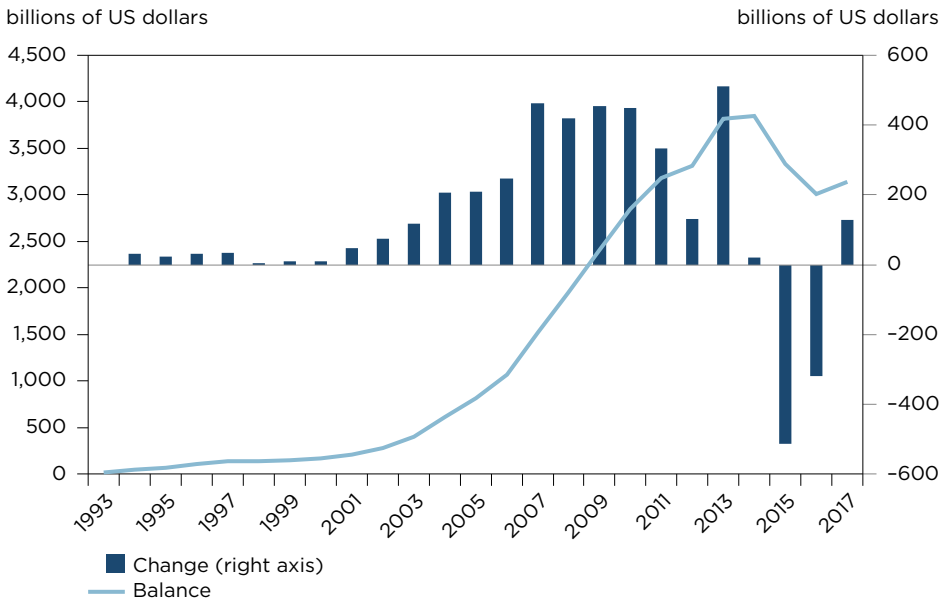
FOREIGN EXCHANGE RESERVES

Setting Aside Foreign Exchange Reserves for Market Intervention

For a long time, the Chinese government has had a certain understanding about foreign exchange reserves: In the uncertain and complex international context, promoting reform, opening up, and developing and ensuring national economic security require considerable foreign exchange reserves to satisfy unexpected needs and ensure China's macro-control capability to withstand shocks (Dai 2001, Zhu 2011a). This understanding was tested in 2015, after the 8.11 exchange rate reform (figure 3.3).

Foreign exchange reserves were used to stabilize the exchange rate this time but not during the Asian financial crisis. As early as the end of 2006, at the Central Economic Work Conference, it was clearly stated that the main contradiction in China's balance of payments had shifted from a shortage of foreign exchange to a large trade surplus and rapidly growing foreign exchange reserves. Maintaining the balance of payments in equilibrium was proposed as vital to maintain macroeconomic stability; the goal of more foreign exchange reserves was not pursued. At that time, foreign exchange reserves stood at $1.07 trillion; by the end of June 2014, an additional $3 trillion was added (see figure 3.3).

Figure 3.3 China's foreign exchange reserves, 1993–2017

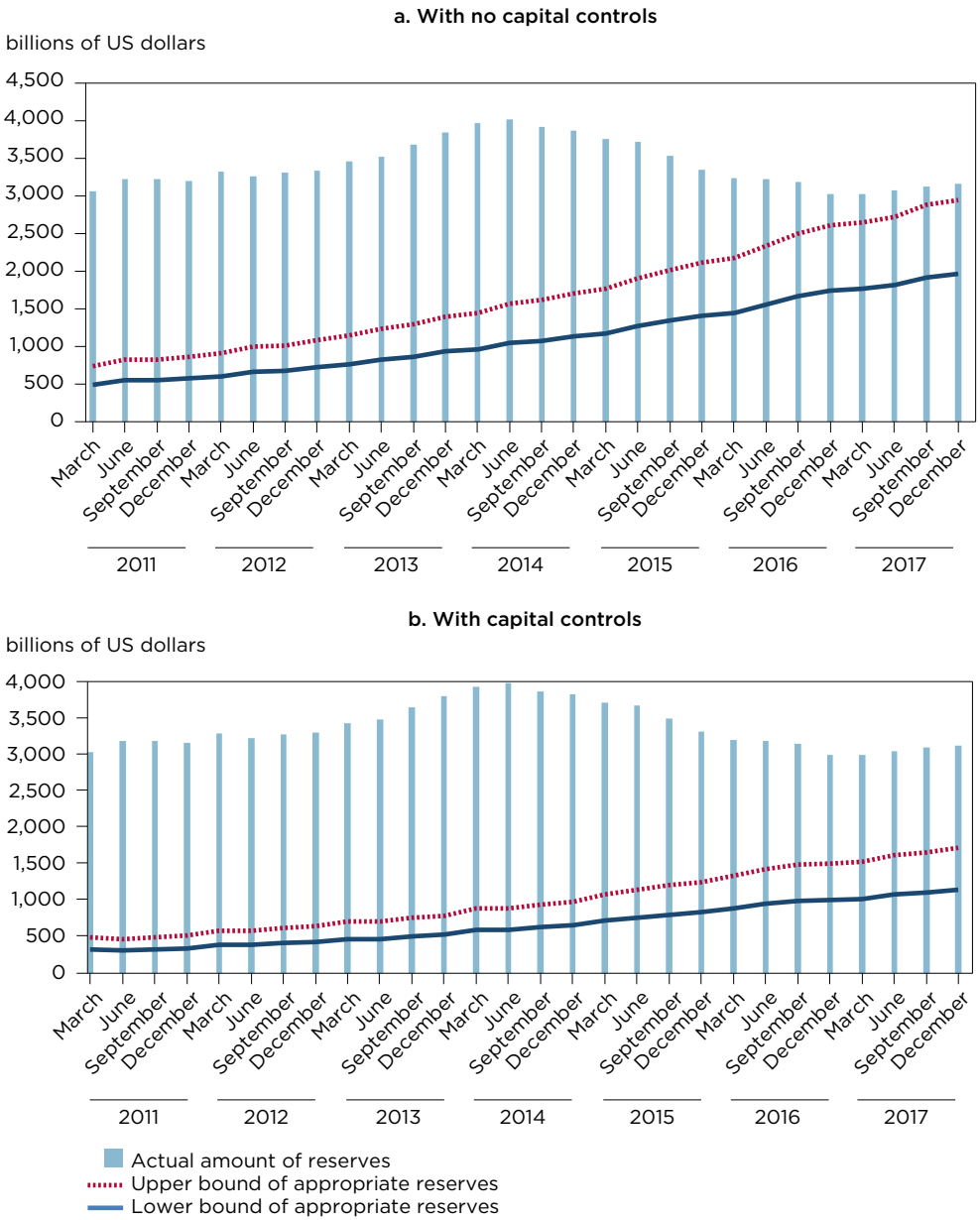


Sources: People's Bank of China; CF40; Wind Financial Information.

The amount of foreign exchange reserves used early on (after the reform) exceeded the resources that would be readily available from the International Monetary Fund (IMF). Without adequate foreign exchange reserves, market intervention would not have been an option when dealing with postreform market turmoil. At the same time, although China's foreign exchange reserves have fallen substantially, they are still equivalent to 22.7 months of imports and 3.5 times the short-term debt balance at the end of 2016. Compared with the newly proposed IMF standards, China's foreign exchange reserves are still abundant (IMF 2015; Guan 2018) (figure 3.4a).[1]

1. Without capital controls, the lower bound on appropriate reserves = 30% * short-term foreign debt + 20% * (medium- and long-term foreign debt + equity investment under foreign securities) + 10% * broad money supply + 10% * export. With capital controls, the lower bound on appropriate reserves = 30% * short-term foreign debt + 20% * (medium- and long-term foreign debt + equity investment under foreign securities) + 5% * broad money supply + 10% * export. The upper bound of appropriate reserves = the lower bound * 1.5.

Figure 3.4 According to the new IMF standards, China's foreign exchange reserves are still abundant



Sources: People's Bank of China; State Administration of Foreign Exchange; CF40; Wind Financial Information.

Although using foreign exchange reserves to stabilize the exchange rate is not costless, it prevented volatile disruption and won time for reform and adjustment. Foreign exchange reserves had accumulated excessively under the previous appreciation pressure; what former People's Bank of China governor Zhou Xiaochuan called the "pool" had eased the impact of concentrated capital outflow on China's real economy.

Safeguarding Foreign Exchange Reserves to Maintain Market Confidence

At the end of 2016, when China's foreign exchange reserves were only one step away from falling below RMB3 trillion, a debate raged over whether China should try to maintain the exchange rate level or the reserve scale. According to one school of thought, renminbi exchange rate fluctuation is normal and has little effect on China's economy; the currency will not move far under a free float. Foreign exchange reserves are hard-earned national wealth and should be cherished As such, it is not worth maintaining the exchange rate level.

According to a different perspective, RMB3 trillion of foreign exchange reserves are still too much. The diversification of foreign exchange reserves (i.e., the holding of foreign exchange by citizens) is a good thing. It helps increase the efficiency of foreign exchange reserve usage, stabilize the renminbi exchange rate, and reduce foreign exchange controls.

However, the exchange rate and reserves are interrelated. During the Asian financial crisis, the Chinese government proposed safeguarding the exchange rate level and keeping its reserves untouched, precisely because the nature of the two issues was clearly understood. Neither was a problem of absolute level or scale; both were issues of market expectations or confidence (Zhu 2011b).

At the end of 2016, the decline in foreign exchange reserves was interrelated with renminbi devaluation, creating a vicious cycle of self-reinforced and self-realized depreciation expectations and leading to debate over whether to maintain the exchange rate level or reserves. The two goals were achieved successfully and simultaneously. The policy and market logic behind it is that although the foreign exchange market is still short of supply, with fundamental factors (such as internal economic stabilization and external dollar weakening), renminbi appreciation has strengthened the credibility of exchange rate policy, inhibited capital outflows, and encouraged capital inflows. The stabilization of foreign exchange reserves has improved market expectations and further supported the renminbi exchange rate (Guan 2017b).

The debate over safeguarding exchange rate levels or reserves ignored another foreign exchange policy option in dealing with capital outflows: capital flow management. According to the new standard proposed by the IMF, the capital control factor (the coefficient given to broad money supply) was reduced from 10 to 5 percent. Under this situation, the lower and upper limits of China's foreign exchange reserves were reduced by $720 billion and $1.08 trillion, respectively, by the end of 2016 (Guan 2018) (figure 3.4b).

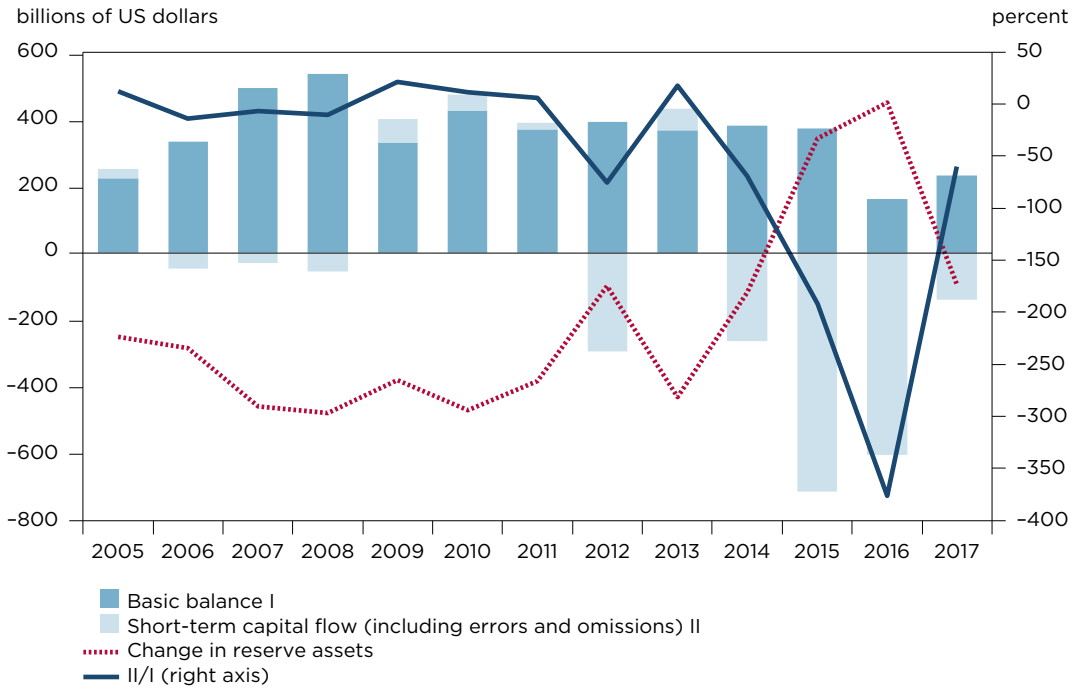
CAPITAL FLOW MANAGEMENT

Strengthening Capital Flow Management Lately after the 8.11 Reform

After the 8.11 exchange rate reform, China experienced large-scale capital outflows (including net errors and omissions), mainly short-term capital outflows driven by market sentiment (figure 3.5). Under a widespread bearish market sentiment, the more the renminbi was devalued, the stronger were the incentives for domestic companies and households to hold foreign exchange, indicating that exchange rate leverage was not working.

China faced two policy choices. The first was to let the price clear the market, which would inevitably lead to excessive devaluation of the renminbi exchange rate. Its domestic financial consequences and international overflow effects would be more uncertain. The second was to conduct quantitative interventions, including selling foreign exchange reserves and strengthening capital flow management. However, the lower the foreign exchange reserves, the greater the impact on market confidence. Limiting the outflow of capital gradually became a short-term policy option.

Figure 3.5 Concentrated outflow of short-term capital after the 8.11 exchange rate reform once threatened national financial security



Note: Basic balance = current account balance + direct investment balance. Short-term capital flows = portfolio investments + other investments + financial derivatives + net errors and omissions. In the balance of payments, the increase in foreign exchange reserve assets (excluding valuation effects) is negative and the decrease is positive. The changes in reserves in this figure are different from the changes in figure 3.3 because the data in this figure exclude valuation effects of exchange rate and asset price changes.

Sources: People's Bank of China; State Administration of Foreign Exchange; CF40; Wind Financial Information.

At the end of 2016, when the renminbi exchange rate moved toward seven against the dollar and foreign exchange reserves decreased to $3 trillion, China began to rely mainly on capital flow management. Measures included regulating overseas investment, strengthening authenticity checks, implementing macroprudential measures, strengthening statistical monitoring, and encouraging capital inflows and foreign exchange settlements.

Assessing the Effectiveness of Capital Flow Management

The strengthening and improvement of capital flow management has gained time for reform and adjustment. The market was affected by the package of measures introduced at the end of 2016, but the generally expected surge in foreign exchange purchases did not occur at the beginning of 2017. Offshore renminbi liquidity tightened, and interest rates soared. As the dollar weakened in the international market, the overseas renminbi exchange rate rebounded continuously, driving up the onshore renminbi exchange rate. These developments were a prelude to the abrupt turn in the renminbi exchange rate throughout the year (see figure 3.1) (Guan 2017b).

Regulating overseas investments of Chinese enterprises and making them more rational has effectively resolved the risk of short-term capital flows. In 2017 the net outflow of foreign direct investment in the balance of payments decreased by 53 percent year-on-year, and cross-border direct investment moved from a deficit to a surplus. During the same period, an increase in the basic balance and a decrease in net short-term capital outflows to a level below the surplus of the basic balance led to an increase of $93 billion in foreign exchange reserve assets. The previous year had experienced a decrease of $489 billion (see figure 3.5).

Price signals support the effectiveness of capital flow management. In 2016 capital flow management was strengthened in terms of window guidance on authenticity checks. However, as the renminbi exchange rate fell by more than 6 percent against the dollar, banks' sale of foreign exchange dropped, but foreign exchange settlement also decreased. The settlement and sales of foreign exchange remained in significant deficit. In 2017, with renminbi appreciation, bank foreign exchange sales declined slightly year-on-year and settlement increased substantially, leading to a nearly 80 percent reduction in bank settlements and sales deficits. With foreign exchange market stabilization, management was gradually relaxed. Starting in September 2017, some temporary regulatory measures (including macro-prudential measures) were removed or suspended, and regulation is now neutral.

CONCLUSIONS AND RECOMMENDATIONS

First, in dealing with capital flow shocks, each of the three foreign exchange policy instruments—the exchange rate, reserves, and management—has its advantages and disadvantages. The government must prioritize its policy objectives. Considering the strong negative overflow effect of a large renminbi depreciation and the damage to market confidence through foreign exchange reserve use, the IMF did not raise any objection to the Chinese government's previous step of strengthening capital controls; instead, it requested only that the policy be consistent and transparent (IMF 2017b).

Second, the key to successful foreign exchange policy is to build credibility. The exchange rate or reserves are not safeguarded merely to establish a specific level or scale but to maintain confidence and stabilize expectations. After the issue of policy credibility was resolved in 2017, the renminbi exchange rate and foreign exchange reserves also stabilized. Complemented by a credible price signal, the effectiveness of capital flow management also improved.

Third, capital flow management should be implemented on the basis of international rules. China should attempt more market-friendly capital flow management measures and adopt more market-based and price-related macro- or micro-prudential measures.

Fourth, capital flow management should be used only as a temporary measure. Once the market stabilizes, it should be adjusted. Capital flow management cannot be a substitute for necessary adjustments and reforms. In the long run, the key to expanding financial openness is to continuously promote market-oriented reform of the exchange rate and reduce reliance on capital flow management measures. Successful transformation of the exchange rate system also requires the prevention and mitigation of financial risks.

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CHAPTER 4

China's Economic Transformation: Progress and Gaps

Zhang Bin and Zou Jingxian

Economic growth involves not only the continuous improvement of labor productivity and per capita income but also the continuous change of economic structure. As Chenery, Robinson, and Syrquin (1989) note, economic growth is the successful transformation of economic structure. The continuous improvement of per capita income and the continuous change of economic structure are intimately interrelated, like two sides of a coin. Countries that made the transition to high-income status made certain economic structural changes. Countries that have been unable to make this transition did not experience these changes.

China's economy has suffered ongoing decline in the wake of the global financial crisis, sparking widespread concern about China's economic prospects. Of major concern is the question whether China's manufacturing will lose international competitiveness, causing China's economy to fall into the middle-income trap.

One way to answer this question is to look at the structural changes China is experiencing and compare them to the changes high-income economies experienced at a similar stage of development. By observing the relationship between income growth and structural changes in the economy, especially changes that occur in the process of economic growth, it is possible to locate the development stage and progress of China's economy, assess the future development prospects of China's economy, and identify the bottlenecks to China's economic development and outstanding issues that need to be addressed.

This chapter reviews the structural changes China's economy is experiencing from two perspectives, industry and expenditure, and compares China and high-income economies at a similar development stage. Three main findings are presented.

First, the Chinese economy passed the peak of industrialization in 2010–12, after which economic activity began shifting from manufacturing to services. At its industrial peak, China's income level and share of industrial value added were consistent with the experience of high-income economies at a similar stage of development.

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Second, after the peak of industrialization, China's human capital–intensive services developed rapidly. Inputs, production, and products show that the overall trend of manufacturing upgrading is strong. Consumption, investment, and exports are more balanced, as the share of consumption increased, the share of investment slowly decreased, and export growth slowed markedly. These trajectories are consistent with the historical experience of high-income economies at a similar stage of development.

Third, the main weaknesses in economic growth are the smaller share of workers employed in the secondary and tertiary sectors; the smaller share of government, community, social, and private services value added; and the possibility of a smaller share of private consumption and a larger share of investment, especially construction and installation investment.

These findings suggest that China's deindustrialization is not premature and that its economy remains on track toward higher income levels. A common explanation for the growth bottleneck is policies enacted by the Chinese government that place too much emphasis on economic development through investment projects and too little emphasis on supporting reforms and improving public services and public management during the urbanization process. Excessive regulation of certain services compounds the problem. This chapter argues that these bottlenecks can be overcome by shifting from development to services.

FROM MANUFACTURING TO SERVICES

Most high-income economies experienced a transformation from manufacturing to services.[1] In their review of the process of economic structural transition, Herrendorf, Rogerson, and Valentinyi (2013) detailed the international experience of the transformation from a manufacturing to a service economy. Their observations apply to most developed economies today.

Charting the trajectory of manufacturing shares as those shares changed with income growth, they find that when the per capita income of an economy reached 8,000 international dollars (calculated using purchasing power parity, constant prices in 1990), the share of nominal and real value added, employment, and work time in manufacturing declined after reaching a peak, and the corresponding shares in the service sector rose. The increase in the share of services came from increases in both their relative price and their relative quantity.

The structural transition of major developed economies took place in the following order:

- United States: 1950
- Canada: 1957
- United Kingdom: 1960
- France: 1965
- Germany: 1969
- Japan: 1970
- Australia: 1970
- Spain: 1972

1. Studying structural transformation requires extensive historical data. The main data sources used for the analysis in this chapter are Maddison (2010); the University of Groningen's EU KLEMS database, www.rug.nl/ggdc/productivity/eu-klems; the World Bank's *World Development Indicators* (WDI) database; United Nations Statistics Division (2018a); the Penn World Tables, www.rug.nl/ggdc/productivity/pwt/; and the OECD Consumption Expenditure Data. Income levels, industrial value added, and employment data are relatively easy to obtain; historical data on the breakdown of consumption expenditure are not available for many countries.

- Italy: 1976
- Taiwan: 1986
- South Korea: 1992

In each case, the tipping point of entering a structural transition was 7,400 to 12,000 international dollars, with most economies concentrated around 9,000 international dollars. The peak of industrial value added shares was 34 to 53 percent, with most economies around 40 percent. The city economy of Hong Kong was the lowest, at 34 percent; Germany was the highest, at 53 percent.

China has crossed the threshold of income for transformation from manufacturing to services. To facilitate international comparisons, we use the same measure for per capita GDP (the price of the international dollar in 1990). The per capita GDP data using the 1990 international dollar were sourced from the Maddison Project database, which has been updated to 2010. Data for 2011–16 were calculated based on the constant price per capita GDP from the National Bureau of Statistics of China. Data on the nominal value of per capita GDP (in US dollars) came from the National Bureau of Statistics of China, which used the exchange rate at the end of the year.

China's per capita GDP was 8,032 international dollars in 2010, which is above the international threshold for the transition from manufacturing to services. China's per capita GDP in 2016 was 12,130 international dollars.

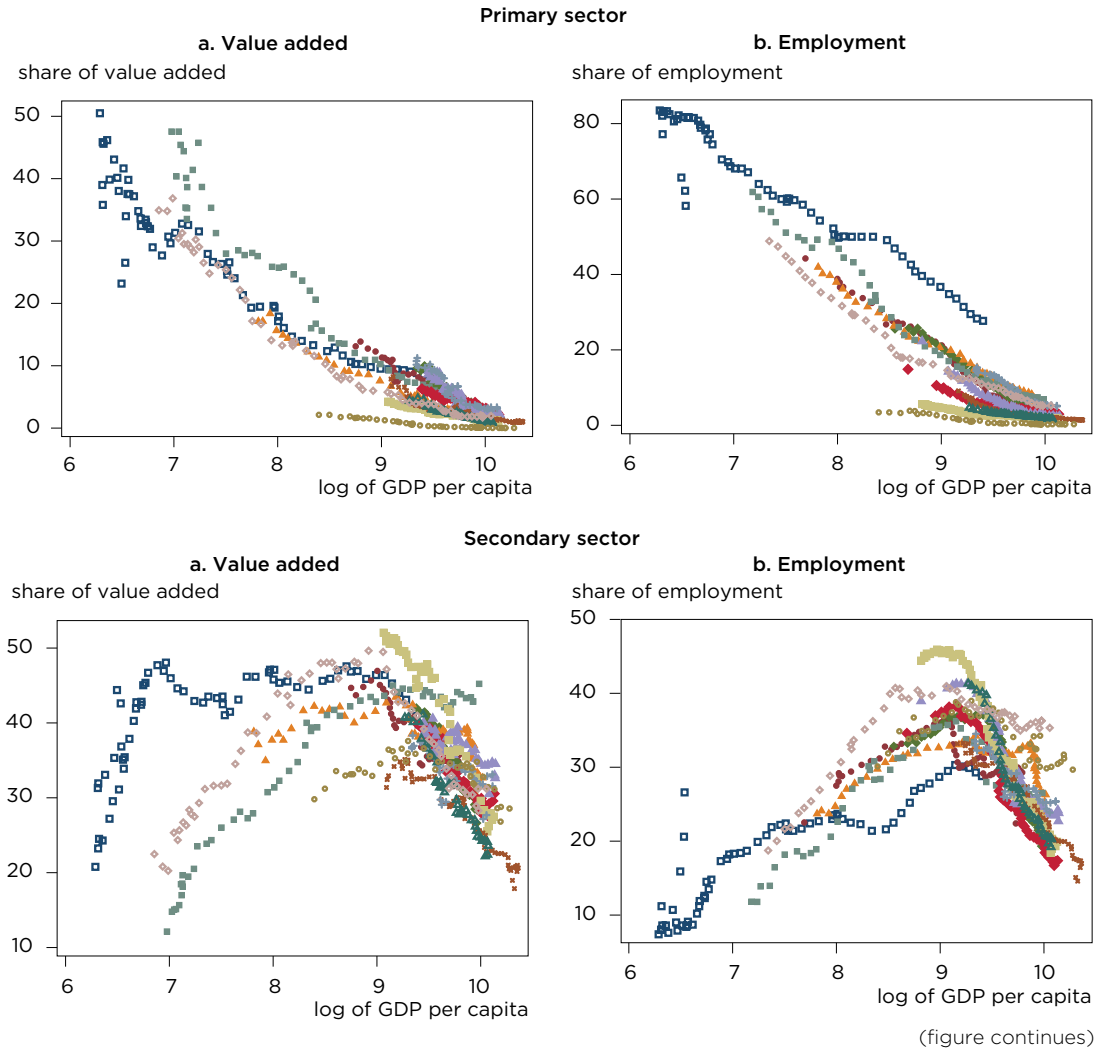
In terms of the share of value added, China has passed its peak of industrialization and started its transition from manufacturing to services. The proportion of current price industrial value added in total current price value added was 41.1 percent in 2006, the highest in the past three decades.[2] Since then it has continued to decline, falling to 33.3 percent in 2016. (Data on manufacturing value added share are available only after 2004.) In 2007 the share of manufacturing value added reached its peak, at 32.9 percent, after which it began to decline. Calculations based on constant prices show that the share of industrial value added reached its peak at 42.7 percent in 2010 and has declined slowly since then, falling to 40.1 percent in 2015. By contrast, the share of services value added has continued to rise, in terms of both current and constant prices.

From an employment share perspective, China has passed its peak of industrialization and started the transformation from manufacturing to services. China does not have extensive data on the share of manufacturing jobs. The relevant employment data include the share in the secondary and tertiary sectors over the past 30 years, urban manufacturing since 2006, and rural migrant workers in manufacturing since 2008. The secondary sector's share of employment was 30.3 percent in 2012 and has since declined. The share of urban manufacturing employment has been relatively stable, at 28–29 percent since the release of statistics. The share of rural migrant workers employed in the manufacturing sector has continued to decline since the release of data in 2008, falling from 37.2 percent in 2008 to 31.3 percent in 2014.

The employment share in the tertiary (services) sector rose continuously over the past 30 years, accelerating its pace since 2008. Between 1985 and 2007, its share of employment increased 0.7 percent a year on average; during 2008–14, the increase was 1.2 percent a year on average. The transition period in the employment share was between 2008 and 2012.

2. Industry includes manufacturing; extractive industries; and the production and supply of electricity, gas, and water. The value added of manufacturing accounts for more than 80 percent of the total industrial value added. In the current statistics, the time series of industrial value added is longer, which can be used as a proxy variable to reflect the long-term change in trajectory of manufacturing value added.

Figure 4.1 Share of value added and employment in primary, secondary, and tertiary sectors in China and selected economies (percent)



(figure continues)

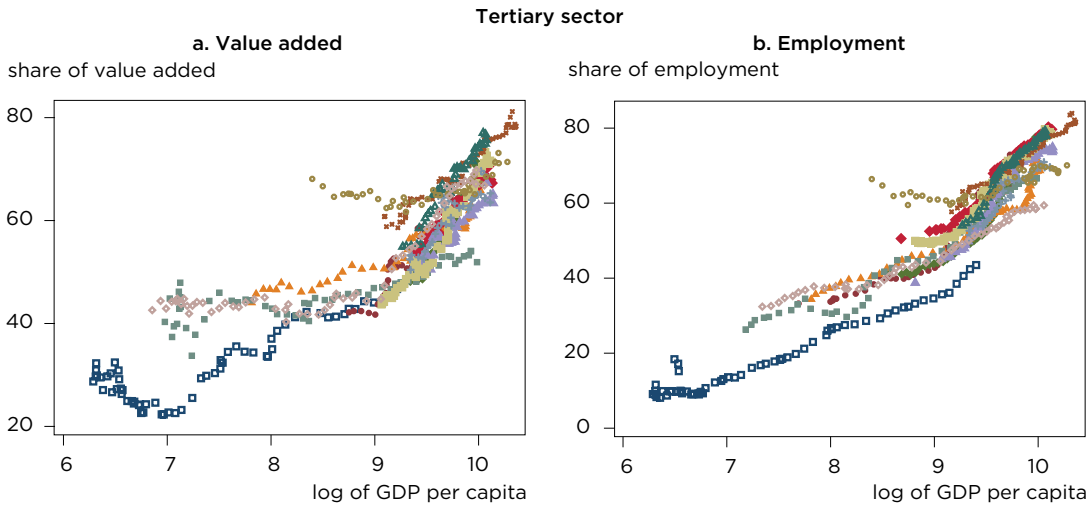
The data on income, value added share, and employment share show that the Chinese economy passed the peak of industrialization around 2010. The trajectory of changes in the shares of value added and employment in China's primary, secondary, and tertiary sectors was consistent with that of high-income economies at a similar development stage.[3] The main difference is that the share of China's employment in the primary sector is higher and the share of employment in the tertiary sector lower (figure 4.1).

RISE OF HUMAN CAPITAL–INTENSIVE SERVICES

In the United States, following the economic transformation that began in 1950, the share of value added in services increased from 57.5 percent in 1950 to 80.9 percent in 2017 (Buera and Kaboski 2012). The share

3. The primary sector includes farming, forestry, animal husbandry, and fishing. The secondary sector includes mining; manufacturing; electricity, heat, gas, and water production and supply; and construction. The tertiary sector includes wholesale and retail, accommodation and catering, information technology, finance, real estate, leasing and commercial services, transportation, storage, and postindustry and other services.

Figure 4.1 Share of value added and employment in primary, secondary, and tertiary sectors in China and selected economies (percent) (continued)



Note: The horizontal axis is measured at 1990 constant price purchasing power parity in international dollars. Hollow squares represent China; the other series shown are for Belgium, Britain, France, Finland, Japan, the Netherlands, South Korea, Singapore, Spain, Sweden, Taiwan, and the United States. Each mark represents a country-year observation. The Chinese data cover 1952–2016. Data for other economies cover 1950–70 through 2010.

Source: Maddison (2010); GGDC 10 Sector Database, www.rug.nl/ggdc/productivity/10-sector. Chinese data not available from GGDC 10 are from the National Bureau of Statistics of China. Data for Belgium and Finland are from the EU KLEMS database, www.rug.nl/ggdc/productivity/eu-klems.

of high-technology-intensive services increased by 25 percentage points, and the share of low-technology-intensive services declined (the definition of technology-intensive services is based on the average education level of employees in the industry).

Other high-income economies had similar experiences. After reaching the peak of industrialization, the share of value added and employment in finance, insurance, real estate, and business and government services that are human capital intensive continued to rise in 10 economies (Britain, France, Italy, Japan, the Netherlands, South Korea, Spain, Sweden, Taiwan, and the United States), and the share of value added in sectors that use less human capital (such as trade, catering, and hotels; transportation, warehousing, and information) decreased or remained the same (figure 4.2).

In terms of value added, China's human capital–intensive service sector grew faster than GDP in the years since the peak of industrialization. During 2011–16, the following subsectors had the fastest average growth:

- scientific research, technical services, and geological prospecting,
- health, social security, and social welfare,
- leasing and commercial services,
- water conservation, environment, and public facilities management,
- finance,
- information transmission, computer services, and software, and
- education.

Figure 4.2 Share of value added and employment in selected service subsectors in China and selected economies (percent)

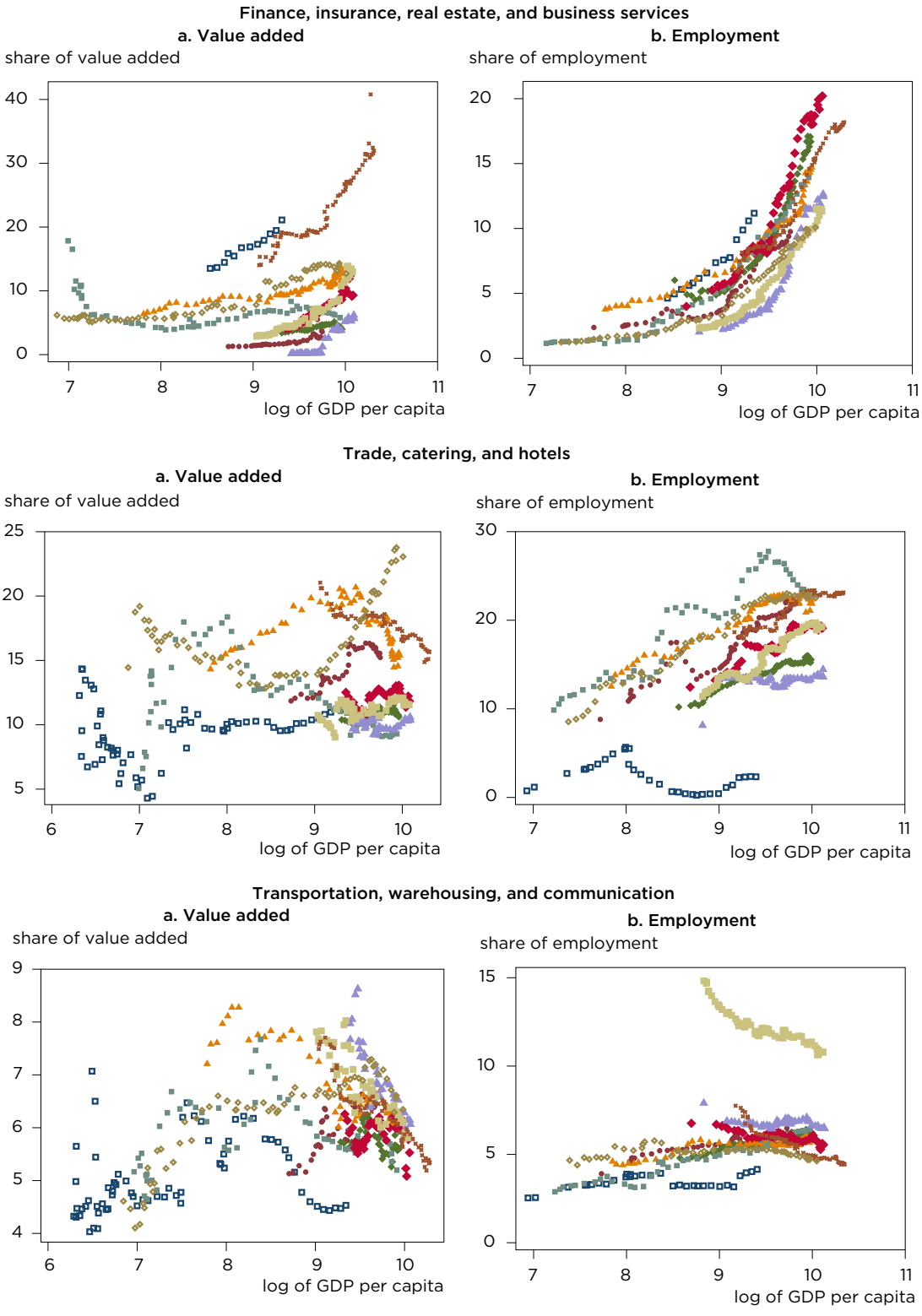


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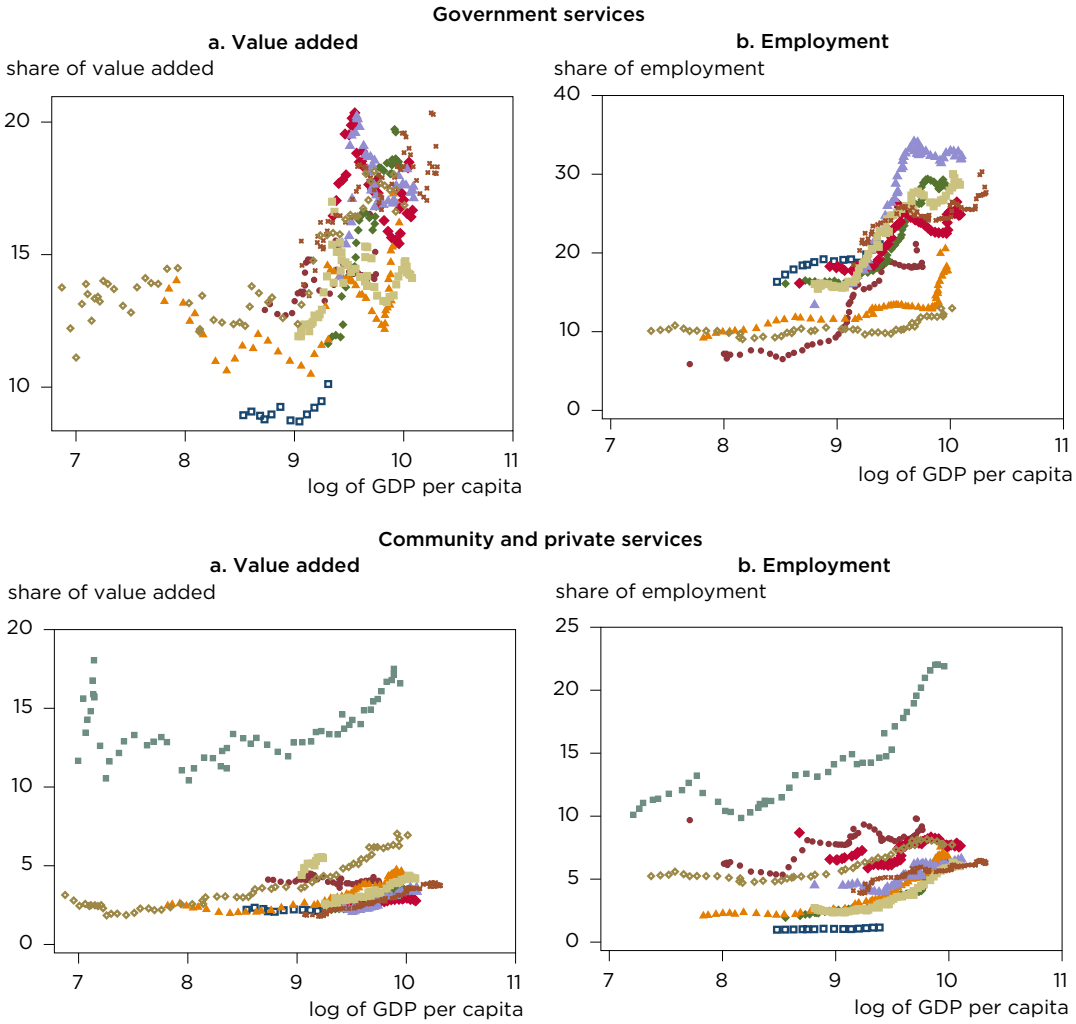
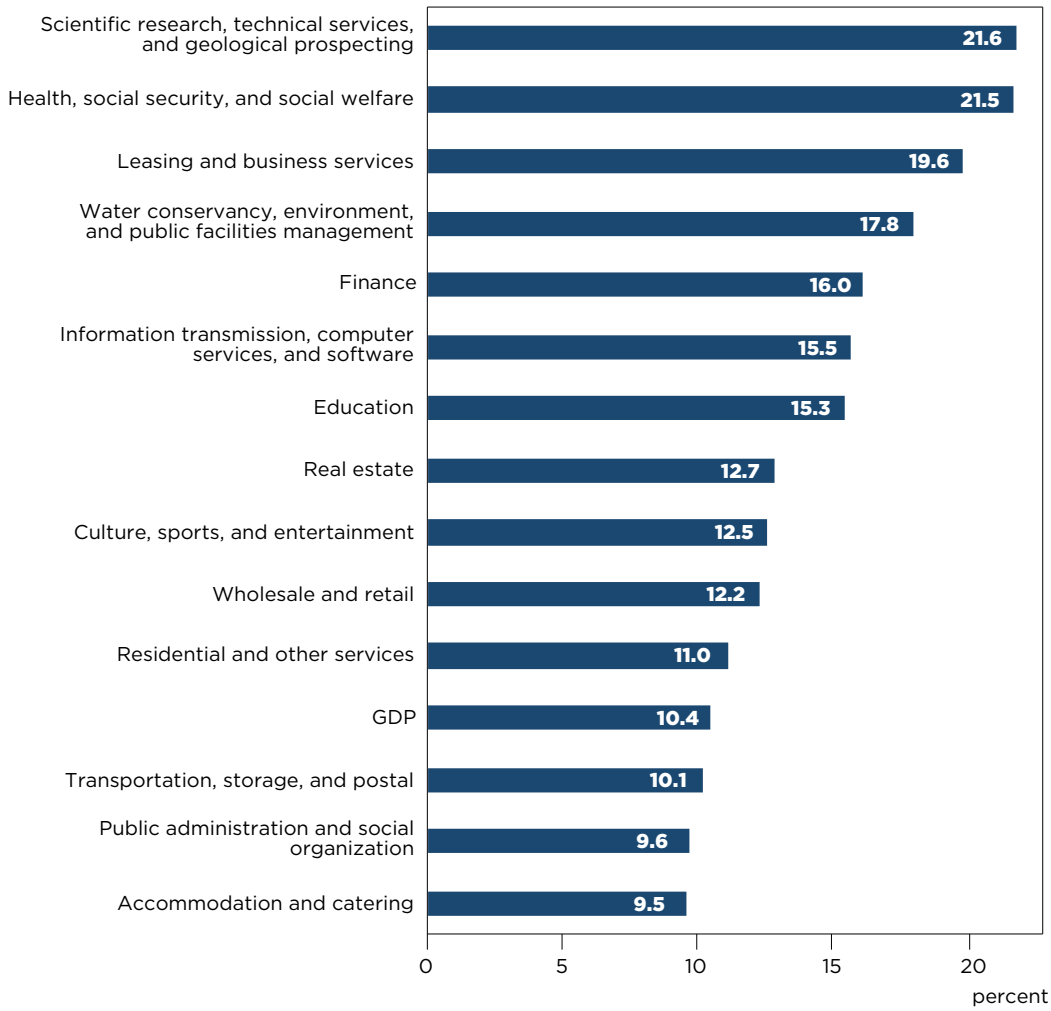
Figure 4.2 Share of value added and employment in selected service subsectors in China and selected economies (percent) (continued)



Note: Hollow squares represent China; the other series shown are for Belgium, Britain, France, Finland, Japan, the Netherlands, South Korea, Singapore, Spain, Sweden, Taiwan, and the United States. Each mark represents a country-year observation. Value added shares are for 1952–2016 for trade, catering, and hotels and transportation, warehousing, and communications and 2004–15 for finance, insurance, real estate, and business services; government services; and community and private services. Employment shares are for 1978–2016 for trade, catering, and hotels and transportation, warehousing, and communications and 2003–16 for finance, insurance, real estate, and business services; government services; and community and private services. Data for other economies cover 1950–70 through 2010. Where GDP data were available, the shares of value added were calculated not relative to the total value added, as in figure 4.1, but relative to GDP; the ratios across the tertiary subsectors therefore do not add up to the value added share of the tertiary sector in figure 4.1. The employment shares for China are calculated based on the National Bureau of Statistics data for urban nonprivate units only, i.e., under assumption that the employment shares within the various components of the tertiary sector are similar between urban nonprivate units and other forms of ownership.

Source: Chinese data are from National Bureau of Statistics of China. Other data are from Maddison (2010) and the GGDC 10 Sector Database, www.rug.nl/ggdc/productivity/10-sector.

Figure 4.3 Average annual change in value added of selected service subsectors and nominal GDP in China since 2011



Note: Data for accommodation and catering; transportation, storage, and postal services; wholesale and retail; real estate; and finance are through 2016. Data for other subsectors are through 2014.

Source: National Bureau of Statistics of China.

The average annual growth rate of all of these subsectors exceeded 15 percent. The average growth rate of real estate, culture, sports and entertainment, wholesale and retail trade, residential services, and other services exceeded the nominal GDP growth rate of 10.4 percent. The average growth rate of transportation, storage and postal services, public administration and social organizations, and accommodation and catering services was below 10.4 percent. After the industrial peak, the growth rate of human capital– and technology-intensive subsectors was higher than that of GDP, whereas the growth rate of labor-intensive subsectors was only marginally higher or lower than that of GDP. This pattern is similar to the experience of high-income economies at a similar development stage. Public management and social organizations lagged other human capital–intensive subsectors (figure 4.3).

For the international comparison, we used a database compiled by the University of Groningen that includes 33 economies from 1950 to 2013. In addition to its long time span, the benefit of using this database was that it provided value added and employment statistics by subsector. The service sector includes five subcategories:

- trade, catering, and hotels,
- transportation, warehousing, and communications,
- finance, insurance, real estate, and business services,
- government services (public administration and defense, compulsory social security, education, health, and social work),[4] and
- community, social, and private services (activities of households as employers; undifferentiated goods- and services-producing activities of households for own use; activities of extraterritorial organizations and bodies).[5]

We reclassified and consolidated the Chinese data to make the international comparison.[6]

It shows that the employment shares of all services sectors in China are smaller than they were in high-income economies at a similar development stage. Employment shares in trade, catering and hotels, and government services show the widest differences. In terms of the shares of value added, two differences are noteworthy. Relative to high-income economies at the same stage of development, the share of government services is much smaller (10.1 percent versus 14.9 percent), and the share of finance, insurance, real estate, and business services is much larger (21.6 percent versus 7.1 percent) (figure 4.4).

UPGRADING MANUFACTURING

In the process of transformation from a manufacturing to a service economy, manufacturing remains an important source of increasing productivity, creating an important spillover effect on the development of other sectors. No comprehensive indicator reflects the state of manufacturing upgrading. Research and development (R&D) investment, patents, production processes, industries, and products provide insight into the upgrading of China's manufacturing sector.

Input: R&D and Patents

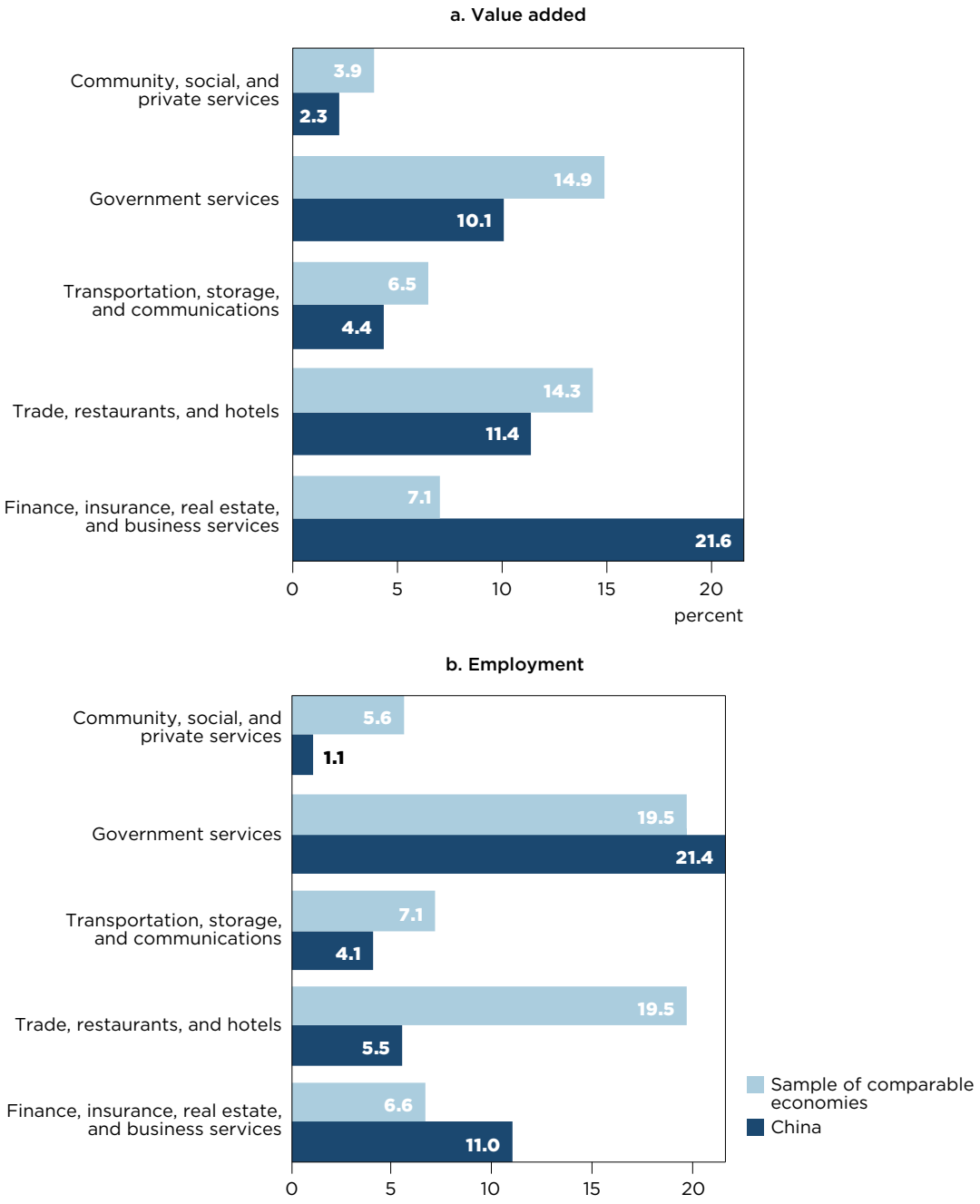
Wei, Xie, and Zhang (2017) compare R&D investment and patents in China and countries in the Organization for Economic Cooperation and Development (OECD). In 1991 China's R&D investment accounted for just 0.7 percent of GDP. In 2010 its R&D investment intensity outpaced the median of countries in the

4. The L–N items in the 3.1 version of the International Standard Industry Classification (ISIC). See United Nations Statistics Division (2018b).

5. The O-P items in the 3.1 version of the ISIC. See United Nations Statistics Division (2018b).

6. The "wholesale and retail industry" and "accommodation and catering industry" data released by the National Bureau of Statistics of China correspond to "trade, catering, and hotels." "Transportation, warehousing, and postal industries" corresponds to "transportation, storage, and communications. "Financial services"; "real estate, leasing, and business services"; "information transmission, computer services; and software"; and "scientific research, technical services, and geological prospecting" correspond to "finance, insurance, real estate, and business services." "Water conservancy, environment, and public facilities management"; "education"; "health, social security, and social welfare"; and "public administration and social organization" correspond to "government services." "Residential services and other services" and "culture, sports and entertainment" correspond to "community, social, and private services."

Figure 4.4 Shares of value added and employment in China's service sector



Note: The "sample of comparable economies" includes 10 economies with per capita income of $11,000–$13,000 international dollars (1990 constant price purchasing power parity): Britain, France, Italy, Japan, the Netherlands South Korea, Spain, Sweden, Taiwan, and the United States. For China, the value added shares are for 2015 and the employment shares are the average for 2015–16. The period covered for other countries varies according to the GDP per capita criterion.The employment shares for China are calculated based on the National Bureau of Statistics data for urban nonprivate units only, i.e., under assumption that the employment shares within the various components of the tertiary sector are similar between urban nonprivate units and other forms of ownership.

Source: Chinese data are from the National Bureau of Statistics of China. Data on other economies are from Maddison (2010) and the GGDC 10 Sector Database, www.rug.nl/ggdc/productivity/10-sector.

OECD; by 2012 it exceeded the OECD average (1.88 percent of GDP). By 2014 China's R&D investment intensity had increased to 2.05 percent, surpassing that of many developed countries.

Another measure of innovation input is the share of the population engaged in R&D. In 1996 the number of researchers in R&D per million people in China was 443. The figure was roughly comparable to that of Brazil (420 persons per million), higher than India (153 persons per million), and much lower than Russia (3,796 persons per million). The number was far lower than figures in Japan (4,947), the United States (3,122), and South Korea (2,211). In 2014 the number of people engaged in R&D in China rose to 1,113 per million.[7]

Industrial upgrading cannot occur without innovation. Patents are a good measure of innovation. The number of patent applications that China's State Intellectual Property Office received increased from 80,000 in 1995 to more than 2.3 million in 2014, a compound annual growth rate of 19 percent.[8] According to the World Intellectual Property Organization, in 2011 China surpassed the United States to become the largest country with patent applications in the world.

Patents are divided into three categories: invention, utility model, and design. Invention is the most technologically advanced category. Its share of total patents in China rose from 8 percent in 1995 to 18 percent in 2014. In 2005 patents granted to foreign applicants accounted for more than 20 percent of the total; this number fell to just 7 percent in 2014, suggesting that independent innovation has played an increasingly important role in China's economic growth.

The number of patents granted to Chinese enterprises by the US Patent and Trademark Office increased from 62 in 1995 to 7,236 in 2014. The average annual growth rate was 21 percent during 1995–2005, rising to 38 percent during 2005–14.[9]

Production: Use of Intermediate Products and Industry Concentration

Adam Smith pointed out in the 18th century that the most important source of efficiency is specialization and the detailed division of labor. Citing the experience of industrial development in many countries, Chenery, Robinson, and Syrquin (1989) observed that "during industrialization, the changes of intermediate inputs are of particular importance. Increased use of intermediate products in production signals increasing degree of production specialization and complexity of industrial links. It is one of the deterministic characteristics of industrialization." An increase in the share of intermediate inputs in production is an important indicator of increased specialization and efficiency.

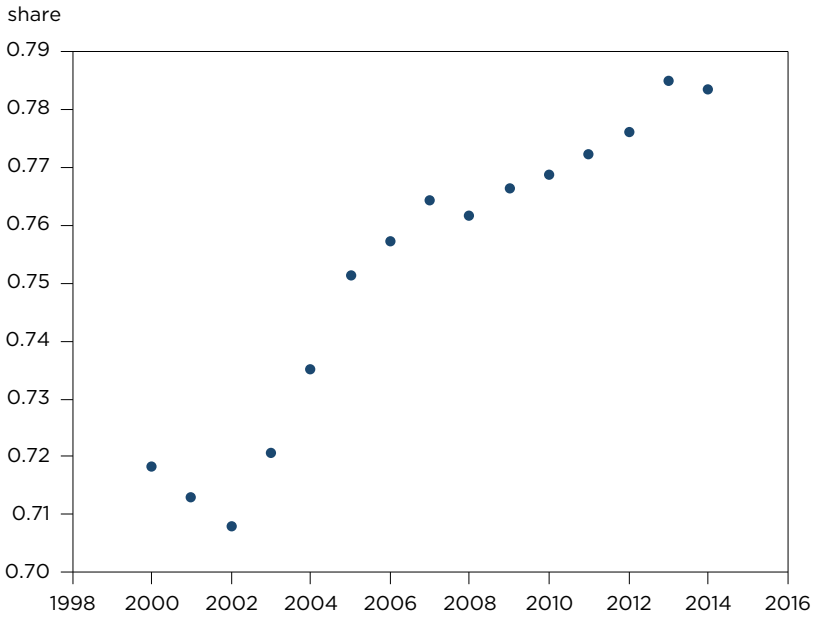
The share of intermediate inputs in the output of China's industrial sector has continued to increase. In the industrial sector it can be calculated from the input-output table (the latest release of the world input-output data is updated to 2014 only). The share of intermediate inputs in the secondary sector (industry plus construction) rose from 70.7 percent in 1995 to 78.3 percent in 2014. The degree to which it increased varied across subsectors. Even after the peak of industrialization, the increase in the share of intermediate inputs in the industrial sector was not interrupted, and specialization continued (figure 4.5).

7. Data on researchers in R&D (per million people) are from World Bank, *World Development Indicators.*

8. Data are from National Bureau of Statistics of China, www.stats.gov.cn.

9. Data are from World Intellectual Property Organization, WIPO, www.wipo.int/about-ip/en/iprm/.

Figure 4.5 Share of intermediate inputs in secondary sector in China, 2000–14



Source: Input-output table from the National Bureau of Statistics of China.

Market competition leads to survival of the fittest; more efficient enterprises have larger market shares. It also increases overall efficiency within an industry.

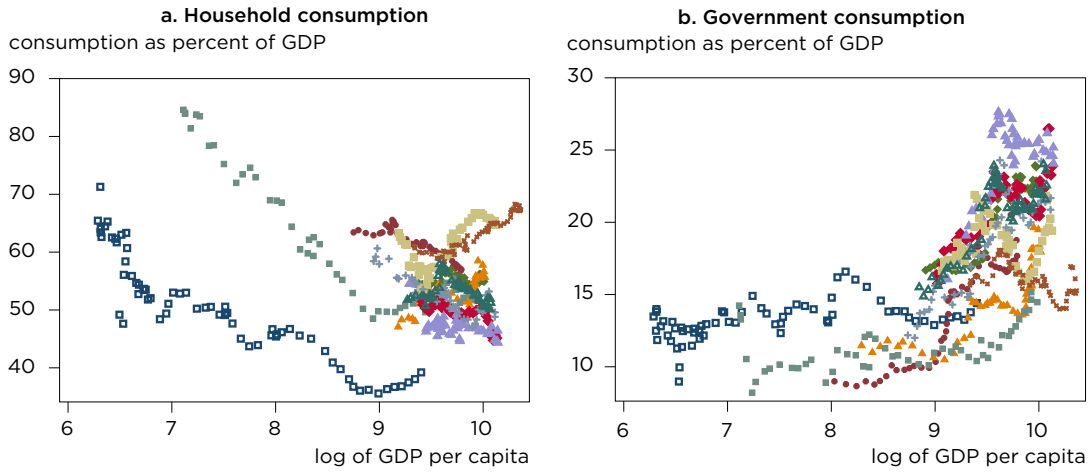
After the peak of industrialization, the industrial sector in China faced the pressure of decelerating demand; only the fittest businesses could survive. A large number of inefficient enterprises were driven out of the market, significantly increasing industry concentration. A report by Huatai Securities (2017) calculates the CRn index based on the operating revenue of A-share listed companies, an indicator of industry concentration, the market share of top *n* companies in the industry. Between 2010 and 2016, the number of highly oligopolistic industries increased from six to nine, and the number of low concentration industries increased from 10 to 15. A large number of enterprises in mining, textiles, and general equipment manufacturing industries went out of business.

Product: Complexity of Export Products and Changes in Export Value Added

Exports reflect a country's manufacturing capabilities and international competitiveness. Manufacturing capacity has several dimensions, including its complexity (Rodrik, Hausmann, and Hwang 2006). According to estimates by Zhang, Wang, and Zou (2017), the income level corresponding to China's exports was $14,643 in 2000 and $24,014 in 2014—much lower than the level corresponding to its export complexity (see Rodrik, Hausmann, and Hwang 2006). Since 2010 the complexity of China's exports has continued to improve.

Bin, Yaqi, and Jingxian (2017) find that China's export value added rate has continued to rise. The increase comes mainly from the intraindustry rather than the interindustry effect, meaning that Chinese manufacturing enterprises are more focused on replacing imported intermediate products than exporting

Figure 4.6 Household and government consumption as a percent of GDP in China and selected economies



Note: Hollow squares represent China; the other series shown are for Belgium, Britain, France, Finland, Japan, the Netherlands, South Korea, Singapore, Spain, Sweden, Taiwan, and the United States. Each mark represents a country-year observation. The Chinese data cover 1952–2016. Data for other economies cover 1950–70 through 2010.

Source: Data on per capita GDP are from Maddison (2010). Data on the share of consumption are from the World Bank's *World Development Indicators*.

new products.[10] This finding is in line with the observation that there has been no significant upgrading of manufacturing in recent years in terms of broad categories of exports. China's manufacturing exporters have focused their R&D and technological advancement efforts on the substitution of imported intermediate products rather than the export of new products.

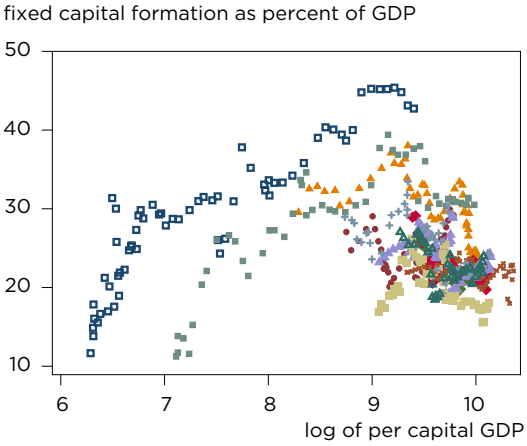
REBALANCING CONSUMPTION, INVESTMENT, AND EXPORTS

As the Chinese economy crossed the peak of industrialization, the share of consumption started to rise. The experience of high-income economies at a similar development stage suggests that the share of consumption declines between the start of industrialization and its peak (that is, the point at which the share of industrial value added in GDP was highest) and then starts to rise.

In China the driving force for the increase in the rate of consumption came not from private sector spending but mainly from government spending. The share of Chinese consumption in GDP declined in the wake of reform and opening up, dropping from 61.4 percent at the beginning of reform and opening in 1978 to 48.5 percent at the peak of industrialization in 2010. Since then it has started to rise. In 2016 it was 53.6 percent. The trajectory of changes in the share of consumption in GDP in China is similar to that in Japan, Korea, and Taiwan. However, the share of consumption in GDP in China is about 10 percentage points lower than these and other economies (figure 4.6).

10. The intraindustry effect refers to the export of similar products, with more imported intermediate products replaced by intermediate inputs of domestic production. The interindustry effect refers to the larger proportion of exports with higher export value added, which is reflected in the structural changes of exports.

Figure 4.7 Fixed capital formation as a percent of GDP in China and selected economies



Note: Hollow squares represent China; the other series shown are for Belgium, Britain, France, Finland, Japan, the Netherlands, South Korea, Singapore, Spain, Sweden, Taiwan, and the United States. Each mark represents a country-year observation. The Chinese data cover 1952–2016. Data for other economies cover 1950–70 through 2010.

Source: Data on per capita GDP are from Maddison (2010). Data on fixed capital formation as percent of GDP are from the World Bank's *World Development Indicators*.

The share of private consumption is still low in China. Final consumption includes both household consumption and government consumption. Their shares have been stable at about 74 and 26 percent, respectively, for the past decade or so. The final consumption of the Chinese government accounts for 14 percent of GDP, which is comparable to the consumption of governments in the United States, South Korea, and Taiwan but lower than governments in Japan and Europe. Final consumption of households in China accounts for 39 percent of GDP, far below the level of other countries, in many of which it exceeds 50 percent.

The formation of fixed capital in China accounted for 30 percent of GDP in the early 1980s and continued to rise, reaching 45 percent in 2010 (figure 4.7). It then plateaued before beginning a slow decline. In 2018 it was still at a relatively high level. These changes are similar to those of today's high-income economies at a similar stage of development.

The share of industrial investment in China dropped while the shares of infrastructure and service investments rose. After 2008 the share of industrial investment in fixed asset investment dropped from 36.3 percent in 2008 to 33.6 percent in 2016. The share of construction and real estate investment fluctuated at about 25 percent over the past decade; and the share of infrastructure investment rose from 22.3 percent in 2011 to 25.5 percent in 2016.

Investment in infrastructure includes three categories: (a) production and supply of electricity, heat, gas, and water; (b) transportation, storage, and postal services; and (c) water conservancy, environment, and public facilities management. The public facilities management industry (including municipal, water supply, public transportation, garden, and sanitation facilities management) accounts for the largest share of total infrastructure investment, reaching 37.3 percent in 2016. The growth rates of the first two categories of infrastructure investment have been declining since 2013. The third category grew more rapidly and has not seen a continuous decline. The three categories grew by 12 percent, 10 percent, and 23 percent, respectively, in 2016.

The share of investment in agriculture, forestry, animal husbandry and fisheries, science, education, culture, health, and other (which includes transportation, software and information technology services, wholesale and retail trade, finance, leasing and business services, residential services, repair and other services, public administration, and social security and social organizations) was relatively low and has maintained a steady upward trend since 2010.

Export growth slowed and the contribution of market share to export growth declined. The growth rate of exports can be broken into two parts: (a) the growth rate of global export markets, which is driven predominantly by global demand and the increase of global economic integration, and (b) the growth of China's market share in global export markets. From 2000 to 2016, China's exports grew at an average annual rate of 15.4 percent (8.4 percentage points contributed by the growth of export market shares and 7.0 percentage points contributed by the growth of global export markets). Over the past decade or so, the growth rate of China's market share in global exports continued to narrow, resulting in a slowdown in export growth. Between 2009 and 2016, the increase in the export market share contributed 5.2 percentage points to export growth, far less than the average 12.5 percentage points in 2000–08.

China's declining export market share and increasing income level is consistent with the experience of other high-income economies. Analysis of data from 17 developed economies for the period 1948–2013 reveals that export market shares show a hump-like change in line with the growth of per capita income. The main developed economies reached the peak of their export market share when their income level was 7,800–20,000 international dollars (in purchasing power parity terms, constant 1990 prices), concentrated at about 15,000 international dollars. China's export market share growth continued to decline over the past 15 years; it will hit nearly zero in 2020, when China's export market share is predicted to peak. The income level will then be about 14,500 international dollars. This pattern is consistent with the experience of high-income economies.

GAPS BETWEEN CHINA AND HIGH-INCOME ECONOMIES AT A SIMILAR STAGE OF DEVELOPMENT

The gaps between China and high-income economies at a similar stage of development are manifest largely in three areas:

- The employment share of the primary sector in China is relatively high and the shares of the secondary and tertiary sectors relatively low.
- The share of government, community, social, and private services is low and the share of finance, insurance, real estate, and business services high.
- The share of private consumption is low and the share of investment high, especially in construction and installation.

The rate of urbanization is another factor that is closely related to the low share of employment in the secondary and tertiary sectors. As of 2016, China's official urbanization rate (based on permanent resident statistics) was 57.4 percent.[11] In sharp contrast, the urbanization rate of high-income economies exceeded 70 percent following the peak of industrialization. Although the rate of urbanization in China is rising, it is still considerably lower than that of high-income economies at a similar stage of development. This lower urbanization rate corresponds with the lower employment share in the secondary and tertiary sectors. The low share of government services is also related to the low urbanization rate, as urban areas enjoy more government services than rural areas.

China's smaller share of employment in the secondary and tertiary sectors, the smaller share of government services value added, and the lower urbanization rate, as well as its higher investment rate, reflect the

11. Data are from National Bureau of Statistics of China, www.stats.gov.cn.

Chinese government's emphasis on development and neglect of services and the fact that related reform measures are not in place. Governments at all levels in China have consistently placed more emphasis on local GDP and tax revenue than services (Zhou 2007). This emphasis partly reflects the fact that Chinese officials are rewarded more for promoting construction projects than providing services (Xu and Wang 2010). Lacking an incentive to provide public services and public administration, Chinese governments regard them as a burden.

Some services or partial services that can be provided by the market, such as health care and education, cannot fully develop because they are subject to overregulation (see Zhang 2015). Inadequate public services and social security services, combined with inadequate policy reforms in areas such as land and urban *hukou* system, make the city a temporary place to work for many rural residents rather than a place where they can find long-term stability. Poor services partly explain the lower urbanization rate; lower employment in the secondary and tertiary sectors; and smaller shares of government, community, social, and private services.

SUMMARY

The main gaps between China and high-income economies at a similar development stage are that China has a relatively small share of employment in the secondary and tertiary sectors, a low proportion of government services value added, and a high investment rate. To overcome these differences, the Chinese government needs to gradually promote the reform of government functions from development to services. With increases in China's income level and economic restructuring, the government needs to shift the focus from project construction to public services and public administration.

The reform of government cannot be achieved without extensive participation from all sectors of society. Only with effective supervision and accountability of public services and public administration can these functions be improved. Participation from the grassroots is needed to improve public services and public administration.

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