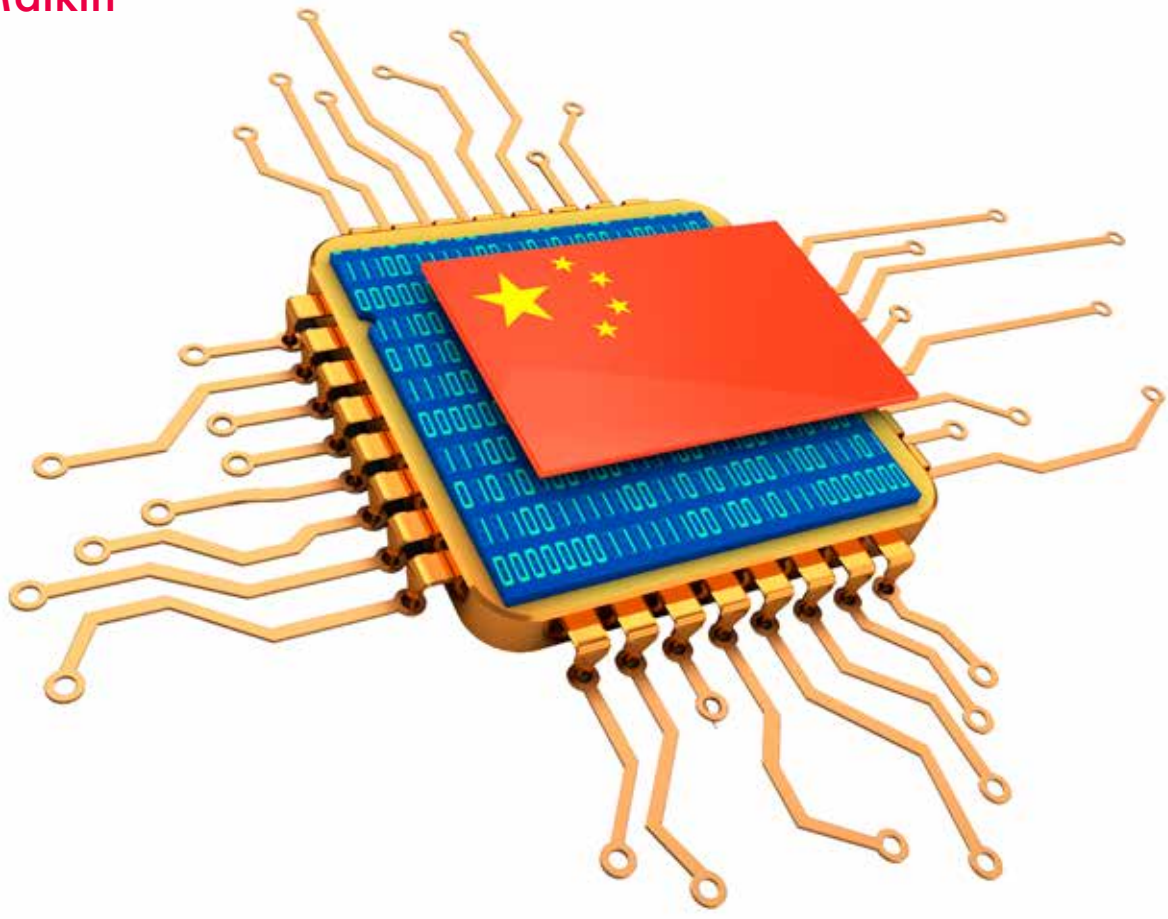
Centre for International
Governance Innovation

CIGI Papers No. 183 — August 2018

Made in China 2025 as a Challenge in Global Trade Governance

Analysis and Recommendations

Anton Malkin



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CIGI Masthead

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About the Author

Anton Malkin is a CIGI research fellow in the Global Economy Program. His research focuses on China's role in the global economy and in global economic governance. At CIGI, Anton has published works on capital account liberalization in China, China's relationship with the International Monetary Fund and regional financial governance arrangements, the capital account liberalization in China and the impact of China's high-tech industrial policies on global trade governance.

From 2012 to 2013, Anton was a senior visiting scholar at the School of International Studies at Peking University. His past work on the internationalization of China's currency has been widely cited in the field of international political economy. His Ph.D. thesis examined the role of foreign financial institutions in the transformation of China's financial markets and state-owned enterprises.

About the Global Economy Program

Addressing limitations in the ways nations tackle shared economic challenges, the Global Economy Program at CIGI strives to inform and guide policy debates through world-leading research and sustained stakeholder engagement

With experts from academia, national agencies, international institutions and the private sector, the Global Economy Program supports research in the following areas: management of severe sovereign debt crises; central banking and international financial regulation; China's role in the global economy; governance and policies of the Bretton Woods institutions; the Group of Twenty; global, plurilateral and regional trade agreements; and financing sustainable development. Each year, the Global Economy Program hosts, co-hosts and participates in many events worldwide, working with trusted international partners, which allows the program to disseminate policy recommendations to an international audience of policy makers.

Through its research, collaboration and publications, the Global Economy Program informs decision makers, fosters dialogue and debate on policy-relevant ideas and strengthens multilateral responses to the most pressing international governance issues.

Acronyms and Abbreviations

AI	artificial intelligence
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
FDI	foreign direct investment
GGFs	government guidance funds
IP	intellectual property
IPRs	intellectual property rights
M&A	mergers and acquisition
MIC 2025	Made in China 2025
MIIT	Ministry of Industry and Information Technology
MNCs	multinational corporations
MOFCOM	Ministry of Commerce
NDRC	National Development and Research Commission
OECD	Organisation for Economic Co-operation and Development
PCT	Patent Cooperation Treaty
R&D	research and development
SEPs	standard-essential patents
SMEs	small and medium-sized enterprises
SOEs	state-owned enterprises
USTR	Office of the US Trade Representative
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Executive Summary

This paper provides a reassessment of Made in China 2025 (MIC 2025) — China's industrial policy framework aimed at helping the country overcome the much-maligned middle-income trap — in the context of global trade governance. It suggests that China's industrial policies have been viewed too narrowly — without sufficient attention to longer-term global governance issues — by a large segment of the global business and policy-making community. To be sure, some of the critiques of MIC 2025, in particular those surrounding persistent formal and informal regulatory barriers to foreign direct investment (FDI) in various sectors of China's economy, are valid. However, claims made by policy makers and business associations regarding the unfairness of China's joint-venture-based technology transfer regime, and its attempts to sideline foreign firms in favour of their Chinese counterparts at the pinnacle of global value chains, are too simplistic. In the face of arguments that China is unfairly acquiring foreign intellectual property (IP), China's leaders have taken significant steps to improve protection and achieve sustainable commercialization of IP rights in China.

The paper argues that the general aims of MIC 2025 and the policies that underpin them are not unreasonable, given the increasingly prevalent dilemmas in global trade that China's leaders are grappling with. These include problems of international development arising from growing global industrial concentration — driven by the growth of the intangible economy — and China's shrinking access to importing and developing technological components (such as semiconductor chips) that are increasingly characterized as "dual-use" by China's trading partners. This suggests that resolving the concerns of China's trading partners regarding China's industrial policies requires global trade governance reform to ensure an equitable, rules-based global trading order that addresses the legitimate needs of developing and middle-income economies in acquiring foreign-owned technological components and know-how, for the purposes of economic development. The paper concludes by outlining specific recommendations for Canada's policy makers to improve their economic relationship with China in the context of MIC 2025.

Introduction

When the State Council of the People's Republic of China (the country's central governing body) gave its endorsement to the MIC 2025 manufacturing and informational technology policy framework — consisting of a collection of research and development (R&D) funding packages, venture capital funds and public-private partnerships — the foreign business community, policy makers in the United States and the European Union, as well as many researchers, insisted that China is trying to implement a large and inefficient import-substitution plan, squeeze out foreign investors and unfairly acquire foreign technology. These grievances are perhaps the most recent iteration of long-standing complaints from advanced, industrialized economies that China is, in effect, not playing by the rules of global trade in various respects. How do we square the circle of China's rhetorical commitment to open trade with its increasing reliance on state-driven support for indigenous innovation and technology transfer?

This paper will argue that much of MIC 2025 has been viewed too narrowly — without sufficient attention to longer-term global governance issues — by a large segment of the global business and policy-making communities. In the context of foreign-invested firms' dominance in China's high-tech export sector and China's gradual liberalization of its FDI regime more generally, joint-venture requirements and the technology transfers that accompany such partnerships are fundamentally not unreasonable for a middle-income economy attempting to raise industrial productivity and move up global production value chains. Similarly, common assumptions that China's IP regime is inherently ineffective at safeguarding intangible assets and skewed toward domestic firms is not borne out by the latest available data and research. Moreover, it will be argued that China's trading partners are focusing too narrowly on China's stated goal of indigenizing "core components" of high-tech products, which are driven largely by national security concerns rather than by a desire for import substitution. This paper will show that sectoral indigenization targets are, in fact, one of several attributes of MIC 2025 and, when viewed in the context of increasingly salient problems of industry concentration and trade in dual-use technologies, also look like a rational response to the pressing problems facing Chinese policy

makers — problems that can only be addressed by reforming trade governance at the global level.

This paper will outline the MIC 2025 industrial policy umbrella. It will argue that several of the criticisms of the policy are misguided and that foreign firms remain — at least for the foreseeable future — an integral part of China's growth model. It will suggest that China's approach to innovation is not protectionist, but that it does nonetheless present significant challenges to the world's major trading powers and to those that are actively seeking trade agreements with the country. It will first outline China's FDI and IP policies in the context of MIC 2025 and then explain the policy logic and exogenous policy dilemmas that cause Chinese policy makers to continue to guide where foreign companies invest and under what conditions. It will conclude by suggesting how Canadian policy makers can move forward in their economic relationship with China and outline the implications of China's activist industrial policies for global trade governance.

Background and Motivations

China's industrial policies have been a heated topic of debate in recent years — especially so because many observers (in the US policy-making community, in particular) see them as a form of mercantilist innovation, aimed at dislodging advanced industrialized economies from their position at the pinnacle of high-tech innovation through trade diversion or FDI restriction. The new policy umbrella is titled "China Manufacturing 2025" but is more commonly translated as "Made in China 2025." There are numerous potential motivations for this scheme. Among them are: the shift from an investment-oriented and export-reliant economy to one that is characterized by services, higher value-added manufacturing and consumer-oriented growth; a desire to improve domestic innovation capacity in the high-tech sector; the desire to improve productivity in the manufacturing sector as wage growth continues to accelerate and the surplus of migrant labour from the countryside peaks and declines; and to access technology that cannot be bought through imports or FDI.[1]

The plan brings together several different policy initiatives by the Ministry of Commerce (MOFCOM), the Ministry of Industry and Information Technology (MIIT) and the National Development and Research Commission (NDRC) to scale up China's manufacturing capacity in a range of industries, including information technology, robotic manufacturing equipment, aerospace parts and manufacturing equipment, renewable energy vehicles, raw material extraction technology, pharmaceutical manufacturing and medical equipment, high-tech ship components, agricultural equipment and mobile phones. It is modelled on Industrie 4.0 — the German government's plan for using artificial intelligence (AI) and robotics to transform the country's manufacturing sector — but it goes much further than that, conveying a multi-decade plan of catching up to the technological frontier.

Although the immediate focus is on the transformation of China's manufacturing sector, the plan is highly ambitious, multi-faceted and concerns a wide array of interests, including the Communist Party of China itself, local governments, public and private enterprises, universities, think tanks and foreign companies — with all pieces carefully coordinated to make China into a leading technological superpower by the middle of this century.

Such advancements in manufacturing would hold out numerous positive externalities for other sectors of the Chinese economy, including the growing service economy, which has seen rapid growth in recent years, but still has a great potential to create jobs and contribute to China's output more generally (Chen and Whalley 2014). The 38-page MIC 2025 policy document mentions services 77 times and posits that China's ascent up the global value chain in manufacturing will expand the quality and range of professional

1 China has frequently complained that many of the technologies (such as satellite and aerospace technology) that it requires for continued growth in many of its industries are out of its reach due to "dual-use" restrictions imposed by its trading partners. Dual-use technology refers to technology that is deemed to have military as well as civilian applications. Because China is not an ally to any of the most technologically sophisticated, developed countries in the world, the scale of dual-use restrictions is potentially significant, as Li and Yang (2013) have found to indeed be the case with respect to US export restrictions to China.

services, information technology, public services and other areas of new and traditional services.

Simply put, China is looking for new sources of growth, hoping to overcome the much-feared "middle-income trap": an economic condition wherein developing countries fail to progress past the middle-income stage of per-capita GDP — a condition that is most commonly associated with a failure to climb higher on the technological value chain (Eichengreen, Park and Shin 2013). China's policy makers have committed to fostering development in what Justin Yifu Lin (2011), former World Bank chief economist and influential adviser to the Chinese government, calls "latent comparative advantage." This refers to industries that could become a source of comparative advantage, but require large initial investments to pay off in the medium and long term. Notwithstanding the merits of this strategy or its prospects for success, it is evident from the State Council's MIC 2025 document that China is following Lin's advice.

In practice, the central government has said that it would like to see the "basic core components" of technology in the above-mentioned areas produced by domestic suppliers for the Chinese market — to achieve a degree of self-sufficiency in sectors under MIC 2025 — to be increased to 70 percent (on average) by 2025; the figure is as much as 80 percent for renewable energy equipment, and as low as 40 percent for semiconductor chips (State Council 2015). The Chinese government has, over the past three years, also rolled out details about how these localization targets and China's overall industrial upgrading and technological breakthroughs will work.

The State Council's announcement of MIC 2025 was followed up by many more specific industrial upgrading policy guidelines, including a Guideline for Service-Oriented Manufacturing, a Development Plan for the Robotics Industry and a Technology Standardization Framework. Perhaps most significant of these is the plan for the development of the next generation of AI, a plan that sees China become the leading innovator in AI technology and technological applications by 2030 (State Council 2017d). This document is very much in line with the style and substance of the precedent set by MIC 2025, setting out targets for the growth of the AI core and related industries in lieu of domestic localization targets, which are already covered by MIC 2025 (for an overview, see Wübbeke et al. 2016).

Despite media, think tank and policy makers' attention to MIC 2025's sectoral self-sufficiency targets, the plan is about much more than helping Chinese enterprises compete with foreigners. In fact, in narrowly focusing on the localization targets, analysts and journalists have mistaken the means for the ends. Localization targets are just one tool to achieve the goal of helping the Chinese manufacturing sector move up the global value chain. Other policy tools laid out by the Chinese government (State Council 2015) include:

- → strengthening IP enforcement, promoting commercialization of intellectual property rights (IPRs), lowering the costs of protecting and applying for IPR for small and medium-sized enterprises (SMEs):
- → increasing credit flows to the private sector (the plan mentions setting up a "national manufacturing credit database," which appears to be a manufacturing sector credit rating system) and enhancing private enterprises' access to equity and direct credit;
- → greater regulatory oversight over product quality and de-regulation of foreign and private investment;
- → using fiscal tools such as public-private partnerships and R&D subsidies and special funds for SMEs to increase investment in manufacturing facilities upgrading;
- → deepening the high-tech manufacturing talent pool by improving the quality of education at the vocational training and university level and by encouraging cooperation between universities and manufacturing enterprises;
- → acquiring foreign technology through overseas FDI;
- → better integrating civilian and defence-based manufacturing; and
- → reducing restrictions on, and regulation of, FDI.

Looking at MIC 2025 and related industrial policies as a package, Table 1 shows the various sources of central government funding (which includes China's policy banks) that provide capital to emerging Chinese high-tech firms to scale up local operations, invest in advanced technology and acquire foreign technology through merger and acquisition (M&A) activity. It also includes

Table 1: Sources of Public Funding for MIC 2025

Source of Funding	Total Estimates (US$)	Purpose/Scope
MIIT and China Development Bank	$45 billion	Direct loans, bond sales and leasing to support major MIC 2025 projects
Advanced Manufacturing Fund (financed by contributions from state-owned fund State Development and Investment Corporation, Industrial and Commercial Bank of China and the central government)	$3 billion	Promote upgrading of labour-intensive, low productivity, manufacturing facilities into modern, machine-intensive ones
State Development & Investment Corporation Advanced Manufacturing Investment Fund	$6 billion	Financing to robot- and AI-related manufacturing operations
National Integrated Circuit Fund	$31 billion	M&A financing for acquisitions in the semiconductor industry
Emerging Industries Investment Fund	$2.28 billion	Loans to support high-tech industry product development
Major Technology Equipment Insurance Compensation System	Unclear	Loans to support high-tech industry product development
Special Constructive Fund	$270 billion	Funding for numerous MIC 2025-related projects
Shaanxi MIC2025 Fund	$117 billion	Financial support for approximately 100 MIC 2025-related projects
Gansu Made in China 2025 Fund	$37 billion	Financial support for more than 600 projects
Anhui Manufacturing Development Fund	$4.36 billion	Financing for Anhui's industrial upgrading (somewhat unclear)
Sichuan Made in China 2025 and Innovation-Driven Project Guiding Fund	Unclear	Funding for R&D in several sectors, including graphene and nine other areas
Nanjing Economic and Technological Development Zone	$1.3 billion	Create a "National Artificial Intelligence Industry Base"
Beijing Technology Innovation Fund	$3.17 billion	Funding for optoelectronics technology, big data, new materials, clean energy, AI, advanced manufacturing, health care, information technology, quantum computing

Source: Estimates and descriptions drawn from Wübbeke et al. (2016); US Chamber of Commerce (2018); China Money Network; state-owned media sources.

local government funding to provide incentives for high-tech manufacturers to locate their operations in various localities. Table 1 lays out a non-exhaustive list of loans (including venture capital and bank loans), research grants and various other regulatory and fiscal incentives (some of these being tax-based subsidies) that will serve as the backbone for MIC 2025. These funds form the core of a broader web of nearly 1,000 vertically integrated "government guidance funds" (GGFs) (Xiang 2017) that aim at scaling up SMEs and providing seed money for commercializing R&D.

It is important to note that the GGF-allocated funding does not comprise a fiscal commitment to selected industries, per se. Rather, they are targeted, aspirational venture capital and private equity funds. The actual capital is to be raised from state-owned enterprises (SOEs) and local governments for specific projects. Therefore, in some cases, the figures in Table 1 may never reach their targets and, in other cases, targets may be exceeded. It is also worth noting that the allocated money, as shown in Table 1, represents an aspirational target, not budget-allocated fiscal items. Each fund is tasked with raising cash from investors (with much of the realized financing provided by state-owned firms) for specific venture capital and R&D projects.

Lastly, while central government funding, joint-venture-based technology transfers and administrative non-tariff barriers to foreign firm business in China, all contribute to China's MIC 2025 and other industrial policy goals, potentially the most impactful and observable policy instruments at play are long-standing *local* government tax incentives. Facing rising labour costs and foreign competition in low-end manufacturing, local governments have been leading the charge of upgrading industry to replace low-end manufacturing facilities with modern, automated factories by footing as much as 10 or 20 percent of the cost of automation (Li 2018).

Perhaps the greatest misreading of the problems associated with MIC 2025 — namely, inconsistent regulatory provisions that have the effect of privileging domestic firms in some sectors of the economy and the lack of transparency about the precise nature of the government's role in China's economy (discussed in more detail in subsequent sections) — is that the plan will inevitably exacerbate these problems. As this paper will show, MIC 2025 is aimed, in part, at ameliorating the concerns of China's trading partners and foreign firms. So far, action has lagged rhetoric on many fronts, but significant progress is already apparent.

Reactions to MIC 2025

Policy makers in Europe and the United States (i.e., China's largest trading partners) have been especially critical of China's high-tech industrial policies; foreign business associations have likewise not been shy to voice their opposition to the plan (see Huang 2017 for an overview). The recent Office of the US Trade Representative (USTR) review of China's compliance with the World Trade Organization (WTO) concluded: "it seems clear 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" (USTR 2018a). The USTR has taken aim at China's technology transfer policies inherent in the MIC 2025 plan, which reflects a view that China's aim to rapidly improve its technological capabilities is a form of "innovation mercantilism" — a concept that has also been applied to Canada's IP regime (Cory 2016). And while the European Union stopped short of taking such a confrontational stance, it did essentially mimic US criticism, especially on China's high-tech subsidies, which it deems extremely market-distorting (European Commission 2017).[2]

The European Union and the United States are interpreting China's recent actions as a sign that China is not playing a fair game and are therefore actively pushing for China not to be given "market economy" status,[3] allowing them to maintain high anti-dumping duties on Chinese goods. While China's approach to world trade is currently in the spotlight — due in part to the aggressive stance on China's trade practices by the administration of Donald Trump — the conflict between China and the United States is not a Trump phenomenon by any means, with officials during the administration

2 To be sure, both the US and EU criticism go much further than rebuking MIC 2025 and include a rebuke of China's entire approach to economic policy making writ large – in particular the role of SOEs in its economy. This paper, however, only concerns China's high-tech sector policies.

3 China was given permission to join the WTO in 2001 under two conditions: that it be considered a non-market economy for the first 15 years of its membership and that its economic policies would receive additional scrutiny and could be liable for countervailing trade measures.

of Barack Obama consistently voicing such views (see, for instance, Campbell and Ratner 2018).

Responses from developed-country policy makers and businesses have generally pointed to two problems with MIC 2025 and its spin-off policies: unequal market access in China relative to that which is available to China's trading partners; and an IP system that favours domestic firms at the expense of foreign investors. These two concerns are interrelated, as China's FDI laws encourage (some say "force") the transfer of foreign IP to Chinese state-owned and private firms.

Many of these criticisms are valid. China's foreign investment regime — the lynchpin of China's industrial policies writ large — is more restrictive than is the case among those countries leading the charge of trade-related grievances toward China. As China's economy grows and matures, the extent to which the country can sustain uneven investment rules vis-à-vis its major advanced-economy trading partners is being tested. Furthermore, China's political economy departs from other advanced economies in the extent to which the state seeks to influence market outcomes. This makes trade with China a challenge for advanced industrialized economies and puts strain on the existing system of global trade governance, which, as it stands today, may not be well-equipped to deal with the nature of the dispute between China and its trading partners.

However, from the perspective of China's development — of breaking through the middle-income trap and moving up the hierarchy of global value chains — MIC 2025 and its spinoffs make a lot of sense *for China*, within the confines of the existing global trade order. Rather than scaling them back, countries such as Canada should find ways to benefit from China's continuing need for foreign technology, expertise and cooperation. Fundamentally, policy makers should be cautious of immediately holding China up to the same standards of IP standards and FDI openness as advanced, high-income economies. At the same time, based on the reactions of foreign business organizations following the announcement of MIC 2025, as well as longer-standing complaints on the part of foreign companies in China more generally, there is still significant room for improvement on the part of China's formal and informal regulations of foreign firms.

Foreign Firms in China

Multinational corporations (MNCs) gained *favourable* treatment with China's attempts to incorporate itself into global supply chains in the 1990s and 2000s. MIC 2025 is the next stage of China's manufacturing sector development: seeing the Chinese economy move to a position where foreign firms no longer claim monopoly over cutting-edge technology and expertise. Does this mean that China's industrial policy framework seeks to limit the role that foreign firms play in China's economy? Has China's policy toward MNCs changed? This section suggests more continuity than change.

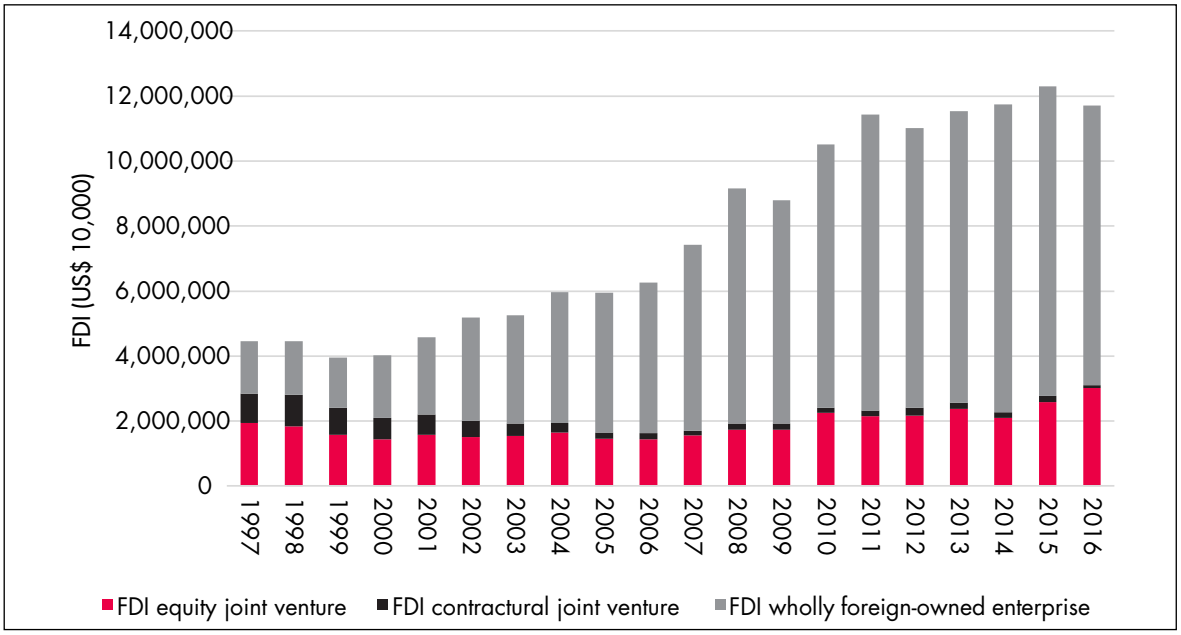
Consider the USTR's latest investigation into China's trade practices under section 301 of the US Trade Act of 1974. According to the conclusions drawn from the investigation (USTR 2018b), China's government treats American firms[4] unfairly by requiring the latter to enter into minority-partner arrangements with Chinese state-owned firms, forcing IP through these arrangements, depriving American companies of an opportunity for market-based licensing of IP, aiding Chinese companies in acquiring foreign technology through outward FDI and facilitating corporate espionage to acquire foreign technology through illicit means.

But FDI data suggests that China's FDI regime is more complex and less discriminatory than is often portrayed. Technology transfer agreements between Chinese and foreign firms typically take place through joint-venture arrangements between the former and the latter, and it is instructive that joint ventures have been steadily declining as a share of FDI relative to wholly foreign-owned incorporation over the past two decades (see Figure 1).

Technology transfer agreements are a feature of China's strategic approach to foreign investment, dating back to the late 1970s. In many industries (the list of which has shrunk over time), Chinese authorities allow foreign investors access to the Chinese market only if the foreign party agrees to establish a locally incorporated company in partnership with a domestic firm, with the foreign party holding no more than 49 percent of the joint venture. Such partnerships exist to foster technology

4 The investigation focuses on damage done to American firms. However, European and Japanese firms were also consulted; in its investigation, the USTR largely drew on the conclusions from the European Commission (2017).

Figure 1: FDI in China by Type (Actual Utilized Value)



Data source: China National Bureau of Statistics.

transfer from the foreign investor to the newly created entity. In some prominent cases, joint ventures have had limited success in transferring high-end technological IP and know-how to the Chinese partner, with high-end manufacturing components and IP continuing to be purchased directly from the foreign partner abroad.[5]

To be sure, this point cannot be made vis-à-vis the USTR's claims of corporate espionage. Policy makers need to carefully assess the risks of IP and trade secret theft in reviewing the behaviour of China's outbound and inbound FDI in a prudent way.[6] China's trading partners should also be clear about the nature of the challenge facing foreign firms in China today, as a large share of concerns among MNCs doing business in China can be attributed to stiffer competition from domestic competitors. As shown in Figure 2, the domestic market issues are especially acute for foreign firms, in part because they occupy a disproportionately large share of the output in the domestic high-tech sector, despite facing both formal and informal regulatory restrictions to doing business in mainland China. In other words, it could be the case that we are witnessing foreign firms being dislodged from their historical position of privilege in high technology, consumer goods and export-oriented sectors of the Chinese economy. Fundamentally, this is not a problem *if* the shift is largely driven by factors related to market-based competition.

Complaints about China's unfair trade practices are as old as China's membership in the WTO.[7] However, the nature of the debate today is quite different from what it was in the first decade of China's WTO membership, when China was frequently accused of exchange rate manipulation, as well as other export subsidies (such as tax rebates), both of which were widely seen as artificially inflating its exports at the expense of its trading partners. These are legacy issues from the 2000s — not only is China's exchange rate regime no longer a significant trade-related issue (Lardy 2014), its exports as a share of GDP have shrunk significantly, very much in line with expectations of what should take place when an economy becomes more productive, domestically oriented and moves up the ladder of technological sophistication (Kruger, Steingress and Thanabalasingam 2017).

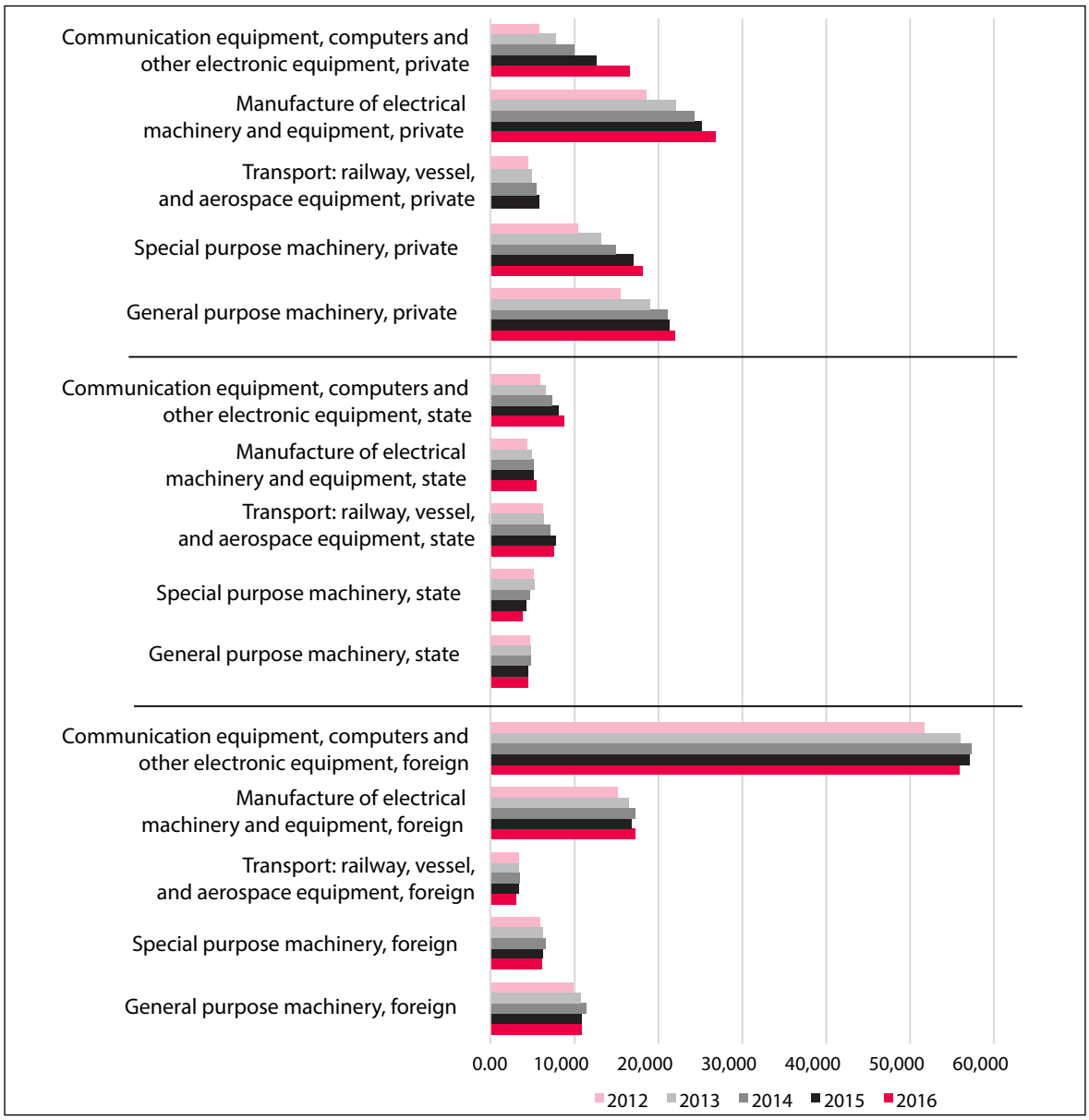
Moreover, one of the main changes in Chinese industrial policy over the past decade has been the elimination of direct and indirect subsidies to

5 See Chin (2010) for an examination of China's automotive industry.

6 It should be noted, however, that incidents of corporate espionage and trade secret theft have markedly declined since 2014 (FireEye 2016).

7 Indeed, they are perhaps even older, given the long debate about China's WTO accession in the 1990s; see Lampton 2001.

Figure 2: Sales Value of Industry by Ownership Type (100 million RMB)



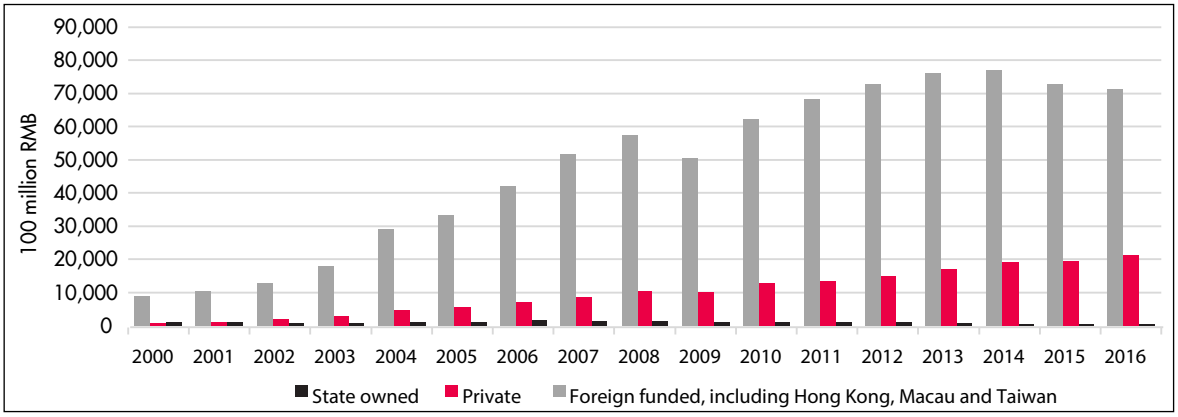
Data source: China National Bureau of Statistics.

foreign firms. Despite this, as Figure 3 suggests,[8] the gains from China's historically large external trade surplus has consistently accrued to foreign firms. While China's western cities and provinces continue to rely on tax incentives to attract foreign investment (Ernst & Young 2017), the shrinking of the current account surplus that ramped up significantly following the country's entry into the WTO in 2001 is the long-term trend.

In this respect, it could be said that a successful MIC 2025, with its focus on the domestic market for high-tech goods and services, could potentially mean a reduction of China's external surplus vis-

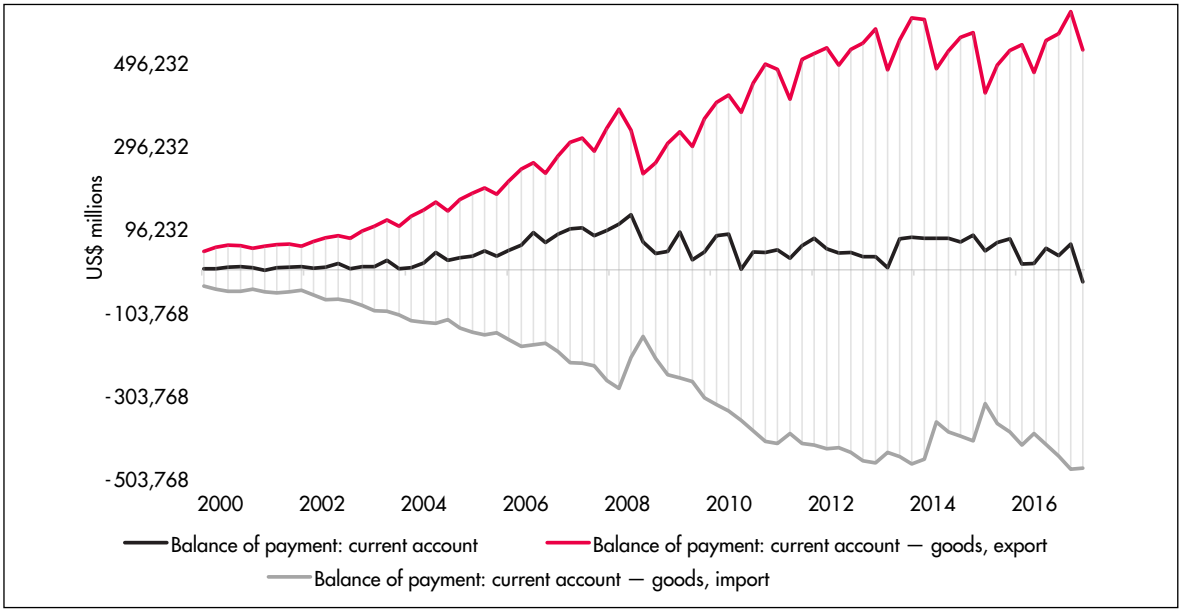
8 It should be noted that Figure 3 does not represent an exact estimation of the actual value of export delivery. It is difficult, if not impossible, to provide a precise estimation due to a phenomenon called "round tripping," whereby capital outflows are disguised as FDI upon returning to China, with the aim of taking advantage of the erstwhile advantages granted to foreign-invested enterprises. By some estimates, round tripping capital amounted to as much as 40 percent of FDI prior to 2008, but decreased markedly to 14 percent by 2014, as export-based subsidies for foreign invested enterprises were gradually phased out. See Aykut, Sanghi and Kosmidou (2017) for a discussion.

Figure 3: Value of Export Delivery of Industrial Enterprises, by Origin of Capital



Data source: China National Bureau of Statistics.

Figure 4: China Current Account Balance



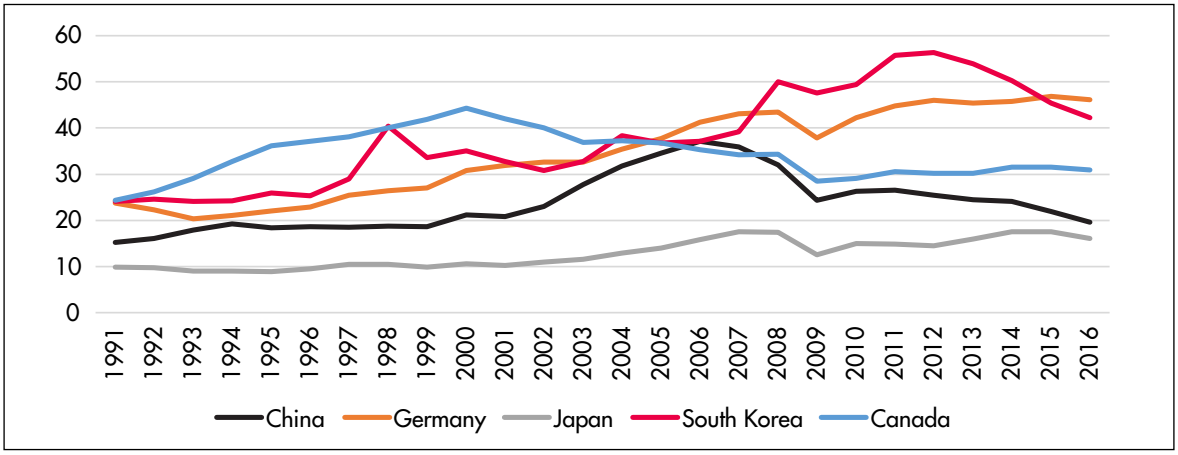
Data source: CEIC, www.ceicdata.com/en.

à-vis China and its trading partners. To this end, it should also be noted that China's external surplus, which peaked in 2007, has gradually declined over time and continues to do so (see Figure 4). Even if China's trade in goods continues to remain in surplus, it is notable that China's trade in services has been in deficit since roughly 2010 and continues to grow.[9] Moreover, China's shrinking goods surplus and growing services deficit is something that the country's economic planners are anticipating, if not actively facilitating (see, for example, Leng 2018).

As Brad Setser (2018) points out, China's manufactured goods trade balance is currently roughly seven percent of the country's GDP, suggesting that Beijing's trading partners still have some legitimate grievances about the macroeconomic implications of China's efforts to ascend global manufacturing value chains. At the same time, it should be noted that when trade in services is considered alongside goods, China's export share of GDP is far less than that

9 For a general overview and sector-specific data on China's trade deficit see MOFCOM (2018, Table 1).

Figure 5: Exports of Goods and Services (% of GDP)



Data source: World Bank.

of South Korea or Germany — and even less than that of Canada, as Figure 5 illustrates.

Since China's accession to the WTO, rapid wage growth has precipitously squeezed the profit margins in mid- and low-end value-added manufacturing, and China's post-2008 stimulus package, defined by its reliance on ramped-up domestic infrastructure spending, has produced an increasingly unmanageable rise in corporate debt (McMahon 2018). MIC 2025 was one of the pillar policy responses to this dual dilemma of shrinking export revenues and mounting domestic debt. This transition sees China moving up the value chain by channelling state-owned capital investment away from energy- and capital-intensive resource-extracting industries toward more efficient upstream production activities (such as clean energy) and foreign investment to acquire foreign technology, and by encouraging foreign capital to move away from low-end electronics assembly and into the technological frontier.

Foreign firms and governments were taken aback by this plan largely because they expected Beijing to steer reform in a different direction: toward greater SOE privatization and accelerated FDI regime liberalization. Given the lacklustre progress on both these fronts, the backlash against MIC 2025 would seem to come from a view that China has changed its trade regime and policies toward an inherent bias against foreign firms. In fact, lost in the recent slew of commentaries and analyses of MIC 2025 is a fundamental distinction between the export sector in China and the domestic market, with the former historically biased toward foreign firms (Huang 2008) and the latter biased toward domestic players (Huang 2017). As China's domestic market rapidly expands, foreign firms naturally lose ground to domestic competitors; a great swath of China's services industry remains under the "restricted" and "closed" categories of the government's list guiding foreign investment.

Last year, the State Council has also published a circular document on "Expanding the Measures for Opening up and Making Active Use of Foreign Investment," which lists ambitious (but not specific) goals of lifting administrative burdens and market access limits in a wide swath of sectors, ranging from mining to manufacturing, and promises to lift minimum registered capital requirements for foreign enterprises. The circular also promises to allow foreign enterprises to participate in national science and technology planning projects (an important component of MIC 2025 and other plans) and to receive preferential R&D and other policies aimed at high-tech enterprises (State Council 2017a). To this end, MOFCOM recently announced some significant FDI liberalization measures, including the lifting of foreign joint-venture requirements in the automobile sector (Shirouzu and Jourdan 2018) and removing restrictions on foreign ownership in sectors like banking (NDRC 2018).

It remains to be seen whether these moves toward FDI liberalization are sustainable into the future, and whether Chinese policy makers can address other significant issues facing foreign businesses there, including favouring domestic companies in some sectors via uneven enforcement of laws, regulatory inconsistency

and privileged treatment of domestic private companies in which local governments hold stakes.

Foreign firms are also weary of the fact that almost every industry category slated by MIC 2025 for development is one where foreign firms operate in the "restricted" category of China's current foreign investment catalogue (telecommunications and aerospace being prominent among them). Foreign firms also worry that, given the already vast and constantly growing size of China's domestic market, saying "no" to a specific technology transfer contract with a joint venture is not an option, as it would inevitably mean ceding ground to competitors. This suggests that businesses are concerned about China's market power. Not incidentally, this is the mirror image of the dilemma facing Chinese policy makers: a shrinking number of MNCs taking an ever-greater share of global output in their respective industries. To counter this trend, however, China is working to not only strengthen the competitiveness of domestic firms, but also to level the competitive environment for all firms within China's borders. This trend is most evident in the case of IPR development in China.

IP Governance in China

Since the early 1990s, China has become infamous for having a weak and ineffective IP regime, rampant with patent, copyright and trademark infringement. China, like many developing countries, has struggled with cutting the Gordian knot of pursuing technological adaptation while abiding by increasingly strict international IP norms. Although FDI policy, as discussed above, remains a point of contention between China and its trading partners, many observers would be surprised to learn that China has made substantial progress in enforcing and protecting IP — beginning in earnest with the Medium- and Long-Term Plan for the Development of Science and Technology promulgated in 2006.

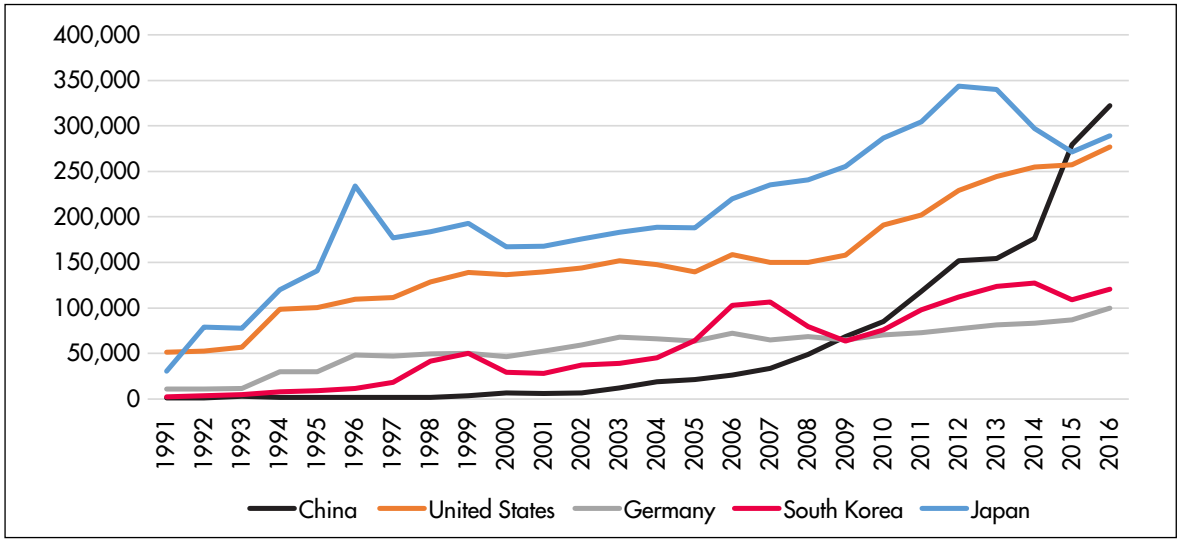
Chinese authorities have, over the past decade, taken significant steps toward creating a functioning, sustainable IP system to accommodate a rapidly expanding private sector in the domestic market — which boasts the presence of both domestic and foreign multinational companies. In 2008, China released its National Intellectual Property Strategy, which set out specific goals and benchmarks and a guiding strategy for an IP system that both converges with global norms and gives China policy space to pursue a nationally specific industrialization and innovation policy. The document calls for a proliferation of patents, copyrights and trademarks registered in China and abroad by Chinese citizens and foreign enterprises alike, for greater legal protection of IP and for the rise of the share of IP assets as a share of GDP. It stipulates that "by 2020, China will become a country with a comparatively high level in terms of the creation, utilization, protection and administration of IPRs" (State Council 2008).

To be sure, the 2008 IP strategy was largely focused on creating an indigenous IP regime and did not lay out a detailed commitment to balancing the interests of domestic and foreign IP originators and protecting foreign holders' IP assets. Over the years, however, efforts to protect foreign IP holders' rights ramped up as well. At the outset, many foreign firms were not impressed at the promises made by China's leadership. In a tone that would reflect the contemporary debate on the goals and intentions of the MIC 2025 policy, a 2010 US Chamber of Commerce paper (McGregor 2010) suggested that the core of China's industrial upgrading policy amounted to a government-led effort to steal or intimidate foreign enterprises to transfer their technology to domestic counterparts (similar concerns were raised by the EU Chamber of Commerce in China [2017] in its report on the MIC 2025 plan).

However, 2010 was the same year that China's 12th Five-Year Plan stipulated concrete quantitative targets for IP protection. For instance, between 2010 and 2015, China's policy makers targeted 3.3 patents for every 10,000 residents and, in practice, achieved nearly double that amount (Love, Helmers and Eberhardt 2016). In 2016, the State Council's "Outline of the Judicial Protection of Intellectual Property in China" (State Council 2017c), specifically called for the equal enforcement of IPRs for foreign firms. The following year, 12 central government agencies released a joint proclamation agreeing to coordinate on enforcement of foreign firms' IPRs, including combating trademark infringements, online piracy and trade secret theft (State Council 2017b).

Some have accurately noted the derivative nature of many of the patents that have come into force over the past decade — namely, the tendency of new IPRs in China to build on existing

Figure 6: Total Patent Grants (Direct and Patent Cooperation Treaty National Phase Entries)



Data source: World Intellectual Property Organization (WIPO).

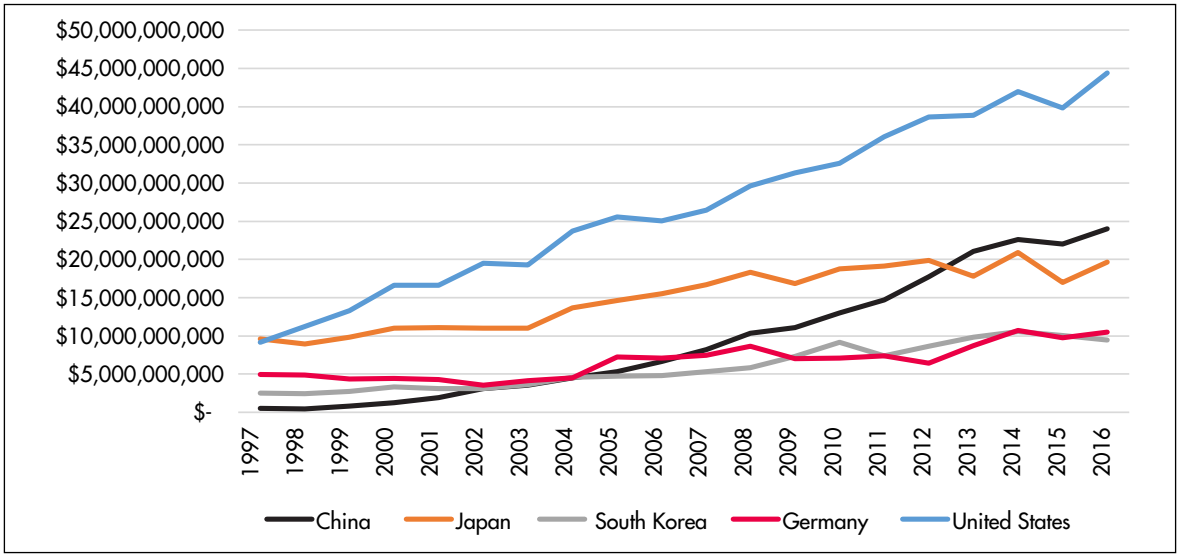
inventions, rather than to patent or trademark fundamentally new technologies (see Kennedy 2017). This observation is in line with what several studies have found to be the defining character of China's technological catch-up and innovation: scaling, commercializing and reducing the price of existing technologies and the time that these technologies take to reach the mass market, rather than focusing on bringing novel technologies to market (see Nahm and Steinfeld 2014). This process often relies on partnering with foreign companies to develop existing technologies for the Chinese domestic market before going global (ibid).

As Figure 6 illustrates, the total number of patent grants to Chinese-originating entities compared with those of other technologically sophisticated manufacturing countries has sharply risen over the past decade. Similarly, charges for the use of IP payments (see Figure 7) have also risen precipitously since the mid-2000s, suggesting that the government's plan to commercialize and improve the enforcement of IPRs has seen some traction. What we are seeing is, in fact, the very early stages of the development of IP commercialization and enforcement. In a country that had virtually no effective IPR system until the early 1990s, and no officially sanctioned private economy until the late 1990s, the figures belie the long-standing assumption that China's economy lacks IPR protection.

More importantly, looking at *how* IPRs are enforced in China, it is notable that, in the face of suspicions that China's IP system exists to benefit indigenous Chinese firms and that China's high-tech industrial policies seek to ramp up IP mercantilism, in practice, foreigners tend to fare as well as, or better than, their Chinese rivals in terms of securing favourable rulings in patent infringement lawsuits. Indeed, they are disproportionately successful in patent infringement disputes (as plaintiffs or defendants) with domestic entities, and receive more in damages, than in cases involving only domestic litigants (Love, Helmers and Eberhardt 2016). Moreover, it should be noted that China's registration in Organisation for Economic Co-operation and Development (OECD) "triadic" patent families — those that receive protection in Japan, the United States and the European Union — has also risen substantially (see Figure 8).

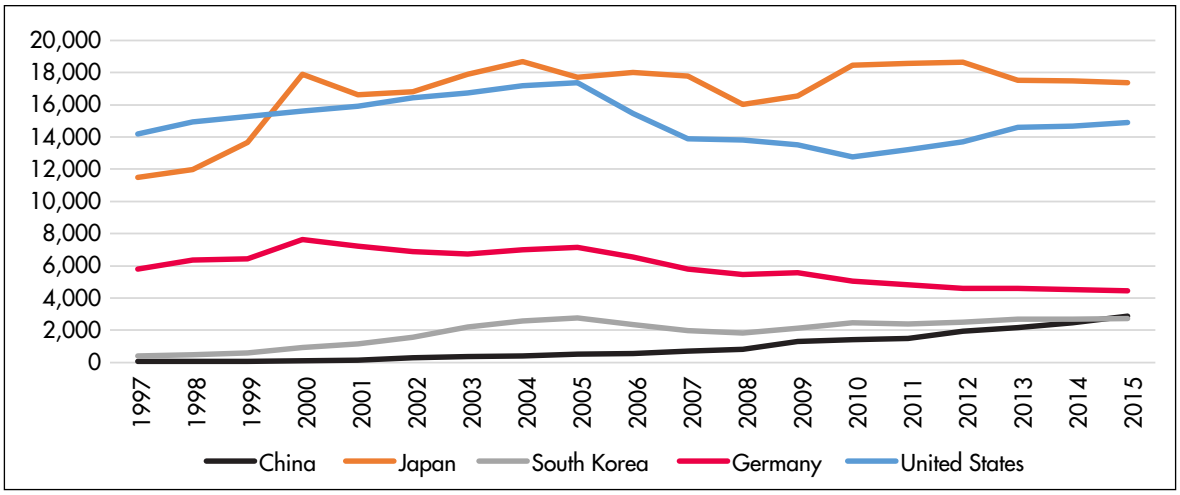
Although China's numbers in this category are not nearly as high as those of leading countries, the United States and Japan, it is on par with other significant IP-registering countries, namely Germany and South Korea. Moreover, although some have noted the importance of triadic patent family grants as a barometer for measuring the quality of Chinese patents (Kennedy 2017), it is important not to overstate the implications of filings under this family of patents. There are many reasons that Chinese applicants may choose to forego filing a triadic patent, including long processing times

Figure 7: Charges for the Use of IP, Payments (Balance of Payments, current US$)



Data source: World Bank, https://data.worldbank.org/indicator/BX.GSR.ROYL.CD.

Figure 8: OECD Triadic Patents (by Quantity)

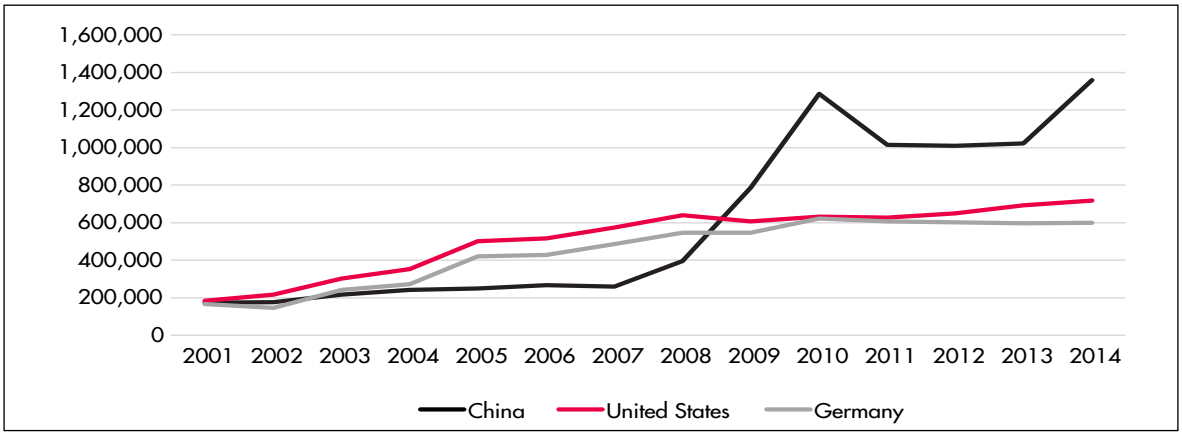


Data source: OECD, https://data.oecd.org/rd/triadic-patent-families.htm.

(in some cases, as long as six years [China Power 2016]) and simple cost-benefit calculus (they are expensive, and do not make sense for Chinese companies that do not have significant business interests abroad). China's lower level of triadic patents, relative to the United States and Japan, may also tell us more about the dominance of American and Japanese MNCs in global markets than about the progress of the Chinese IPR regime. Moreover, patent "quality" is not an objective measure of IPRs but refers to the *commercial* valuation of particular patents (see Berman 2015). As such, triadic filings tell us more about the internationalization of the Chinese IPR regime than its progress at home.

The trademark system has exhibited a similar pattern of development, especially following the release of the Medium- and Long-Term Science and Technology Development Plan. Figure 9 shows the remarkable growth of trademark registrations since 2006 in China — a country that has occupied the popular imagination of developed-country audiences as a bastion of fake brands and copycat products. Most remarkably,

Figure 9: Total Trademark Registrations (Direct and via the Madrid System)



Data source: WIPO.

criminal prosecution of trademark infringement and substandard and counterfeit goods has, likewise, grown dramatically, with China taking sixth place in terms of trademark registrations in the Madrid System of international trademark protection (State Intellectual Property Office of the People's Republic of China 2015, 7).[10] With respect to copyrighted material, the Chinese government has been proactive in updating and enforcing its copyright laws to include robust protection of digital content and has signed numerous agreements with foreign governments to protect copyrighted material across national jurisdictions.[11]

Under the MIC 2025 framework, Beijing has suggested that foreign companies are invited to participate in standards setting and indicated the government's desire for Chinese firms to contribute to global standard setting, as well as the development of Chinese-originating standard-essential patents (SEPs). As Dan Breznitz and Michael Murphree (2013) have shown, while foreign firms have largely been left out of China's indigenous technological standards-setting process, the process has not resulted in the proliferation of Chinese standards. Instead, it has led to a decline in the price that foreign-IP holders must pay for SEP technology. However, as Chinese businesses continue to globalize and, most crucially, as Chinese firms continue to move up the hierarchical ladder of global value chains as envisioned by MIC 2025, it would not be entirely surprising to see China's emphasis on SEP cost-cutting decline and gradually conform to global standards.

As Figure 10 shows — illustrating China-originating PCT publications in the fields of frontier technologies, including digital communications (10.1), computer technology (10.2), audio-visual technology (10.3) and semiconductors (10.4) — Chinese IP is increasingly being filed under WIPO's Patent Cooperation Treaty (PCT), meaning that technologies have cleared a pre-filing stage in major IP jurisdictions all at once.[12] Typically, universities comprise a disproportionate share of PCT applications (WIPO 2014). This is because universities are typically involved in "upstream," exploratory R&D and do not have the resources or mandate to determine the commercial potential of their inventions — this is what the PCT system helps them to achieve. However, in China, applications are dominated by business applicants (ibid.). This suggests that Chinese firms are looking to internationalize the commercialization of their IP assets. Thus, Chinese IP commercialization looks to be market-driven and increasingly global in scope.

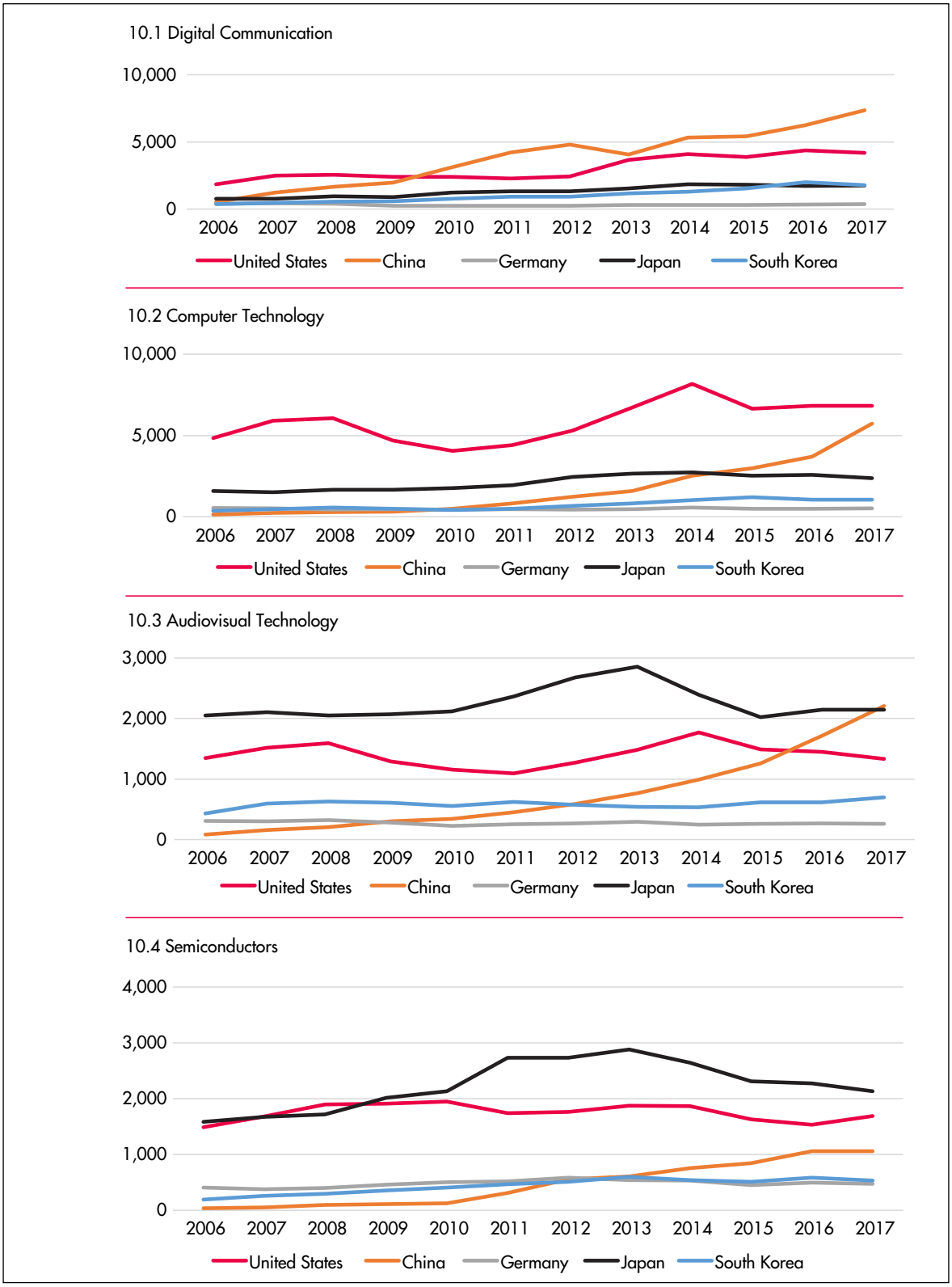
As the figures below show, in several categories of technologies, the quantity of patents filed by China-originating applicants is now competitive with

10 The Madrid international trademark system allows for simultaneous protection of national trademark registration in up to 117 member countries at once.

11 For a full list of domestic IP laws and international IP treaties to which China is a party, see www.wipo.int/wipolex/en/profile.jsp?code=cn.

12 It should be noted that PCT applications (successful or not) do not constitute effective patent grants. The PCT filing phase only assesses the *patentability* of an invention or technology, it does not grant a legally enforceable patent in any particular jurisdiction. The "national phase" of the application is where the PCT grant becomes legally protected in one or multiple jurisdictions (see WIPO 2017).

Figure 10: Number of PCT Publications by Country of Origin



Data source: WIPO.

other technologically advanced economies such as Germany, Japan, South Korea and the United States. This is significant because in fields such as digital communication and computer technology, leading Chinese private sector firms, for example, Huawei, ZTE and Ali Baba, file most of their invention patents outside of China and actively participate in technology transfer schemes involving universities and other research centres (Bay Area Council 2017).

China's *influence* in the global patent order still lag behind those of the major economies. In particular, China's efforts to become influential in generating SEP assets and amassing SEP portfolios is still limited (Ernst 2017). Indeed, Chinese private technology firms have been struggling to compete directly with their foreign counterparts precisely because it is notoriously difficult to move from buyer to seller of SEP licenses in an environment when enforcement of patent rules is becoming stronger.

The IP development trend in China is positive, when judged from the perspective of commercialization, adjudication and enforcement. While China's system of IPRs may ultimately become distinct from that favoured by countries that today control the bulk of the world's intangible assets, it is worth noting that the proliferation of patents has taken place precisely in those areas of manufacturing emphasized under MIC 2025. As Brian J. Love, Christian Helmers and Markus Eberhardt (2016, 713) have found, irrespective of whether policy makers sought to create an IP regime favouring domestic companies, they "appear to have created a system that often benefits foreign interests at the expense of domestic ones and that also generates a good deal of litigation among domestic firms."

China's Industrial Policy Reconsidered

The preceding analysis of China's plan to move up in the value chain of global trade, suggests that foreign firms continue to play a significant role in China's economy (especially in the tradeable goods sector, but also in retail and consumer goods) and that China's national IP regime is rapidly strengthening and internationalizing IPR protection and commercialization. At the same time, China continues to widely utilize joint-venture requirements to indigenize imported technology and to prioritize the transfer of IP assets to Chinese firms and to China's domestic economy. If these policies do not violate the written rules of the WTO, do they violate the spirit of open trade and reciprocity in global trade governance more generally?

This section suggests that the answer is far from straightforward. China's industrial policies highlight the continued challenges associated with creating mutually beneficial, global rules governing cross-border trade and investment, while leaving sufficient "policy space" for developing countries to pursue domestic priorities. In the case of China, this refers to the capacity for addressing global market concentration issues as well as the challenge of reconciling national security priorities with the need to reduce frictions in the cross-border movement of goods and services.

These dilemmas are also, in the case of MIC 2025, inherently intertwined. Consider, for example, China's emphasis in fostering indigenization of the semiconductor sector. The recent brief ban[13] on Chinese telecom giant ZTE's purchase of American components (most notably Qualcomm's semiconductor chips), imposed on the company for violating US-led sanctions on Iran and North Korea, has brought China's semiconductor "core components" indigenization strategy to the forefront of political and academic debate on China's industrial policy. In fact, Chinese policy makers have made semiconductor chip manufacturing competitiveness a national priority as early as the late 1980s. Indeed, ZTE is itself in part a product of China's semiconductor market push. It is no secret that the purpose of this policy is not simply economic competitiveness — although competitiveness is certainly one of several motivating factors (see Keller and Pauly 2007) — but national security as well. The ZTE case has only reinforced Beijing's perception that, with respect to telecommunications components (for civilian and military use alike), "US supply is not reliable" (*Global Times* 2018).

13 The ban was temporarily lifted, on conditions of a management reshuffle, a hefty fine (said to be US$1.19 billion) and hiring an American compliance officer to monitor the company's sales (Swanson 2018).

Global Industrial Concentration

The ZTE case also highlights the problem that technological monopolies pose for China's development. It is easy to dismiss China's semiconductor industry core components indigenization strategy as an attempt to discriminate against foreign companies. China's policies in this industry should not obscure the fact that industry concentration, marked by sub-sector monopolies in various segments of semiconductor manufacturing and design, coupled with export controls, make it increasingly difficult for Chinese producers such as Huawei and ZTE to catch up to dominant industry players such as Samsung, Toshiba, Qualcomm and TSMC. A 2011 study by McKinsey found that Chinese companies influence as little as one to two percent of the design of the finished semiconductor chips globally and generate less than four percent of global revenue in this sector, despite the Chinese market accounting for nearly 33 percent of the aggregate global market of the semiconductor industry (Kaza et al. 2011). Indeed, even in the context of China's technology transfer policies, access to foreign technology in various segments of the global semiconductor market is nearly impossible, due to national-security-related export controls administered by Washington and Taiwan — two leading producers of semiconductor technology.

The issue of market concentration policy presents us with a policy dilemma of potential zero-sum gains: if China is to move up the technological ladder and create incentives for domestic firms to protect their R&D at home (rather than in the United States) and to incentivize innovation and productivity gains at home, foreign multinational companies could, in effect, lose out in the long-run. This could be interpreted as a fundamental threat to MNCs' home country interests (Starrs 2013), but it does not have to be. For instance, in 2015, China fined US telecom supplier Qualcomm for abusing market power in bundling SEPs with non-SEP technology licenses to create 100 percent market dominance in one segment of the handset-based cellular chip market (see Harris 2015). While this decision certainly harms Qualcomm, it provides direct benefits not only to Chinese firms that purchase Qualcomm's equipment, but also to the global consumers of cellphones.

Therefore, as China moves up the technological value chain, we should be cautious of a chorus of powerful, multinational business interests pushing for emerging economies such as China opening their domestic markets in accordance with their specific commercial interests. The existing literature on multinational business lobbying in multilateral and bilateral trade agreements suggests that import-competing industries have been far less successful in shaping the outcomes of trade agreements than export-seeking commercial interests seeking to improve their competitiveness in overseas markets (Rodrik 2018). Moreover, policy makers should keep in mind that reducing the number of sectors subject to joint-venture restrictions from China's investment regime also means a much slower rate of technology transfer and technological innovation.[14]

This does not mean that advanced economy policy makers should not seek a more balanced investment regime vis-à-vis China. In pursuing market opening in China — as China's developed country trading partners have consistently done and continue to do — policy makers should not confuse technological late-comer policies for free-riding behaviour. We should also be aware of the growing array of new obstacles to development that emerging market economies face today, most notably the growing market concentration in the field of frontier technological development (see Poon 2014). Not only are global production/value chains essentially hierarchical (Ernst 2017) but so is IP more generally, wherein IP-related monopoly rents confer benefits on incumbent firms from countries that set global IP rules (Schwartz 2017).

The issue at hand is that a significant part of the profitability of today's leading MNCs comes from monopoly rents accrued from their IP assets.[15] China's policies to commercialize and internationalize domestic firms' IP portfolios are a potential threat to this profitability. In the presence of joint-venture requirements in several strategic sectors, it certainly appears that the Chinese state is actively facilitating the competitiveness of domestic firms at the expense of their foreign competitors. Policy makers should be mindful that China is

14 Kun Jiang et al. (2018) have found that the positive technological spillover effects are nearly twice as high in the presence of joint-venture firms than in the presence of wholly foreign-owned enterprises.

15 For instance, IP assets comprise nearly 70 percent of the value of publicly listed US firms (IP Commission 2013).

not unique in this respect and that even the US government has been, and continues to be, very active in the development and commercialization of cutting-edge technology and the IP assets that accompany such development (Weiss 2014).

Furthermore, while "forced"[16] tech transfer and corporate espionage is certainly a cause for concern for global trade governance, reducing or eliminating instances of unwanted tech transfers is unlikely to quell the disputes between China and its developed-country trading partners. This is because the deep-rooted grievances expressed by China's trading partners are normative disagreements about the role of the state in a modern, technologically driven economy. The dilemma facing policy makers is striking a balance between the anti-competitive effects of foreign investment restrictions and the positive externalities these restrictions generate.

Dual-use Technologies in Global Trade

As noted in the recent USTR section 301 investigation, China's state-owned and private enterprises also actively acquire foreign technology through foreign M&A and green field investments. These policy levers are problematic for China's trading partners not because they contravene the concept of reciprocity, but because they concern Beijing's access to dual-use technology produced in advanced economies. Canada and other advanced economies are legitimately worried that China uses overseas investment for non-commercial purposes. Not incidentally, Beijing is worried about China's dependence on foreign technology exposing the country to national security vulnerabilities (Cai 2018). Simply put, this is a problem because Beijing is not a military ally of any developed country. It is, therefore, unsurprising that the US Department of Defense is leading the push to counter China's technological upgrading policies, which it sees as a direct threat to US national security (Delaney 2017).

In this respect, the debate surrounding MIC 2025 is a symptom of a broader trend. How should trading partners maintain the free flow of goods and services across borders, when a new area of commercial development — with wide-scale, cross-industry applications and a potential to radically alter the landscape of both services and advanced manufacturing alike — is also an area with widespread present-day and potential defence technology applications? This is precisely the dilemma surrounding China's Next Generation Artificial Intelligence Development plan. Although conceived after and outside of the original framework of MIC 2025, it pursues similar goals and utilizes similar policy tools. Issued by the State Council in 2017, the plan calls for collaboration between public and private enterprises to develop technology in China, recruitment of R&D talent and multinational companies to develop AI technologies in collaboration with Chinese universities and companies and even relies on GGF funding (as illustrated in Table 1) to provide venture capital to burgeoning AI firms.

Although AI is a frontier technological industry — meaning that China (in tandem with the United States) is leading the way, not supplanting incumbents — the US Department of Defence has nonetheless expressed concern that China's development of AI technology, insofar as it draws on US-funded research and talent, harms US interests (Brown and Singh 2018). This is deemed to be the case because of the wide-ranging defence-related applicability of many of the burgeoning technologies in AI and beyond. This "dual-use dilemma" (Kania 2018) is becoming increasingly salient in global economic governance, exacerbated by the Chinese AI plan's explicit insistence on "open-source" innovation via sharing of research and resources among the private sector, universities and the military (State Council 2018). While defence procurement may not be the primary goal of the plan, the case of AI development nonetheless speaks to the increasing salience of national-security-related issues that permeate trade in emerging technologies.

16 The idea that technology transfer arrangements are forced is not shared by all segments of the foreign business community in China (see Roach 2018).

One could make the counterargument that Beijing's subsidies and intangible assets indigenization drive are far more aggressive than their US counterparts — or, more relevantly, than erstwhile efforts by Japan, South Korea and Taiwan special administrative region. China's policy makers today face a far more stringent global trade governance regime than that which existed when newly industrialized countries such as Japan and South Korea were developing their high-tech sectors. Prior to the mid-1990s, and especially prior to the 1980s, much of the discussions on lowering trade barriers were about reducing tariffs and quotas, not about dealing with intangible assets, reducing innovations subsidies and addressing global IP harmonization.

This underscores another important dilemma in global trade governance: integrating idiosyncratic industrial policy regimes into the global rules-based trade framework. In China's domestic market, both domestic and foreign firms do better when their business strategies align with the long-term development goals of the Communist Party. This makes China's domestic markets distinct from those seen in advanced economies. This distinction is creating tensions within the global trade order, which was envisioned by its architects as a global economic space for liberal market economies that are defined by a relatively clear separation of markets from states — a separation that is (perhaps deliberately) not well institutionalized in China. It is, therefore, China's political system, as much as its economic system, that fans the flames of tension between China and its trading partners. Political disagreements should not obscure the fact that developed and middle-income countries alike are facing real obstacles to economic development stemming from the increasingly pressing problem of global industrial concentration.

Recommendations for Canada

Help Make MIC 2025 Work Better for Canadian Firms

As a latecomer to today's rapidly evolving technological landscape, China's policy makers have set themselves an enormous task: catch up with advanced, industrialized economies in less than two decades, or be forever mired in the dreaded middle-income trap and face premature de-industrialization and economic stagnation.[17] If China's recent history is any indication, continued productivity gains and economic growth will also improve labour practices and gender equity in China (see Yang 2017; Chan and Nadvi 2014). This would certainly reflect the current Canadian government's progressive trade agenda and would be seen by some to be consistent with the logic that has led to the recently signed Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

In this respect, it is worth considering once again approaching the subject of a bilateral trade treaty with Beijing. China's trading partners have legitimate grievances about how China's interactions with foreign business have evolved over the last three decades. That MIC 2025 appears to be aimed at addressing some of these problems looks — at least in some ways — like a positive step forward. But implementation is what counts — not rhetorical commitment. And while Canadian firms could certainly find ways to benefit from this increased demand for their goods and services in China, the rapidly evolving regulatory landscape overseeing foreign-invested enterprises makes it notoriously difficult for new entrants to navigate the Chinese market (US Chamber of Commerce and Bain & Company 2018). Using bilateral trade negotiations to help reduce regulatory uncertainty and regulatory compliance risks[18] would contribute to bridging

17 China needs rapid productivity growth for several reasons, not least of which is to service large corporate and local government debt accumulated over the past decade.

18 For instance, regulatory uncertainty and regulatory compliance risks were noted as the first- and third-most pressing obstacles (respectively) to doing business in China, according to a US Chamber of Commerce and Bain & Company (2018) joint business climate survey.

the interests of Canadian businesses with the goals of MIC 2025 and other industrial policies.

Lean on Emerging Chinese IP Standards to Push Back against US-led Standards

Considering the positive developments in the IPR landscape in China, Ottawa should also reassess its engagement with China on issues related to IP, especially when viewed in the context of Washington's favoured "maximalist" approach to cross-border IP protection (see Halbert 2011). Although China is adopting many global standards and practices in IP protection and enforcement, the country's policy makers are also engaged in building a national IP portfolio, influencing the setting of global standards and increasing Chinese firms' IP competitiveness. In other words, Beijing is implicitly advocating allowing for greater policy space (within the existing global trade governance regime) for countries to protect domestic IP assets and to control their movement across national borders.

The Government of Canada recently released its own IP strategy, which seeks to actively protect Canadian firms against burgeoning anti-competitive practices in the Canadian and the global IP landscape. Ottawa should find comfort in the fact that China is thinking about IP in relatively similar terms. This provides Canada with an important ally in pursuing more policy space for nurturing domestic innovation and a more competitive global IP framework, where developing countries and small open economies can resist harmonizing their IP laws with those of the United States and other large economies with a comparative advantage in IP assets. In this respect, the US withdrawal from the Trans-Pacific Partnership agreement was a positive outcome for Canada.

The watered-down IP protection measures and, more broadly, enhanced policy space under the CPTPP agreement makes it easier to engage China on trade and allows for a negotiated middle ground between China's industrial policy and the demands of advanced economies for greater cross-border convergence on IP standards, trade in services and FDI policy. Given Canada's long-standing interests in resisting US-favoured IP protection standards, Ottawa's interest in greater economic engagement with the Asia-Pacific region, and its relative willingness to accept Chinese direct investment, there is ample common ground to build on for future trade negotiations between Ottawa and Beijing. Moreover, it is notable that the ongoing China-Japan-South Korea trilateral free-trade agreement negotiations demonstrate China's increasingly flexible approach to cross-border IP governance, especially as innovation and R&D gains more importance (Zhang 2016).

Finding Synergies with MIC 2025

It is no secret that the Canadian manufacturing sector's contribution to Canada's GDP has declined; equally notable is the manufacturing sector's declining contribution to Canadian exports since the early 2000s (Boothe 2015). Today, Canada's manufacturers cite a lack of clients, business partners, new markets outside of Canada and problems attracting and retaining skilled labour as their top business challenges (Canadian Manufacturers and Exporters 2016). In this context, Canadian policy makers should also consider developing a national strategy for sectors such as intelligent manufacturing, robotics and telecommunication technologies that takes advantage of China's need for skilled labour, foreign partners, and greater innovation in fields such as intelligent manufacturing.

Moreover, as a study by German think tank MERICs has found, there are many opportunities for German companies to participate in MIC 2025 to help China move up the technological value chain, noting that high-tech catch-up policies present unique opportunities for mutual commercial gain for German companies, and that foreign companies should seize the opportunity for selling technology and entering China's advanced manufacturing industry while the window of demand for foreign technology in China is still open. As the authors bluntly put it, Chinese industry will advance, "if not with German assistance, then with products made by other international competitors" (Wübbeke and Conrad 2015, 1). Policy makers in Canada should also be contemplating this potential medium- and long-term trade-off.[19]

19 It is likewise important, as Jost Wübbeke and Björn Conrad (2015) suggest with respect to data security, to make sure that the terms of foreign-Chinese company partnerships are clearly and carefully set, avoiding unintended loss of sensitive trade secrets and IP. In this instance, Canadian businesses will likely need the government's support and could benefit from general foreign investment terms set out in a free trade agreement or bilateral investment treaty.

Taking a Lead in Global Trade Governance

In crafting a policy strategy in response to MIC 2025 and other facets of China's industrial policy, Ottawa also has an opportunity to continue to play a leading role (as it did in the establishment of the Bretton Woods system of global governance) in shaping a new cooperative, stable world order. During the postwar reconstruction period, Canada played a disproportionately influential role in mediating between American and British interests in the global economic governance order. The present withdrawal of US leadership on this front provides opportunities for Canadian leadership on a renewed global trade and governance order that tackles issues of industry concentration and the growing security-related issues of global trade and investment. Making the global order amenable to the needs of middle-income and small open economies, while keeping the global economy open, should find sympathetic ears in Beijing, Brussels and beyond. The key challenge is the integration into the global governance structure of a large emerging state-driven economy. There are various avenues for Canada to reassert its global governance leadership, including the WTO, the Group of Twenty and through bilateral trade and investment treaties serving as a stepping stone to broader multilateral trade agreements.

Conclusions: Renegotiating Global Trade

This paper has outlined the drivers and characteristics of the MIC 2025 plan and of the recent trends in Chinese high-tech industrial policies more generally. It has suggested that Beijing's plan to move up the value chain in global manufacturing consists of a large-scale public-private partnership aimed at developing cutting-edge technologies for the Chinese market and attracting skilled labour to develop indigenous technological adaptation and innovation. Additionally, and contrary to popular perception, foreign investment and IPR protection and commercialization are central to achieving the goals of MIC 2025. Moreover, this paper suggests that, in the context of increasingly salient global problems of industry concentration and China's idiosyncratic dilemma of trade in dual-use technologies, it is unfair to characterize China's industrial policies as a free-riding, import substitution plan, aimed at deliberately privileging domestic enterprises over foreign investment.

Contemporary trade tensions between China and its developing country trading partners have also exposed an old conundrum in global trade governance: finding a balance between giving developing and middle-income economies policy space to catch up to their developed, industrialized country competitors, while playing by the rules of the global trade regime (see Singh and Jose 2016). As China is the first major middle-income economy to test this balance between binding rules and policy space since the establishment of the WTO, policy makers would be wise to view MIC 2025 as a *global* trade governance issue, rather than a China-specific issue. China is not the first country to use technology transfer policies (vis-à-vis strategic FDI and competition policy), and it will not be the last. Ensuring that China is better integrated into a rules-based global trading order will set an important precedent for other emerging economies to follow. This should be done with an eye to encouraging the equal treatment accorded to foreign firms, to which Beijing has explicitly (but so far only largely rhetorically) committed. China needs continued access to foreign technology and the world needs more transparency on the part of

Beijing in this regard. Perhaps this calls for updating global trade rules, which could be accomplished on a piecemeal basis, through bilateral and multilateral negotiations with Beijing within the existing framework overseen by the WTO.

Some have suggested that China is using national security legislation, standard-setting initiatives and procurement to disguise mercantilist policies that favour domestic firms over foreign competitors. However, it is important to consider the possibility that critics are confusing intent with outcome. China has legitimate concerns with respect to the national security vulnerabilities of reliance on "foreign" technology. As Chinese investments in advanced economies have increasingly come under national security scrutiny, China's trading partners should be at least sympathetic to Beijing's concerns. Two-way dialogue on this issue is important in overcoming a global trade regime increasingly marked by zero-sum national security concerns.

Moreover, the elephant in the room is the disproportionality in the level of FDI access in China and that enjoyed by Chinese firms in the economics of China's trading partners. This disproportionality is deliberately permitted by the WTO, which considers a country's level of development and its obligations to remove subsidies and regulatory obstacles to foreign investment. The WTO makes these exceptions to WTO obligations for policies such as environmental protections and infant industry promotions. These exceptions date back to the 1947 General Agreement on Tariffs and Trade articles VI, XVII, XIX, XX, as well as later articles stipulated by the WTO (ibid.). The current debate on global trade is split between those that wish to scale back some of these exceptions and those that wish for these exceptions to be strengthened. MIC 2025 did not create these issues — it brought them to the surface of global debate.

The most fundamental issue of disagreement between China's advanced-economy trading partners and MIC 2025 concerns the role of the state in China's economy. It is no secret that China's leaders view the government's role in the economy differently from advanced-economy policy makers. Communist Party Committees are located (by law) within private, foreign and state-owned companies in China. MIC 2025 carries on this tradition, with much of China's new venture capital and tech transfer mechanisms involving state-owned companies. At the same time, a simultaneous reality in China is the consistently growing contribution of the private sector to overall GDP growth (see Lardy 2014). Even as the government increasingly seeks to align its development goals with the commercial goals of the private sector, Chinese authorities have indicated that foreign, as well as domestic, private firms are the pillars of this scheme (State Council 2017a). China's trading partners should work constructively with Beijing to see these goals implemented, while ensuring that the role of the state in China's private sector is transparent and predictable, so as to reduce the national-security-related tensions associated with outward Chinese investments.

Should the WTO or another organization stipulate a limit to the government weighing in to the investment decisions of foreign enterprises? To what extent should strategic FDI policy be limited under global investment rules? How, and under what circumstances, should technology transfer policies be regulated? These questions concern not just the rise of Chinese firms in the global economy, but the rise of China as a global economic power. This kind of conflict was far easier to resolve in the 1980s, when the rising economy of the day, Japan, was an ally of incumbent advanced economies; China, today, is not. That China's leaders see the relationship between states and markets differently from policy makers in most advanced economies today further adds to these tensions. Therefore, beyond a grand global governance bargain on dual-use technology and intangible assets, policy makers have few tools other than bilateral or plurilateral trade agreements to resolve interstate conflict.

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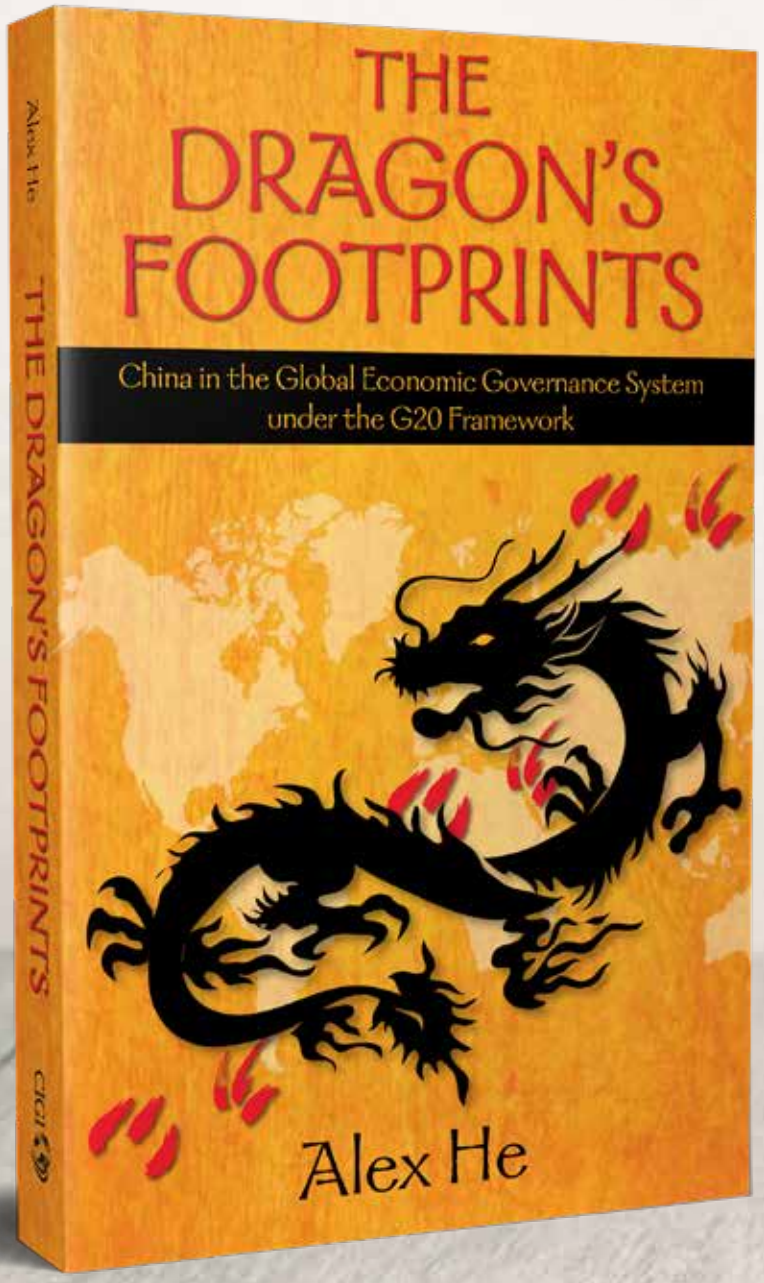

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China in the Global Economic Governance System under the G20 Framework

Alex He

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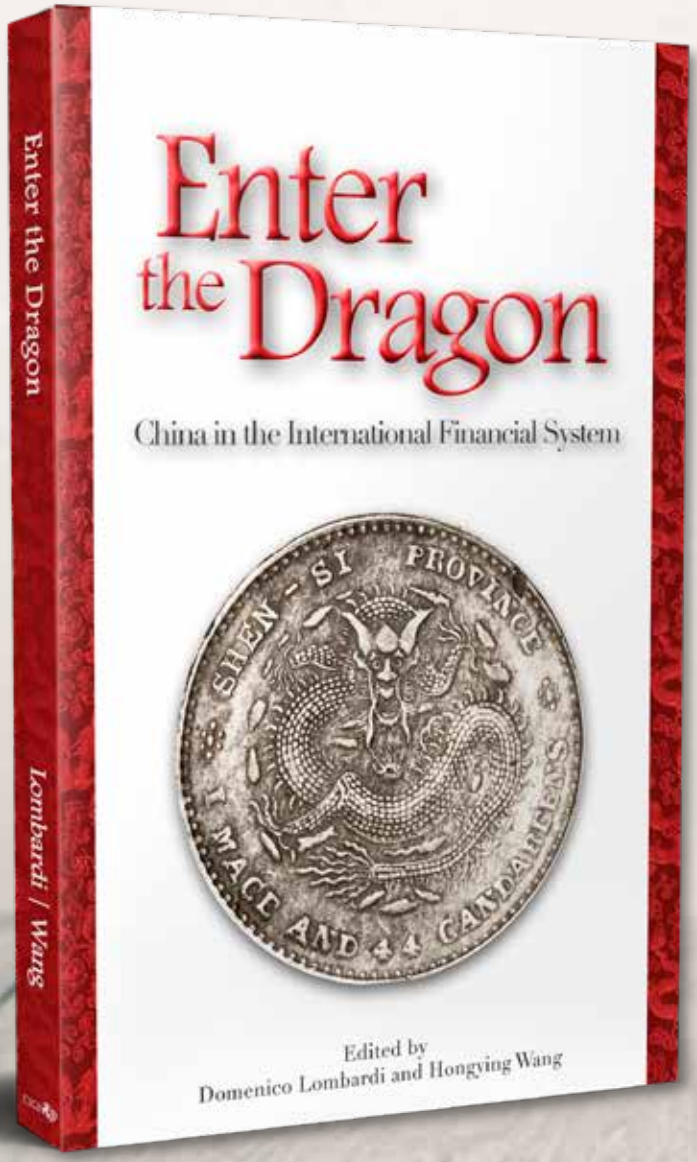

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China in the International Financial System

Domenico Lombardi and Hongying Wang

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