

China’s “Forced” Technology Transfer Problem -- And What to Do About It

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The Trump Administration’s trade confrontation with China is occurring on several fronts, none more crucial than the dispute over China’s alleged misappropriation of foreign technology. In a report issued March 22, the United States Trade Representative (USTR) issued a lengthy bill of particulars citing instances of “forced” technology transfer and failure to protect U.S. intellectual property from infringement or theft. Following this report, the administration announced plans to impose tariffs on up to \$60 billion worth of Chinese exports to the U.S. and tighten the rules governing Chinese investment in the U.S. China countered with tariff threats of its own, and President Trump then threatened more tariff actions against up to \$150 billion worth of Chinese exports. At the time of this writing, both sides appear to be backing away from the imposition of these tariffs, but the details of any final agreement are still uncertain.

A broad range of experts and market observers agree that China has repeatedly forced foreign multinationals to transfer technology to indigenous firms as a condition for them getting Chinese market access and that China has persistently failed to protect the intellectual property of foreign firms doing business (Wei, 2018; Dollar and Hass, 2017; Cambell and Ratner, 2018; Economist, 2018a,b). At the same time, stock markets, American industry, and farm sectors dependent on exports to China have been worried in recent weeks by the prospect of a U.S.-China trade war. The Trump Administration has repeatedly threatened a strategy of broad-based “retaliation” that will arguably cause U.S. firms and workers more economic pain than the Chinese behavior the Administration’s trade negotiators are seeking to change.¹ The indiscriminate nature of its proposed tariffs – and the rhetoric that accompanies them -- cedes the moral high ground to China and undermines the international and corporate support Mr. Trump needs to solve the real problem.

Fortunately, there is a better way. The key idea is to replace the indiscriminant tariffs proposed by the Trump Administration with carefully targeted sanctions imposed on the Chinese entities directly involved in technology misappropriation. Implementation of this strategy has been hampered in the past by the lack of detailed data, and data have been hard to find because U.S. multinationals have been – justifiably – reluctant to voluntarily disclose their complaints. This policy brief proposes a new structure, based on a current bill with bipartisan support in Congress, that can equip policymakers with the data they need, and outlines existing policy tools they can use, to take this more targeted approach.

¹ Lovely (2018) shows that the retaliatory tariffs proposed by the Trump Administration will hit multinational supply chains serving U.S. firms and companies far harder than Chinese entities potentially benefitting from technology misappropriation.

Forced Technology Transfer: Ways and Means

In many respects, the USTR report released in March breaks little new ground. Earlier studies undertaken by the International Trade Commission (2011) and the bipartisan Commission on the Theft of American Intellectual Property (2013, 2017) had already noted the ways in which Chinese firms misappropriate foreign technology, and had even made efforts to quantify the losses imposed on U.S. innovators and owners of intellectual property by these practices. These earlier studies indicated that these losses could be an annual flow measured in the tens of billions – perhaps even the hundreds of billions – of dollars. The wide-ranging estimates mostly reflect the value of American intellectual property believed to be stolen or infringed by Chinese entities, and an impressive body of evidence points to significant weaknesses in the enforcement of intellectual property rights in China.²

However, inadequate IP enforcement is only part of the problem. China has also adopted a set of policies deliberately designed to *force* foreign multinationals to transfer strategically sensitive technologies to indigenous Chinese firms. These policies are a key component of China's longstanding ambition to replace Western firms currently at the forefront of key technologies with Chinese national champions. In many cases, technology transfers are effectively required by China's FDI regime, which closes off important sectors of the economy to foreign firms, unless they enter into joint ventures with Chinese entities they do not control (Lardy, 2014; Hufbauer and Lu, 2017). This is true in the auto industry, where foreign ownership restrictions (and high tariffs) force foreign firms to serve the booming Chinese auto market – now the world's largest – through joint ventures in which they are prevented from holding a controlling interest. China's well-publicized drive to become a leader in electric vehicles has resulted in complaints by European auto firms that they are being pressured to turn over sensitive technology, including proprietary software code, to joint venture partners who may later compete with them in China and beyond (Clover, 2017). In China, the Great Firewall effectively prevents U.S. digital services companies from operating freely in the Chinese market, and the telecommunications services industry is generally closed to wholly-owned foreign firms.³ As the world of computing migrates to cloud-based services, the global IT industry is increasingly forced to access Chinese customers through a gauntlet of JV partners that may someday pose a competitive threat (Dollar and Hass, 2017). Even in officially open sectors, foreign firms must obtain approval from relevant regulators in a process that lacks transparency and is subject to political influence – foreign firms can often be quietly pressured to transfer technology to local firms in order to obtain these necessary approvals.

Given the prominent role of state-owned enterprises (SOEs) in key sectors of the Chinese economy, these firms often function as another mechanism through which foreign firms are forced to transfer

² For evidence on the weaknesses of China's IP system, see MacGregor (2010), Kennedy (2017), Branstetter, Conti, and Zhang (2018), and Rassenfosse and Raiteri (2016), among many other sources. Nicholas Lardy (2018) notes that Chinese payments for the use of foreign intellectual property have risen significantly since the early 2000s, and China now ranks fourth globally in terms of the dollar value of these aggregate payments. This is true, but it reflects, in part, China's emergence as the world's largest manufacturer and exporter of goods, and the fact that China's exports these goods to advanced industrial nations with strong patent systems and trade laws that allow for the impounding of patent-infringing goods at the border. These aggregate statistics do not disprove the existence of forced technology transfer or widespread IP infringement within China itself.

³ These investment restrictions in telecommunications were negotiated as part of China's accession to the WTO; they can be downloaded from the WTO website at https://www.wto.org/english/thewto_e/acc_e/completeacc_e.htm.

technology in order to gain market access. A well-known example occurred in the early 2000s, when China was building out its energy grid to meet booming demand (Kranhold, 2004). Power generation in China is dominated by state-owned enterprises, a position perpetuated by the regulatory structure of the industry. The top executives of these firms are effectively appointed by the Chinese Communist Party, as are all top executives of major nationally owned Chinese SOEs, and their appointment is driven, in part, by the extent to which their management of their firms contributes to the Party's objectives. If the Party wants to create an indigenous Chinese manufacturing industry capable of producing high-tech products for energy plants, like advanced turbines, that can compete with GE and Siemens, then the head of a Chinese power company – sensitive to this objective – can insist that any supplier of turbines transfer valuable technology to indigenous Chinese suppliers, even if this condition raises prices for his own firm, reduces product availability and reliability, and limits the options for his customers. GE and its multinational competitors all realize the Chinese market is too big to ignore, and that the short-term costs of refusing to play by Chinese rules are quite high – since, if one firm refuses to play, the other is likely to acquiesce.

According to China's critics, this dynamic is playing out in industry after industry, enabling state-owned enterprises (SOEs) to function as "gatekeepers," determining which products and services will be incorporated into China's energy, communications, transportation, and health care systems.⁴ China's enormous size gives these SOEs real power, which is being exercised in service to Chinese government plans to replace the world's leading companies with Chinese companies. In recent years, concerns about forced technology transfer have been heard in industries from wind turbines to medical devices (European Chamber of Commerce in China, 2017).

The Global Welfare Implications of Forced Technology Transfer

It has long been recognized that efficient international business practices *require* technology transfer across national and firm boundaries (Vernon, 1967). If U.S. multinationals were *voluntarily* transferring technology to Chinese entities over which they have no control, then any proposal to regulate or limit that transfer would need to be viewed with skepticism. As the previous section makes clear, however, some of the technology transfers taking place in China today are only "voluntary" in the sense that the business transactions engaged in by the business partners of the fictional gangster of the *Godfather* series, Vito Corleone, were voluntary. China is effectively making offers multinationals cannot refuse.

The fact that firms "voluntarily" trade with parties that possess monopoly power on the supplier side or monopsony power on the demand side does not obviate the reality of economic harm. One way to view the forced technology transfer problem is to see it as a cartel, organized by the Chinese party-state, in which Chinese purchasers collude to expropriate key technologies from a foreign supplier or group of suppliers. If a Chinese firm "licenses" an extremely valuable technology at a price that is a small fraction of its commercial value, and is able to do through the exercise of monopsony power, this is conceptually quite close to intellectual property theft.

To the extent that China's forced technology transfer practices (or the expectation of the intellectual property theft) deter multinationals from investing or operating there, it can harm both China and the broader global economy. A series of formal models (Lai, 1998; Branstetter and Saggi, 2011; Gustafsson and Segerstrom, 2010) shows how fear of losing control of key technologies could prevent multinational

⁴ See Massie (2011), Atkinson (2017), Kranhold (2004), Branstetter and Lardy (2008), and the *Economist* (2018a,b).

corporations (MNCs) shifting production to lower cost countries. This outcome prevents low-cost countries from fully realizing their comparative advantage in production of established products; it also prevents advanced countries from fully realizing their comparative advantage in developing new goods. As a consequence, production costs are higher, efficiency is lower, and the rate of innovation in the global economy is slower than it would be in an equilibrium in which multinationals are able to retain control over their technology.⁵

When forced technology transfer enables a Chinese firms to displace the Western enterprises from which technology was extracted, the global economy can be harmed in a different way. The forced technology transfers described here amount to a subsidy of a less domestic innovative firm, and a *de facto* tax on the foreign enterprise that created the valuable technology in the first instance. If Chinese government intervention succeeds in tilting the playing field in favor of less innovative (but heavily subsidized) Chinese firms, and thereby limits the resources flowing to the world's most innovative firms, then, in the long run, the rate of innovation can slow, and consumers around the world could suffer a welfare loss.⁶

Finally, China's misappropriation of foreign technology violates WTO principles and China's obligations under its accession agreement to the WTO. The Trade Related Investment Measures (TRIMs) Agreement, which is part of the WTO charter, forbids a signatory state from requiring technology transfers in return for market access. China also agreed, in its WTO accession protocol, that the procurement of its state-owned enterprises should be undertaken according to commercial concerns, and not in response to state industrial policy goals. As a signatory of the TRIPs Agreement, China committed to protect the intellectual property – patents, trademarks, copyrights, and trade secrets – of foreign firms operating in its territory, providing them the same degree of protection it provides to its own firms, *and* providing all inventors with a degree of protection that meets the high minimum standard prescribed under WTO rules. Unfortunately, past efforts to resolve these issues through bilateral negotiation have failed to address the underlying problems, and the realities of the WTO dispute resolution process make it extremely difficult to sanction China's behavior through WTO litigation. China's requirements for technology transfer are not stipulated in law, and are imposed through extralegal means; few firms are willing to make their complaints public. China's patent statutes are in *de jure* compliance with WTO standards, although the *de facto* level of protection falls far short of what the law appears to promise. It has proven difficult for the U.S. to seek WTO remedies against violations of the TRIPs Agreement that are shortcomings of enforcement rather than statutory deficiencies. Nevertheless, rules that are routinely violated without sanction quickly cease to be rules. For all of these reasons, inaction in the face of China's current behavior is not an appropriate response.

What Is To Be Done?

China has become quite adept at playing off different Western governments and Western firms against one another, and there are few important technical domains in which U.S. firms retain a monopoly on technological leadership. Therefore, any successful strategy will need to be multilateral, relying on joint action by the U.S. and its traditional European and Asian allies. Fortunately, America's trading partners

⁵ See Branstetter, Fisman, Foley, and Saggi (2011).

⁶ One of the most influential trade and growth papers of the early 1990s, coauthored by leading trade and growth theorists Gene Grossman and Elhanan Helpman (1990), showed how this scenario could actually come to pass. Chinese innovative capability is growing (Wei, Xie, and Zhang, 2017), but still arguably lags behind that of the industrial West (Kennedy, 2017; Branstetter, Li, and Veloso, 2015).

in Western Europe and East Asia are increasingly cognizant of China's technology misappropriation and increasingly resolved to respond in some way (Atkinson, Cory, and Ezell, 2017).

Efforts to change China's behavior should also be limited and well-targeted. To the extent possible, any sanctions designed to limit forced technology transfer should be applied solely to those firms and individuals responsible for pressuring foreign multinationals and to those firms and individuals who benefit from the transfer. This would raise the costs and limit the benefits of the behavior the West is seeking to constrain in a targeted fashion, without inviting the sort of broad-based trade retaliation that could generate far more harm than good. Unfortunately, multinationals are often extremely reluctant to publicly disclose the details that could enable such targeted sanctions, out of fear of retribution from China. This silence has served China's interests for decades and severely constrained the ability of Western governments to undertake the kinds of targeted sanctions this brief will endorse. To overcome that problem, the Administration must create a monitoring mechanism that enables – and requires – multinationals to disclose when they are being subject to forced technology transfers. Fortunately, a bill currently advancing through Congress with bipartisan support may provide the foundation upon which this kind of monitoring mechanism could be built.

CFIUS As An Instrument To Limit Forced Technology Transfers to China

In 2017, Senator Jon Cornyn (R-TX) and Congressman Robert Pittenger (R-NC) introduced legislation designed to revamp the Committee on Foreign Investment in the United States (CFIUS) in a way that would empower this committee to limit or block outbound foreign direct investment and technology transactions.⁷ This proposal, originally known as the Foreign Investment Risk Review Modernization Act (FIRRMA) of 2017, or H.R. 4311, was inspired, in part, by the concerns outlined in the previous section.

The original Cornyn-Pittenger proposal significantly broadened the range of transactions over which CFIUS could exercise scrutiny and, through the President, blocking authority. CFIUS would be directed and authorized to scrutinize nearly every inbound and outbound investment and technology transaction with "countries of special concern," which are not named or defined in the draft legislation, that might result in important technologies diffusing to these adversarial nations in a way that undermines national security. The proposal also left broad discretion to the executive branch in terms of defining both "countries of concern" and "critical technologies," and that discretion could lead to significant economic harm if wielded by an incompetent or injudicious chief executive. For instance, a president who sought to punish companies that shifted production abroad could, in principle, invoke the new powers of CFIUS under the original proposal to prevent such shifts indefinitely. At the time of this writing, the original proposal is being substantially amended in ways that could address some of these concerns, but it is not yet clear what will emerge from the legislative process.⁸ Instead of attempting to forecast the outcome of ongoing Congressional debates, this brief proposes a number of changes to the original architecture that could make it an effective instrument in combatting forced technology transfer.

⁷ CFIUS is a cabinet level interagency committee charged with reviewing foreign merger and acquisition bids to acquire U.S. companies, with the goal of determining whether any such acquisitions threaten national security. For an extensive review of CFIUS, its history, and administrative processes, see Jackson (2018). See also Moran (2009) and Moran and Oldenski (2013) for a critical review of CFIUS actions, especially with respect to China.

⁸ In its review of the proposal, the Senate Banking Committee eliminated the review of outward joint venture deals from the draft legislation, but kept control over outward technology transfers.

Improving the Cornyn-Pittenger Proposal

First, CFIUS should **not** be given authority to review or block the outbound FDI of U.S. multinationals, even when they involve “countries of concern.” The decision by a multinational to shift production or operations abroad through greenfield investment or acquisition may raise the risks of an accidental transfer or the possibilities of industrial espionage, but firms are in a better position than the government to judge these risks and balance them against potential returns.⁹ Any potential expansion of CFIUS review of outbound transactions should focus solely on technology licensing or transfer of critical technologies to unaffiliated indigenous parties that can reasonably be viewed as operating under the influence of the governments of countries of special concern.¹⁰ By exempting outbound FDI and technology transfers within MNCs from additional CFIUS scrutiny, the revised proposal would encourage China to allow U.S. multinationals to retain formal ownership and control of their technology, while effectively penalizing China for forcing transfer to unaffiliated entities. Limiting the expanded jurisdiction of CFIUS in this manner would limit the set of new transactions under review sufficiently that CFIUS could retain something close to its current structure and scale. The proposed limitation has the added advantage of conforming closely to a review process China recently imposed on its own firms when transferring technology abroad, with China’s recent implementation of the *Measures on the Transfer of Intellectual Property Rights to Foreign Parties*. The U.S. government would not be doing anything China is not already effectively doing (Ross and Zhao, 2018). On the other hand, by subjecting potentially “forced” technology transfer to scrutiny within the context of a government investigative process that possesses CFIUS’ subpoena power, multinationals that might otherwise be pressured into silence by the threat of future Chinese sanctions can now tell their Chinese interlocutors that they have no choice but to disclose their true circumstances, since silence or partial disclosures could be met with a subpoena. This could substantially alter the dynamic that has so far prevented the U.S. government from obtaining the kind of detailed data it has needed for effective countermeasures.¹¹ The expectation that the imposition of extralegal pressure on a U.S. firm to transfer technology might be disclosed to the U.S. government could, in turn, have a disciplining effect on the use of this practice.

Second, the current bill gives the U.S. President dangerously broad discretion in identifying “critical technologies” that might result in harm to national security. Instead, a revised CFIUS statute should stipulate a process that engages the expertise of the National Academies of Science, Engineering, and Medicine and the other federal science agencies in the creation of a narrow definition of “critical

⁹ At the time of this writing, Washington-based sources suggest that President Trump may soon issue an executive order asserting broad authority to limit outbound FDI at his discretion. Congressional passage of a substantial revision of the Cornyn-Pittenger proposal, along the lines described in this policy brief, could serve the useful function of pre-empting such an executive order.

¹⁰ Broad-based, global licensing agreements into which Chinese parties enter on the same basis as other users of the technology around the world would be exempt from this additional scrutiny. On the other hand, technology transfer agreements in which U.S. firms are transferring technology to indigenous Chinese entities under terms that are very different from what is observed in other markets would be of special interest to this proposed review process.

¹¹ Multinationals rarely welcome the government’s use of subpoena power, but it would be impossible for the antitrust agencies or the Securities and Exchange Commission (SEC) to enforce U.S. law without the information they can obtain through judicious exercise of this authority. The principal reason forced technology transfer persists is that the U.S. government has never been able to obtain the detailed data necessary to combat it. If the U.S. government remains unwilling to exercise subpoena power in this domain, then it will be forced to choose between acquiescence and a punishingly expensive trade war.

technologies“ that could limit the scope of CFIUS reviews (Hufbauer, 2017; Hufbauer, 2018). The national security agencies involved in the CFIUS process are likely to use their influence (and technological expertise) to push for a definition of critical technologies that is relatively broad, encompassing “dual use” technologies with civilian and military application. These political realities cut both ways. From the standpoint of a free trader seeking to limit the scope of government interference in mutually beneficial transactions, the definition of critical technologies likely to emerge from the interagency process may be too broad. From the standpoint of a critic of China’s current policy, worried that a review process predicated on threats to national security might miss Chinese efforts to misappropriate strategically important civilian technologies, the breadth of the definition on which the Pentagon and the intelligence agencies will likely insist may be about right.

Third, any new CFIUS statute needs to spell out a deliberative interagency evaluation process by which nations are designated as “countries of special concern,” and it should specify a set of standards and criteria that would justify the designation of a country as one of special concern. At the moment, the president would seem to have wide discretion in deciding which nations fit into this category. The disturbing current spectacle of a chief executive proposing to block steel imports from defense treaty allies on the grounds that such imports threaten “national security” drives home the need for strong limits on future executive discretion. Instead, any new CFIUS statute should mandate an extensive interagency review, involving intelligence agencies, the Department of Defense, and economic agencies, which documents that a country’s IP regime, investment regime, SOE purchases, and other institutional factors are insufficiently protective of U.S. firms’ IP and trade secrets. The interagency review should be conducted exclusively by individuals possessing a permanent (not provisional) high-level security clearance, and the reviewing agencies should have subpoena power. The review must document a significant number of forced technology transfers (or instances of IP theft) where the economic value of technology thus appropriated is meaningfully large. While CFIUS would, in principle, limit its legal authority to block technology transfer to cases that posed some threat to national security, the investigation potentially designating a country as one of special concern would admit as evidence forced technology transfers that did not pose a direct or proximate threat to national security. Such transfers would still constitute evidence of systematic underprotection of foreign technology and pervasive efforts to shift technology to indigenous parties. This interagency review process should be conducted in concert with key defense treaty allies and FTA partner nations, and some degree of international concurrence should be required by statute before a designation can be made.¹² When designated countries measurably improve their practices, they should be deleted from the list of countries of concern, and the statute should contain a provision allowing countries with this designation to petition for reclassification after some period of time has elapsed since their designation. In addition to placing bounds on the dangerously wide executive discretion that exists in the original Cornyn-Pittenger bill, this change creates a strong incentive for China to change its system. If China relied on *market-driven* technology transfers to private firms, upheld by strong IP laws, then it could avoid or end designation as a country of special concern, and that would enhance its access to technology. China could still be subject to limitations imposed by export control laws, but better behavior would allow it to escape this

¹² It seems reasonable that a well-constructed review process would designate only one or two countries as “countries of concern.” Other than China, and, possibly, Russia, it seems unlikely that any nation is undertaking these actions of forced technology transfer on a scale that poses any meaningful threat to U.S. national security or to the global regime of trade and investment in technology.

extra measure of CFIUS review. However, any reversion to a pattern of forced technology transfer or biased application of IP law could bring the CFIUS scrutiny back.

Fourth, in its review of a prospective transfer of a designated critical technology to an indigenous entity in a designated country of concern, the statute should require that CFIUS consider the possibility of the foreign entity obtaining the technology through third countries (Hufbauer, 2017). If the foreign entity has another pathway to obtain the technology, then a CFIUS-ordered restriction cannot be imposed unless and until the third parties are also willing to limit transfer. This will limit the degree to which the new authority would place U.S. multinationals under a competitive disadvantage relative to multinationals in Europe, Japan, or Israel that would operate outside of the jurisdiction of U.S. law.

Fifth, U.S. firms subject to CFIUS-ordered restrictions on outbound technology transfer should have the right to appeal the decision and, if dissatisfied, to challenge the government ruling in a legal proceeding.¹³ Typical grounds for appeal might include the following arguments: the technology in question is not truly military or dual use in nature, the technology can be obtained through other sources not blocked by CFIUS, or the designated country of concern no longer meets the criteria for such designation. Commercial loss or inconvenience, *per se*, would not be a basis for appeal. This right of appeal would only apply to CFIUS-ordered restrictions on outbound technology transfer, not to restrictions on inward investment, which would continue to operate under current rules. This right of appeal will impose useful discipline on the internal interagency deliberative process, and it will help limit the overuse of CFIUS in cases where a national security threat is limited or indirect. If a CFIUS ruling were overturned on appeal or by a court, but there were strong reasons to expect a meaningful threat to national security, then the government could invoke other legal grounds for preventing the transfer. Technology transfers that truly threaten national security could also be denied on the legal basis provided by export control laws, and the statute should allow evidence gathered in the CFIUS review process (including classified evidence gathered through intelligence) to be used in prosecution under export control laws.

Other Policy Tools

The Use of Complementary Targeted Sanctions Under IEEPA (1977). Any time CFIUS blocks a transaction, whether inbound or outbound, it prevents financial flows that could benefit U.S.-based firms and individuals. Ideally, one would prefer policy countermeasures designed to punish Chinese behavior that have substantially more negative impact on the Chinese parties engaged in that behavior than they do on U.S. firms and individuals. The International Emergency Economic Powers Act of 1977, or IEEPA, provides sweeping legal authority for the U.S. president to order sanctions of firms, individuals, and countries. IEEPA was the legal basis for the U.S. sanctions recently imposed on China-based ZTE, which quickly brought this major multinational to its knees.

If the interagency review proposed above designates China as a “country of concern” under the CFIUS reforms described above, then that designation could also serve as the basis for issuance of an executive order, as called for under IEEPA, that would allow the broad powers of that statute to be utilized to deal

¹³ This would constitute a significant change in CFIUS structure, and the details of its full implementation might require a separate policy brief. One potential approach would be to designate the Federal Circuit Court of Appeals as the single appellate body, provide an expedited procedure for review, and place the burden on the complainant firm to show that the government decision was wrong.

with the economic threat posed by forced technology transfer. Once codified in the federal register, this executive order could authorize the use of targeted sanctions on the Chinese entities that were the beneficiaries of the forced technology transfer, the top executives of those Chinese entities, and the government officials who were involved in brokering the forced technology transfer. The comprehensive analysis proposed as a prerequisite for the designation of China as a country of concern would produce specific evidence of forced transfers sufficiently detailed to identify these beneficiary firms, their leaders, and the government officials involved in pressuring Western firms. The judicious use of subpoena power and the full involvement of U.S. intelligence agencies in the review process would ensure that outcome. Targeted sanctions could involve travel bans in the Western world for key Chinese individuals and their families, foreign asset freezes, and financial and trade penalties on the firms and products benefitting from forced technology transfer. America's allies possess similar statutes (which provided the basis for their cooperation during the sanctions regime against Iran) and could participate in enforcing multilateral sanctions against entities that forced the transfer of U.S. technology and the U.S. could enforce sanctions on Chinese entities that benefitted from the forced transfer of European, Japanese, and Israeli technology.

As the ongoing CFIUS review process described above identified new cases of forced technology transfer or intellectual property theft, "micro" targeted sanctions of this type, using IEEPA authority, could also be employed (or threatened) as a complement to or a substitute for the restrictions imposed by CFIUS itself. Like the sanctions that could be imposed under CFIUS, these would not come without economic costs to the United States and its Western allies. However, the focus of these sanctions on specific Chinese entities currently pressuring Western firms to transfer technology or specific Chinese entities benefitting from such transfers would ensure that maximum pressure would be brought on the offending parties, with limited "collateral damage" to unrelated sectors. The targeted nature of the sanctions on China would invite similarly limited counter-sanctions (if any), from the Chinese, further limiting the fallout from this dispute. One hopes that the existence of a well-targeted, credible sanction could significantly deter forced technology transfer, such that the sanctions rarely occur in practice. As this brief has argued, technology transfer motivated by mutual benefit rather than coercion would be in the best interests of China and its trading partners.

Export Controls. The limited CFIUS reform supported herein will not necessarily be sufficient to prevent all conceivable transfers of sensitive technology to adversarial nations. To limit that risk, the United States and its allies should rely on existing export control laws, which already apply to technology transfers and outbound FDI as well as actual exports of sensitive goods.¹⁴ When the risks of leakage of technology to a potential adversary are present but unclear, existing statutes provide broad authority for the Bureau of Industry and Security (BIS) of the Department of Commerce to investigate activities involving a dual use technology. BIS agents possess broad authority to subpoena documents, compel testimony, and suspend or postpone transactions that may carry with them a national security risk. If concerns intensify, then the federal government could expand the resources and staff made available to BIS to enforce existing laws.

¹⁴ California Congressman Ed Royce has introduced a bill that would strengthen export controls and give them a firmer legal basis. Representative Royce's proposal, H.R. 5040, has a number of attractive features, but a full appraisal of that bill is beyond the scope of this policy brief.

Section 337 Cases. This policy brief has already noted that China’s legal regime for enforcing intellectual property rights is flawed. The U.S., Japan, and European governments are right to pressure China to substantially upgrade the operation of its system – and such reform would be in the long-run best interest of China itself. However, it will almost certainly take years of determined effort by Chinese policymakers to bring the operation of China’s patent system into line with international best practices. Any American policy that imposes high tariffs in the absence of instant patent reform will simply drive the world’s two largest economies into a trade war. In the meantime, are there legal or policy tools available to American firms to protect them from intellectual property theft? One legal tool is provided by Section 337 of the 1930 Tariff Act. This allows for an expedited investigation of the import of IP-infringing products into the U.S. market, conducted by the U.S. International Trade Commission. These investigations tend to be much faster – and often far less costly – than civil litigation in IP courts. At the same time, many of the legal tools available in patent infringement cases, such as discovery, are available, and can be applied even if the exporting firm is located outside the United States.¹⁵ Under existing law, an administrative law judge has the authority to order U.S. customs to impound IP-infringing imports at the border. While this judgment can be overturned by civil courts, such appeals could take months to years. Section 337 cases therefore offer a useful tool for U.S. firms facing competition with IP-infringing goods in their home market. Most of America’s top trading partners have similar provisions in their law, so U.S. multinational firms with significant business operations overseas can often protect their sales in overseas markets through the use of similar tools. A sizable increase in the ITC’s budget targeted to section 337 cases could expand the agency’s administrative capacity to undertake these investigations and accelerate their speed.

Unilateral Efforts to Strengthen U.S. Technological Leadership in Key Domains. The U.S. government could and should undertake a number of steps to reinforce its technological leadership. American universities remain global leaders in the basic science underlying key domains like artificial intelligence. Unfortunately, the Trump Administration has pushed for deep cuts in government science budgets rather than increases – an unnecessary and self-imposed setback for a president bent on maintaining “American greatness.” The other critical ingredient for sustained technological leadership is access to talent. There is a worldwide shortage of individuals trained in AI and related disciplines. Foreign-born students at U.S. universities constitute a large fraction of students pursuing advanced degrees in the sciences and engineering. If President Trump is serious about maintaining U.S. technological leadership, then he should abandon the anti-immigrant positions urged on him by his erstwhile chief strategist, Steve Bannon, and instead immediately embrace greater openness to high-skilled immigration. Arora, Branstetter, and Drev (2013) show that U.S. openness to immigration played a critical role in enabling Silicon Valley to respond to a software-biased shift in technological opportunity in IT – an opportunity Japan’s far more restrictive immigration regime effectively closed off to Japanese IT firms. The current administration would do well to heed this lesson.

Conclusions

At the core of the Trump Administration’s 301 case against China lies a real problem – China’s persistent misappropriation of foreign technology. This longstanding pattern of activity violates China’s WTO commitments, distorts international trade and investment, and undermines China’s own long-run ability

¹⁵ The absence of a discovery procedure in Chinese civil litigation makes the prosecution of patent infringement much more challenging in that legal context.

to contribute to the advancement of the global technological frontier. The problem is serious enough that it merits action. Unfortunately, the policies and threatened policies put forward by the Trump Administration are unlikely to change China's behavior. By unilaterally threatening high tariffs on a wide range of products, the Administration is already undermining the support of multinational corporations and U.S. trading partners that the better approach outlined here would require. These parties are now concluding – rationally – that the threatened tariffs would be a cure worse than the disease they are meant to remedy.

This policy brief outlines a better approach – one that is multilateral in its operation, limited in scope, and targeted at exactly the behavior the U.S. and its allies seek to change. This approach will regularly produce the kind of detailed data whose absence has prevented effective countermeasures in the past. While the use of the new policy tools – and the more aggressive use of existing policy tools – proposed herein will not be economically costless, the economic costs will be limited, by design, and they stand a reasonable chance of changing the strategic calculus of Chinese entities in a way that could significantly limit misappropriation of foreign technology going forward. The Administration's current path will almost certainly result in failure – but there is still time for President Trump and his advisors to choose a more effective approach.

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