

THE LAW AND ECONOMICS OF “FORCED” TECHNOLOGY TRANSFER AND ITS IMPLICATIONS FOR TRADE AND INVESTMENT POLICY (AND THE U.S.–CHINA TRADE WAR)

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ABSTRACT

“Forced technology transfer” is a central issue in the ongoing U.S.–China trade row. The phrase encompasses a number of different practices, but the most significant according to various commentators involve measures that require foreign investors in China to partner with domestic entities as a condition of making an investment, either by forming a joint venture or affording Chinese investors a controlling equity stake. These “corporate structure requirements” empower prospective Chinese partners to bargain for technology transfer as a condition of forming a new venture or otherwise enable them to learn the details of foreign technology through participation in the business enterprise. Foreign investors are free to reject such requirements and forego the associated investment opportunities, and in this sense any technology transfer pursuant to China’s requirements is “consensual.” For ease of reference, this essay refers to these corporate structure requirements as CSR. The analysis to follow examines the economics of CSR from both the national and global welfare perspectives. It indicates how CSR may undercut the national welfare of the USA even if it is profitable for U.S. investors. The global welfare implications of CSR, however, are much less clear, which offers an explanation for the absence of any constraints on CSR in typical trade agreements. A clear role for restrictions on CSR does emerge, however, in investment agreements that seek to eliminate investment protectionism by requiring “pre-establishment national treatment” for foreign investors. This analysis has immediate policy implications for the ongoing trade dispute with China.

Trade tensions with China have grown rapidly since its entry into the World Trade Organization (WTO), fueled heavily by the perception that growing

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import competition from China has caused a massive loss of manufacturing jobs in the USA (Autor, Dorn, & Hanson 2013). These tensions have come to a head during the Trump administration in the form of an ongoing “trade war” with China, which has resulted in hefty tariffs on hundreds of billions of dollars in trade in both directions in a standoff that changes week by week (Wong & Coty 2020). U.S. concerns about Chinese policy span a range of issues (Wu 2016), but the problem of “forced technology transfer” is said to lie “at the heart” of the ongoing dispute (Mulloy 2019).

In the business press and popular commentary, “forced technology transfer” may refer to several different types of practices (U.S. Trade Representative 2017; Qin 2019). Forced transfers can result from outright theft of intellectual property (IP) by competitors engaged in corporate espionage, as alleged in a recent indictment of Huawei.¹ Forced transfers can also arise in relation to various regulatory proceedings that require foreign firms to disclose technology to host country regulators, who may then copy and disseminate the technology *sub rosa* to their domestic firms (Fitzpatrick 2013; Davis & Wei 2019; Mauldin & Cameron 2019). Technology transfers that result from outright theft, or deceit by regulators, are already addressed in principle under existing international² and national law and are not the focus of this essay.

The analysis here instead concerns a narrower but important class of practices that involve consensual arrangements between foreign investors and host country entities, albeit arrangements that foreign investors often deride as coercive. In particular, my concern is with investment restrictions that enable foreign companies to gain access to proprietary technology as a condition of establishing an investment in the host country.

China does not formally condition permission to invest in China on the transfer of technology to Chinese entities. As shall be seen below, such mandatory requirements are impermissible under WTO rules contained in China’s Protocol of Accession to the WTO³ and elaborated in the new Phase One

1 See U.S. Department of Justice, Chinese Telecommunications Device Manufacturer, and its U.S. Affiliate Indicted for Theft of Trade Secrets, Wire Fraud, and Obstruction of Justice, <https://www.justice.gov/opa/pr/chinese-telecommunications-device-manufacturer-and-its-us-affiliate-indicted-theft-trade>.

2 The WTO TRIPs Agreement, discussed *infra*, contains elaborate rules for the protection of patents, trade secrets, and copyrights against theft and misappropriation, requiring Member States to enact appropriate domestic laws to that end and affording an international dispute process in the event of their failure to comply.

3 But see Clover (2017) (discussing controversy over whether technology transfer is a requirement for foreign investors seeking regulatory approval to sell new energy vehicles in China).

Trade Agreement with China.⁴ Instead, the key problem in China stems from legal requirements that condition permission to invest in the formation of joint ventures with Chinese partners, and similar legal requirements that place a percentage cap on foreign equity ownership and thereby guarantee substantial indigenous participation in the investment enterprise. Potential Chinese investment partners use these requirements as negotiating leverage to secure technology transfer agreements—would-be foreign investors often complain that they are played off against each other when negotiating for entry into the Chinese market, eventually capitulating to demands for technology transfer agreements lest a refusal result in the business opportunity going to a competitor.⁵ Moreover, Chinese venture partners can often gain access to important technology without a formal transfer agreement simply by observing the operations of their foreign partners once they become part of the venture (Atkinson 2012). The centrality of joint venture requirements and equity caps in the current U.S.–China dispute has been underscored by a number of commentators, some suggesting that the elimination of those rules would be the most useful concession China could make (Mauldin & Cameron 2019).

For ease of reference, this essay will refer to the "forced" technology transfer associated with corporate structure requirements as CSR. The Trump administration decries CSR (and forced technology transfer more broadly) as unfair and has claimed that it inflicts billions of dollars in damages yearly on U.S. companies (Davis & Wei 2018).⁶ In response to such complaints, however, China denies that its investment policies "force" the transfer of technology at all. From the Chinese perspective, U.S. companies enter business arrangements with Chinese partners voluntarily, knowing and often agreeing explicitly that Chinese partners may acquire some technical knowledge through the collaboration (Cai & Elmer 2019). Put differently, U.S. companies make profit-maximizing choices to participate in the lucrative Chinese market, and any resulting technology transfer is neither "forced" nor otherwise unfair given the substantial returns that U.S. companies receive.⁷

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- 4 See USTR, Economic and Trade Agreement between the United States of America and the People's Republic of China: Phase One, <https://assets.bwbx.io/documents/users/iqjWHBFdfxIU/rVaHxDBUtdeW/v0>.
 - 5 See Fitzpatrick (2013) ("The intense competition prompts companies to make concessions on technology transfers, as the Chinese are very good at playing off the competition.").
 - 6 U.S. Trade Representative (2017) suggests that objectionable Chinese IP policies of all types impose between \$14 and \$90 billion in harm on U.S. companies annually, with a "point estimate" of about \$48 billion. This calculation apparently includes losses from outright theft as well as corporate structure requirements.
 - 7 Cai & Elmer (2019) cite a report suggesting that U.S. firms posted \$39 billion in profits from their Chinese operations in 2016.

This divergence of views crystallizes a puzzle at the heart of this essay. China is surely right that U.S. companies undertake investments in China to advance their economic interests, and the fact that doing business in China has the effect of transferring some technological knowledge comes as no surprise to them. Indeed, foreign investment has long been touted as a desirable aid to economic development in poorer countries precisely because of the technology transfer that often accompanies it (Markusen & Venables 1999). Although China no doubt gains from technology transfer, therefore, U.S. companies also presumptively gain from the commercial transactions that generate the technology transfer—a win-win situation.

So what is the problem exactly? Are complaints about CSR simply a form of rent-seeking activity by foreign companies that wish to make even more money on their overseas operations than they do already? Or is there some more subtle underlying problem? To put the question slightly differently, is there some “inefficiency” or “market failure” associated with CSR that warrants legal or other policy intervention, or is the issue simply a battle over how to divide the “pie” of profits to be earned from doing business abroad?

If the answer is the latter, and if the investment restrictions fostering CSR do not violate a host country’s legal commitments (a matter discussed below), then complaints about CSR by the USA (and others) ring somewhat hollow. Moreover, even if host countries such as China were to eliminate the policies in question, they have other policy instruments that they can deploy to capture the same share of profits from foreign investments (such as tax policies or even a simple fee for a license to invest, which would be legal under China’s current international commitments) (Bankman, Kane, & Sykes 2020). If CSR is economically wasteful in some way and destroys economic surplus that can be protected and redistributed for the benefit of all concerned, by contrast, policy intervention in the form of a treaty-based solution or some other legal instrument may be warranted.

Accordingly, this essay takes a close look at the economics of CSR. The core question is whether CSR introduces some inefficiency into the international economy, is simply a zero-sum “transfer” among firms, or is even efficiency-enhancing.

In undertaking this analysis, I put to the side technology transfer that involves serious national security concerns. Plainly, the U.S. government will not wish its companies to transfer missile defense, stealth bomber, or other technologies with important military applications to adversary countries even if the transfer is privately profitable—such behavior entails obvious externalities that are the subject of export control regulations and related measures (Jackson, Davey, & Sykes 2013, p. 464). The emphasis here is on technology

relating to commercial products without substantial military significance, albeit products that may be technologically advanced in various ways.

Even with that proviso, several scenarios arise in which U.S. firms may engage in voluntary technology transfer that is not in the best interests of the USA as a whole. Accordingly, it is not difficult to understand the interest of the USA in seeking changes to China's policy.

That said, it is much less clear that CSR policies are inefficient from a global perspective—they may be a wash in large measure, or even enhance global welfare, at least in an environment where countries are allowed to employ a range of other measures that discriminate against foreign investors. It is thus questionable whether an agreement to change China's CSR policies will be in the mutual interest of the two countries as long as the focus of negotiations remains on trade issues rather than broader market access for foreign investors.

If the USA and China at some point choose to negotiate a bilateral investment treaty (BIT) with provisions comparable to other U.S. BITs, however, constraints on CSR could serve an important role in ensuring fidelity to a nondiscrimination (national treatment) obligation. A U.S.–China BIT seems unlikely given current tensions and suspicions between the two countries; however, and it *may* then make sense for the USA to pursue policies that promote the national interest regardless of the economic implications for China. The Trump administration strategy, however, which seeks to create negotiating leverage using punitive tariffs that violate U.S. commitments in the WTO, is a dubious approach because it violates international law, undermines the credibility of the USA as a treaty partner, and imposes deadweight costs on the U.S. economy. A better approach might be to take advantage of the minimal legal constraints on U.S. policy toward Chinese investors to limit or tax their access to the U.S. market and to U.S. technology.

The plan of the essay is as follows. Section 1 provides greater detail about the nature and extent of the “problem” with forced technology transfer in China. Section 2 considers the status of forced technology transfer and CSR under international trade law generally and the law applicable to China in particular. Section 3 provides the economic analysis, taking both the national and global welfare perspectives, and assuming that CSR arises in an environment in which countries are free to use a range of policy instruments to restrict the access of foreign investors to domestic investment opportunities (as is presently the case with China). Section 4 then addresses several puzzles associated with China's obligations under WTO law and the Phase One Trade Agreement, such as the question why China's WTO Protocol of Accession and the new Phase One Trade Agreement prohibit mandatory technology transfer requirements but not corporate structure requirements (that often have the effect of producing

technology transfer). It also explains why constraints on CSR are often found in international investment agreements but not in agreements limited to trade. Section 5 considers various legal and policy options with a particular focus on the current dispute with China.

1. THE NATURE AND MAGNITUDE OF THE FORCED TECHNOLOGY TRANSFER "PROBLEM" IN CHINA

The Chinese government openly engages in industrial policy and seeks to become competitive in a range of advanced technology industries in accordance with a strategic plan known as Made in China 2025.⁸ An important element of this plan encompasses measures often termed "indigenous innovation policy," whereby China hopes to enhance its capacity for innovation and advanced manufacturing. These measures include the CSR practices on which this essay focuses.

It is exceedingly difficult to quantify the effects on foreign firms of forced technology transfer and any such estimates are speculative (Hufbauer & Liu 2017). Not only is it unclear how to place a precise valuation on its consequences, but the firms affected by it are frequently reluctant to speak out publicly about their experiences for fear of some retaliatory response from Chinese authorities (Branstetter 2018; Davis & Wei 2019). Most of the detailed public information involving individual firms tends to focus on allegations of fraud and deceit by Chinese firms and regulators, matters that are put to the side in this essay.⁹

U.S. Federal agencies have done some research on the matter, including a 2011 U.S. International Trade Commission investigation pursuant to section 332 of the Tariff Act of 1930 (U.S. International Trade Commission 2011). The report addressed a wide range of IP concerns with China with a primary emphasis on IP infringement. Its chapter on indigenous innovation policy, however, highlighted reported problems of CSR in several industries, including concerns about mandatory joint ventures in automotive manufacturing and civil aircraft production (*id.*, table 5-1).

8 See State Council, People's Republic of China, "Made in China 2025" Plan Issued, May 19, 2015, http://english.gov.cn/policies/latest_releases/2015/05/19/content_281475110703534.htm.

9 Kawasaki Heavy Industries, the maker of Japan's high-speed rail equipment, entered a joint venture in China that eventually led to its former Chinese partner challenging Kawasaki in its other foreign markets (contrary to a purported mutual understanding) using technology alleged to be a knockoff of Kawasaki's. See Fitzpatrick (2013). Likewise, a number of electric automobile manufacturers have expressed serious concern about China's purported insistence that their technologies be disclosed to regulators (Clover, 2017).

More recently, the Trump administration through the Office of the U.S. Trade Representative (USTR) initiated a wide-ranging investigation of Chinese IP practices pursuant to section 301 of the Trade Act of 1974, which concerns any act that infringes the rights of the USA under trade agreements or that is otherwise “unreasonable or discriminatory” and “burdens or restricts United States commerce.”¹⁰ The findings of the investigation focus extensively on CSR through joint venture requirements (U.S. Trade Representative 2018), based in part on submissions to USTR by individual firms and trade associations, and in part on surveys conducted by other entities. One such survey was conducted by the American Chamber of Commerce in Shanghai, which reported that 21 percent of 434 respondents reported pressure to transfer technology in exchange for market access. In particular industries, 44 percent of aerospace respondents and 41 percent of chemical industry respondents reported such pressure (Cai & Elmer 2019). In another survey conducted by the U.S. Bureau of Industry and Security (part of the Commerce Department), “the majority of industry representative interviewed for this study clearly stated that technology transfers are required to do business in China” (Atkinson 2012).

Similar results arise from surveys of European firms. The European Union (EU) Chamber of Commerce in China found that 20 percent of the European firms doing business in China had been pressured to transfer technology, typically through joint ventures, and especially when the venture includes a state-owned enterprise (SOE) as a partner. The reported percentages were higher in particular industrial sectors such as chemicals and petroleum companies (30 percent), medical-device companies (28 percent), pharmaceutical companies (27 percent), and automotive companies (21 percent) (Wernau 2019).

In sum, although the impact of CSR is hard to quantify, the perceived scope is extensive and it has unquestionably generated considerable political pressure for U.S. action. It is by all accounts among the most difficult and important issues in the current trade negotiations with China (Mayeda & Leonard 2019).

2. TECHNOLOGY TRANSFER REQUIREMENTS AND CSR UNDER EXISTING INTERNATIONAL LAW

The existing international law pertaining to technology transfer requirements and CSR in China comes from generally applicable WTO obligations that apply to all members, some special provisions involving China contained in its WTO Protocol of Accession, and the recently concluded Phase One Trade Agreement with the USA. Consider each in turn.

10 19 U.S.C. § 2411(a)–(b).

2.1 Generally Applicable WTO Law

The WTO grew out of and subsumed the General Agreement on Tariffs and Trade (GATT), which concerns trade in goods. The advent of the WTO added two more pillars to the treaty structure—the General Agreement on Trade in Services (GATS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Conspicuously missing from this architecture is any general treaty on international investment. Accordingly, generally applicable constraints on WTO Member State policies toward inbound investment, and associated technology transfer, are limited and indirect.

For example, a government policy that would condition the right to import or sell imported goods on the transfer of manufacturing technology would violate either GATT Article XI (prohibition on nontariff import restrictions) or Article III (nondiscrimination between imported and domestic sales of goods), as well as the WTO Agreement on Trade-Related Investment Measures (TRIMs) (Jackson, Davey, & Sykes 2013, chaps. 9 & 12). But these provisions have no applicability to technology transfer policies concerning conditions for investment rather than for the sale of imported goods.

Likewise, GATS has little or no apparent applicability to the current row with China. To be sure, a requirement that foreign service providers form joint ventures with Chinese partners could violate GATS Article XVI *if* it were imposed in a sector covered by Chinese market access commitments under GATS *and* not properly scheduled as a limitation on those commitments (*id.*, chap. 19). But the current dispute over CSR focuses on manufacturing rather than service industries.

TRIPS is also of limited relevance. The focus of TRIPS is on the scope of IP protection of various types, such as the duration and scope of patent rights. It also contains in Article 3 a general nondiscrimination obligation (national treatment) that requires foreign right holders to be treated as favorably as domestic right holders. These obligations are at issue in two recent WTO cases initiated by the USA and the EU that relate to technology transfer. The U.S. case challenges a requirement that foreign investors indemnify their Chinese partners for any losses in IP litigation, a prohibition on contracts between foreign firms and Chinese partners limiting the Chinese partners from improving and using the technology subsequently, and a prohibition on contracts with foreign investors that limit the ability of their Chinese partners to use transferred technology after the termination of their partnership. If proven, these claims seemingly make out violations of the nondiscrimination obligation in TRIPS Article 3 as well as rules regarding the mandatory scope of patent rights under TRIPS Article 28.¹¹ The alleged practices appear to be relatively minor in

11 See China – Certain Measures Concerning the Protection of Intellectual Property Rights, Request for Consultations by the United States, WT/DS542/1, March 26, 2018.

terms of their economic impact (Abbott 2018), however, and more importantly for present purposes, they do not encompass CSR i, which does not entail any limitations on IP rights *per se*.¹²

2.2 China's WTO Accession Protocol

Beyond the generally applicable obligations of GATT, GATS, and TRIPS, China's WTO commitments include some additional matters negotiated at the time of China's accession and embodied in its Protocol of Accession. In particular, section 7(3) of the Protocol provides in pertinent part¹³:

Without prejudice to the relevant provisions of this Protocol, China shall ensure that the distribution of import licences, quotas, tariff-rate quotas, or any other means of approval for importation, the right of importation or *investment* by national and sub-national authorities, is not conditioned on: whether competing domestic suppliers of such products exist; or performance requirements of any kind, such as local content, offsets, the *transfer of technology*, export performance or the *conduct of research and development in China*. (emphasis added)

These commitments were elaborated and clarified in working party discussions prior to China's accession and were memorialized in a working party report¹⁴ that became a binding commitment in accordance with the Protocol.¹⁵

Accordingly, formal requirements for technology transfer as a condition of investment in China are prohibited by China's Accession Protocol. On that basis, the EU has initiated a WTO dispute proceeding challenging a number of

12 One might argue that a formal requirement for technology transfer as a condition of investment in an industry, applicable to foreign right holders only, would violate TRIPS Art. 3 on national treatment. As noted earlier, however, China eschews such formal requirements in favor of limitations on the corporate form of foreign investments.

13 WTO, Accession of the People's Republic of China, Decision of November 10, 2001, WT/L/432 (hereafter Accession Protocol).

14 Report of the Working Party on the Accession of China, WT/ACC/CHN/49, October 1, 2001 (hereafter Working Party Report). Paragraph 203 provides in part: "The allocation, permission or rights for importation and investment would not be conditional upon performance requirements set by national or sub-national authorities, or subject to secondary conditions covering, for example, the conduct of research . . . or the transfer of technology." And in para. 49, the Chinese representative to the working party "confirmed that the terms and conditions of technology transfer, production processes or other proprietary knowledge, particularly in the context of an investment, would only require agreement between the parties to the investment."

15 See Accession Protocol para. 1.2 and Working Party Report para. 342.

Chinese practices that it contends amount to violations.¹⁶ For example, the EU challenges an aspect of Chinese law requiring that “the technology and equipment contributed by a foreign partner to a joint venture be advanced and suitable to the needs of China,” and further requiring that the “details about the technology . . . must be submitted to Chinese authorities for their examination and approval.”¹⁷ Although this investment review process is apparently mandatory, that alone need not violate Chinese commitments (Wu 2018) because it does not on its face “transfer” technology. The issue here instead touches on a problem noted earlier whereby regulation is used as a pretense to pry technology disclosure from investors that is secretly copied or revealed to competitors. If it could be proven that required regulatory disclosure is misused by China, a violation of the Protocol would be established, along with likely violations of TRIPs. But proof of such behavior is likely to be difficult even if it has occurred,¹⁸ and more importantly here, corporate structure requirements such as mandatory joint ventures and equity caps do not entail any technological review by Chinese regulators.

Corporate structure requirements promoting partnerships with state-owned enterprises (SOEs) raise somewhat more subtle issues. Consider, for example, a mandatory joint venture requirement that forces a foreign investor to partner with an SOE and supposes further that the SOE insists on technology transfer as a condition of forming the venture. Examples of CSR involving SOEs have arisen in several contexts, including the energy, communications, transportation, and healthcare sectors (Branstetter 2018). The insistence on technology transfer by an SOE might be considered a government act and thus a mandatory technology transfer requirement. The difficulty here is that obligations imposed by the Chinese Protocol do not explicitly cover SOEs, and their language is open to interpretation (Ahn 2019).¹⁹ Section 7(3) of the Protocol makes reference to acts of “national or subnational authorities” concerning the “approval” of investment, which one can argue does not extend to the negotiated terms for investment partnership between a foreign investor and an SOE. Likewise, the interpretive language in the working party report provides

16 See China – Certain Measures on the Transfer of Technology, Request for Consultations by the European Union, WT/DS549/1/Rev. 1, January 8, 2019.

17 *id.* p. 5.

18 Commentators observe that forced technology transfer rarely leaves any “paper trail” that could be used to prove government coercion. See Abbott (2018).

19 It is also noteworthy that Chinese SOEs are not necessarily “public bodies” subject to the disciplines of the WTO Agreement on Subsidies and Countervailing Measures. In a confusing line of decisions on the issue, the Appellate Body has suggested that government ownership of an enterprise is insufficient to make it a “public body,” and that the enterprise must also be exercising some type of “governmental function.”

only that the terms for technology transfer should be negotiated between the “parties to the investment” and has no qualifier for settings in which one of the parties is an SOE. Finally, if the insistence on technology transfer by an SOE could be deemed governmental action, the SOE might simply shift to the strategy of learning the foreign technology through various ways of participating in the joint business venture without demanding a formal technology transfer agreement.

Putting aside the participation of SOEs, it seems impossible to fashion an argument that China’s obligations under the Protocol prevent it from imposing corporate structure requirements on inbound foreign investments simply because they create negotiating leverage for private actors to seek technology transfer agreements or afford them opportunities to observe and learn foreign technology as business partners. WTO obligations bind member governments, including their subnational governmental units such as states and provinces (Jackson, Davey, & Sykes 2013, § 7.4), but private-sector actors are not bound. A complaining nation has the burden to show that some type of government action lies behind its grievance,²⁰ and such government action must constitute a type that is prohibited. The fact that restrictions on a corporate form may create negotiating leverage for private-sector entities and have some collateral effects on the value of investors’ IP does not make the restrictions into “performance requirements” for the “transfer of technology.”

2.3 The Phase One Trade Agreement

On January 15, 2020, China and the USA signed a Phase One Trade Agreement settling certain aspects of the ongoing U.S.–China trade war. Chapter 2 of that Agreement addresses “Technology Transfer” and contains several provisions aimed at curtailing “force or pressure” by a “Party” for the transfer of technology. The “Parties” to the Agreement are defined in the Preamble as the two respective governments. Article 2.1 of the Agreement then states:

- (1) Natural or legal persons (“persons”) of a Party shall have effective access to and be able to operate openly and freely in the jurisdiction of the other Party without any force or pressure from the other Party to transfer their technology to persons of the other Party.

20 See Japan – Measures Affecting Consumer Photographic Film and Paper, WT/DS44/R, adopted April 22, 1998, ¶¶ 10.52–56.

- (2) Any transfer or licensing of technology between persons of a Party and those of the other Party must be based on market terms that are voluntary and reflect mutual agreement.

Article 2.2 provides:

Neither Party shall require or pressure persons of the other Party to transfer technology to its persons in relation to acquisitions, joint ventures, or other investment transactions.

And in Article 2.3:

Neither Party shall adopt or maintain administrative and licensing requirements and processes that require or pressure technology transfer from persons of the other Party to its persons.

All of these obligations are phrased in terms of actions by a “Party” that force or pressure persons of the other party to transfer technology. Formal governmental requirements for technology transfer, or “pressure” from the government to transfer technology transfer in return for some favor or advantage, are thus prohibited. These obligations arguably go somewhat beyond the pre-existing obligations in the WTO Protocol by virtue of, e.g., the general reference to “administrative and licensing requirements,” but for the most part government requirements for technology transfer were already prohibited. Article 2 of the Phase One Agreement does not specifically address corporate structure requirements, however, which empower private parties in China to bargain for technology transfer with inbound investors or simply to observe their technology by virtue of their participation in the business enterprise. Article 2.2 simply prevents a “Party” from requiring technology transfer in relation to “acquisitions, joint ventures, or other investment transactions.” Voluntary technology transfer resulting from the need for inbound investors to secure an investment partner in China would appear to be consistent with the requirement that transfers be “based on market terms that are voluntary and reflect mutual agreement.” Likewise, by simply defining the “Parties” as the two governments, the Agreement does nothing to resolve the controversy over whether Chinese (wholly or partially) state-owned enterprises count as part of the “government” of a Party. Finally, nothing in the Phase One Trade Agreement creates general obligations concerning “investment,” or in any way disables China from treating foreign investors less favorably than domestic investors.

Based on an initial reading, therefore, the Phase One Trade Agreement does not dramatically alter China’s obligations with respect to technology transfer,

although it does embed them in an agreement directly enforceable by the USA without the need to resort to the WTO. China may still require inbound investors to partner with indigenous investors, who then bargain for technology transfer or simply acquire technical knowledge through their business partnership.

3. THE ECONOMICS OF CSR

We now turn to the core economic issue raised in the introduction: if private firms agree with Chinese partners to afford them access to technology to gain access to the Chinese market, either through a formal transfer agreement or in the form of knowledge that they gain simply from participation in the joint enterprise, should we not assume that the bargain is beneficial to both sides and no more objectionable than a bargain regarding the licensing of IP by U.S. right holders in other contexts? In other words, is there any inefficiency associated with CSR that warrants an international legal solution?

Throughout the analysis in this section, we shall assume that CSR arises in an environment where countries retain the right to employ policies to restrict inbound investment—this assumption accurately describes the current relationship between the USA and China. Section 4 will relax this assumption and consider, *inter alia*, the implications of introducing an investment treaty that forbids any discrimination against foreign investors.

3.1 National and Global Welfare Perspectives

It is a commonplace in the economic analysis of international law to distinguish between national and global efficiency benchmarks. Canonical economic models of international interaction and the role of international law posit that nations acting unilaterally tend to pursue their national economic interest (efficiency, whether economic or political, from the national perspective) while neglecting the interests of foreign states and actors. Such parochialism often produces externalities that lead to actions that are inefficient from the global perspective. The role of international law is then to induce states to “internalize” those externalities and to promote behavior that serves the global economic interest (Posner and Sykes, 2013, chap. 3). The increase in global surplus can then be divided among participating states to make them all better off.²¹ Trade agreements are illustrative. Nations acting unilaterally choose tariff

21 Such a division of surplus can occur through transfer payments from state to state or, more commonly, through “issue linkage” by which the state that benefits from one aspect of the bargain makes concessions on other matters that benefit the counterparty state. See *id.*

rates and other trade barriers with regard to domestic interest group pressures, ignoring the harm done to foreign exporters and thus producing excessive levels of protectionism. Trade agreements yield joint gains through reciprocal reductions in these inefficiently high trade barriers (Bagwell & Staiger 2002, chap. 2).

Extending this type of framework to the issues associated with the U.S.–China dispute over CSR, the analysis must consider the decisions of three sets of actors: China, U.S. investors, and the U.S. government.²² We shall assume that China's restrictions on inbound investment promote the self-interest of China, whether by inducing technology transfer or in other ways.²³ We further assume (except for a brief discussion of "short-termism") that U.S. investors who proceed in the face of China's investment restrictions also benefit from their investments. But the investors act in their private interest, and it remains to ask whether their bargains impose costs ("externalities") on other actors. If so, private bargains in the shadow of CSR may not be in the national interest of countries such as the USA. We will also ask whether the U.S. government can somehow affect the "bargaining game" between U.S. investors and their Chinese partners in a manner that shifts investment returns to U.S. investors, whether or not externalities exist. Each of these possibilities may afford an incentive for a nation such as the USA to seek changes in China's investment policies.

The fact that national governments may have an incentive to seek such changes, however, is not enough to establish that China's practices are detrimental from a global perspective or, equivalently, that an international treaty or other legal intervention can enhance global welfare by prohibiting them and thereby making it possible for all nations to benefit.²⁴ If the goal and effect of national government intervention are simply to shift surplus to its national investors, the situation may be zero-sum and the elimination

22 The discussion is equally applicable, of course, to disputes over CSR between China and other governments such as the EU.

23 For simplicity, we treat China as a unitary actor here and suppress any possibility that Chinese firms may act in ways that are contrary to China's national interest.

24 The discussion here elides somewhat exactly what is meant by "welfare." The conventional measure of economic welfare is the aggregate of all economic surplus across consumers, producers, and governments. At the national level, it is roughly captured by the concept of national income. National governments are not necessarily motivated by a desire to maximize this conventional measure of welfare, however, and are better understood as maximizing "political" welfare, which includes considerations of distribution as well as aggregate surplus. Likewise, international legal arrangements for the promotion of global "welfare" are best understood as promoting mutual political welfare. I will focus here on the conventional conception of welfare, however, because the slippage between the conventional measure of welfare and "political" welfare is unobservable, and it is reasonable to assume that governments care about conventional welfare even if not exclusively.

of CSR cannot enhance mutual welfare. Likewise, it is possible that China's CSR policies actually increase global welfare, with the same implication. As shall be seen, the case against CSR on global welfare grounds is at best shaky.

3.2 National Welfare Considerations

We begin with the national welfare perspective, asking whether China's CSR policies reduce the welfare of the USA without regard to the concomitant welfare effects on China. Two issues receive consideration here—does CSR shift economic surplus from the USA to China, and does private acquiescence to CSR by U.S. investors create negative externalities for other U.S. entities? We defer to the next section several issues that are more appropriately addressed under the global welfare perspective, including the effect of CSR on the efficiency of investment levels in China, its effect on research and development (R&D) incentives, and the possibility of bargaining inefficiencies.

3.2.1 *The Division of Economic Surplus*

CSR affords Chinese business partners access to proprietary technology, and thereby “cuts them in” on the returns to investments in that technology. Those returns may flow from the profits of the joint enterprise created as a result of CSR, and from the possibility that Chinese venture partners will become eventual competitors using the proprietary technology (or a modified version) in other ventures and markets. Absent CSR, by contrast, it seems at first blush that foreign investors would retain all the profits from their proprietary technology as long as it remained protected by IP law or as a trade secret. Thus, CSR seemingly shifts economic surplus from the USA to China, which directly reduces the economic welfare of the USA, other things being equal. The U.S. government will surely prefer that a greater share of the returns to U.S. technology go to U.S. entities, which may motivate demands to eliminate CSR.²⁵

This analysis is oversimple, however, because CSR is by no means the only policy instrument that China can employ to extract surplus from foreign investors. For example, if China has the leverage to extract, say, \$10 million in expected future profits from a would-be foreign investor through CSR, it should also have the leverage to charge that same investor \$10 million for a

25 Indeed, the elimination of restrictions on the corporate structure of inbound investment would rebound potentially to the benefit of all U.S. investors, whether or not the investment involved any technology transfer. A lifting of any constraint on inbound investment can only make it more profitable.

license to undertake its investment in China.²⁶ Nothing in China's existing legal obligations toward the USA would preclude such a licensing fee. Similarly, China can impose discriminatory taxes on foreign investors if it wishes, subject them to discriminatory regulations, regulate their output prices, and so on. Accordingly, the elimination of CSR need not shift any surplus from China to the USA and could simply result in the substitution of other instruments to tax the surplus of U.S. investors.

It also bears emphasis that if the only effect of CSR were on the division of surplus (rather than its magnitude), any gain to the USA from a change in Chinese policy will be offset by an equal loss to China. An agreement by China to eliminate CSR would then create no joint surplus and such an agreement could not generate mutual gains.

3.2.2 Externalities and CSR

We now consider the possibility that CSR creates externalities that affect parties who do not participate in the joint enterprise created by CSR. In particular, we ask whether U.S. investors may agree to CSR because it is privately profitable for them even though CSR imposes losses on other U.S. entities to a degree that reduces aggregate national welfare. Three possible scenarios raise this possibility.

3.2.2.1 The national "terms of trade." A central concept in the economics of international trade is the "terms of trade." The terms of trade is defined as the ratio of the price of goods and services that a nation exports to the price of the goods and services that it imports (Krugman, Obstfeld, & Melitz 2018, chap. 6). An increase in this ratio benefits a trading nation and a decrease harms it. The logic is exceedingly simple—as an analogy, if the price of legal services rises and the price of groceries falls, those of us who trade legal services for money to buy groceries come out ahead.

Technology transfer has implications for the competitiveness of U.S. industries over time and for the associated terms of trade. In particular, the transfer of technology to China can result in a worsening of the U.S. terms of trade and a loss of national income.

To elaborate, suppose that the pattern of specialization in production across countries is driven by differential access to technology (the classical "Ricardian" account of comparative advantage) (*id.*, chap. 3). Assume further

26 Here I put aside the possibility that the investor is risk-averse and views the expected loss of \$10 million from CSR as a greater burden than a fixed license fee in the same amount. If risk aversion were important, however, and if the only issue were the division of surplus between China and the inbound investor, China would rationally use the fixed license fee in the first place because it would be able to charge a licensing fee that exceeded the expected cost to an investor of CSR.

that the USA initially has an advantage over China in the production of advanced technology goods, specializes in producing such goods, and exports them to China, while China produces less technologically advanced goods and exports them to the USA. Now imagine that China gains access to more advanced technologies and starts producing the goods previously produced only in the USA. Chinese competition causes the prices of those goods to fall. But because the technology for producing the goods that China initially produced has not changed, the prices of those goods remain the same and thus increase relative to the prices of goods sold by the USA. The attendant worsening of the terms of trade implies a loss in U.S. welfare.²⁷

This scenario offers a simple rationale for U.S. concern about technology transfer that rests on the dynamic, adverse effects of technology transfer on global prices for the goods that the USA specializes in producing and exporting. To complete the analysis, however, one must offer an explanation for why U.S. firms would transfer technology to China if doing so has the effect of hurting their long-term competitiveness—why is that loss not internalized by the transferor firms so that it only occurs in the presence of some offsetting benefit that more than makes up for the long-term loss? The most likely answer is that U.S. technology is not “owned” by a single firm. Imagine a situation in which multiple U.S. firms producing similar goods employ similar technologies embodying a mix of similar or cross-licensed patents, trade secrets, and the

27 The essence of the argument can be captured by a simple formal illustration—my thanks to Robert Staiger for suggesting it. Imagine a two-country world composed of the USA and China. Two goods are produced. The only input into the production of either good is labor. Good A requires α units of labor to produce in the USA and α^* units of labor to produce in China. The labor requirements for good B are β and β^* , respectively. The U.S. wage per unit of labor is w and the Chinese wage w^* . There are no tariffs or transport costs. Assume finally that the USA has superior technology for producing both goods (i.e., $\alpha < \alpha^*$ and $\beta < \beta^*$).

Suppose that good A is produced in both countries. Its price and thus marginal cost must be the same in both. Hence, $\alpha^*w^* = \alpha w$ and $\alpha^*/\alpha = w/w^*$. It follows that $w^* < w$ (Chinese wages are lower than U.S. wages). Suppose further that $\beta^*/\beta < \alpha^*/\alpha$, which implies that the labor requirement to produce good B in China is lower in relative terms than the labor requirement to produce good A in China in relative terms. Then, $\beta^*w^* < \beta w$, China will have comparative advantage in good B (despite its less efficient technology in an absolute sense) and only China will produce good B.

Now let China gain access to improved technology for producing good A, call it $\alpha^{**} < \alpha^*$. For good A to continue being produced in both countries, wages must adjust to reduce the differential between the USA and China. Call the new U.S. wage w' , and we now have $\alpha^{**}w^* = \alpha w'$. U.S. consumers of good A can nevertheless obtain it at the same “real” price because its price has declined in proportion to the drop in U.S. wages. But there has been no comparable technological improvement in the production of good B and its price has therefore risen relative to the U.S. wage. Put differently, the U.S. terms of trade have deteriorated from $\alpha w/\beta^*w^*$ to $\alpha w'/\beta^*w^*$. The new terms of trade are clearly worse for the USA because $w'/w^* < w/w^*$.

Note further that on these assumptions, the situation is not reciprocal. The USA has superior technology across the board, and so the adverse effect on the USA from the improvement in China’s technology cannot be offset by technology transfer to the USA from China.

like. An individual firm may then profit from transferring its technology to the Chinese in return for the private benefits of participating in some Chinese investment opportunity, ignoring the adverse effects on other U.S. firms producing similar goods. This scenario presents a classic externality problem in which the decision by an individual U.S. firm may not be in the best interests of U.S. firms as a whole and affords a possible rationale for concerns about CSR on the part of the U.S. government.

Even if technology transfer worsens the terms of trade for the USA, however, it does not follow that global inefficiency arises. Indeed, putting aside any possible inefficiency associated with reduced *ex ante* incentives for R&D (discussed in Section 3.3 below), technology transfer *increases* global economic welfare. Its effect is to spread technology to firms abroad that can take advantage of it to lower their costs. Greater global output can then be produced with the same resources. Hence, even if CSR has a terms of trade effect that harms the USA, it does not offer a compelling basis for international cooperation to curtail it. Only if the prospect of technology transfer leads to globally inadequate incentives for R&D might there be some global efficiency loss, an issue addressed below.

3.2.2.2. Imperfect Competition and Exporter Profits. A closely related possibility arises in imperfectly competitive industries with an export orientation. To make it concrete, suppose hypothetically that two U.S. companies both produce advanced computer chips with similar capabilities. No other companies produce comparable chips, and the two U.S. companies have a “duopoly” over chip production in an important segment of the global market. Assume further that because of their duopoly, the companies recognize that it is their mutual interest to refrain from vigorous competition, and instead for both to set prices well above marginal costs to earn generous “duopoly profits.”²⁸ Finally, assume that most of their chip production in this market segment is exported. Accordingly, from the U.S. perspective, the high prices that result from the duopoly are a net benefit—the profits of U.S. firms are considerably higher at the expense in large part of foreign consumers, and U.S. consumers suffer only limited losses because they do not buy the chips at issue in significant quantity.²⁹

28 For purposes of this illustration, it matters not whether the duopolists explicitly coordinate their pricing behavior or simply engage in “conscious parallelism” in their pricing strategies, although the implications under domestic antitrust law could be quite different.

29 When U.S. firms earn their monopoly profits at the expense of foreign rather than domestic consumers, the usual objections to monopoly power from the domestic perspective vanish. This observation can explain, for example, why U.S. antitrust laws exempt “export cartels” from coverage under the Webb Pomerene Act. See 15 U.S.C. §§ 61–68.

Now imagine that a valuable opportunity arises to build a chip production facility in China. Both companies are interested in this opportunity, and because of CSR, a potential Chinese venture partner can insist on technology transfer as a condition of entering a joint venture to facilitate the investment. Both companies know that the eventual consequence of technology transfer will be a new Chinese competitor and a reduction in profits for the preexisting duopoly. Each U.S. company will take account of its own loss of profit in deciding whether to create an enterprise with a Chinese partner but will ignore the harm done to the other U.S. company. The result may be an arrangement whereby one U.S. company receives modest net gains from a deal to build the new facility in China, at the expense of a substantial loss of profit for the other U.S. company. And if U.S. consumers have only a modest stake in the pricing of chips in this market segment, as assumed above, the net impact on U.S. economic welfare can be detrimental.

This illustration is really just a variant on the terms of trade illustration of the last section, with the harm to the USA flowing through a loss of exporter profits rather than increased relative prices of imported goods.³⁰ Once again, the essential problem is an externality—firms that invest in China benefit from their investments but their decisions cause harm to other firms that they do not take into account. The illustration offers a possible account of why firms as a whole in particular industries may object to CSR policies, knowing that they would be better off collectively if China eschewed them (or if they could coordinate their joint behavior to refuse China’s terms), even if firms individually are tempted to accept China’s terms. And from the perspective of their home governments, this externality problem may diminish national economic welfare if the primary effect of increased competition is a loss of profit on export sales without offsetting benefits for domestic consumers.

The illustration here is like the terms of trade illustration in another respect. Putting aside *ex ante* R&D incentives for the moment once again, technology transfer in an imperfectly competitive industry enhances global welfare by reducing the inefficiencies associated with the exercise of market power, even if the effect on national welfare is adverse. Accordingly, despite the externality problem, no global inefficiency arises that would support international cooperation to eliminate it.

3.2.2.3 Agglomeration economies. A final source of potential externalities arises when technology transfers occur in industries with agglomeration economies (Glaeser 2010). The idea has its genesis in the “strategic trade policy”

30 The issues here also relate to a literature on the possibility of “profit-shifting” trade policies in imperfectly competitive industries. A classic reference is Brander & Spencer (1985).

literature that focuses, among other things, on the technological spillovers that can account for geographic concentrations of innovation such as Silicon Valley.³¹ IP rights are imperfect, the argument runs, and it is impossible for firms to capture all of the returns to innovation that occurs under their auspices. Instead, knowledge is portable and when workers change jobs, they take with them important details about technological advancements in their areas of expertise, which contributes to innovation in the new firms with which workers affiliate. In this way, innovation “spills over” from firm to firm, and innovation at each firm thereby creates a positive externality for other firms.

If these spillovers benefit all firms equally regardless of location, it would make no difference to a national government whether innovation occurred at home or abroad. But if positive spillovers are local because they flow through mobile workers who rarely migrate to other countries—or indeed who may rarely migrate out of their local area—then the positive externalities from innovation may become highly concentrated geographically (the Silicon Valley story). From the national perspective, much is to be gained from having technologically innovative companies concentrated at home or even in small areas within the home country because the country then captures the valuable spillovers (Krugman, Obstfeld, & Melitz, 2018, chap. 12).

In industries where such agglomeration economies are important, technology transfer abroad again creates negative externalities from the national perspective even if individual firms profit from it. In the limit, it may lead to a shift of the primary locus of innovation and alter who benefits from agglomeration economies.

Once again, however, the global welfare effects and the national welfare effects do not coincide. A shift in the locus of innovation will benefit one country and harm the other, but the net effect is in general ambiguous. One can imagine scenarios in which the dispersion of innovation reduces global agglomeration economies and retards the rate of technological progress to the detriment of global economic welfare. But one can also imagine scenarios in which changing the locus of innovation is a wash, or even results in a shift of R&D toward a more productive environment or an environment where complementary resources are available in greater abundance. Like the other issues discussed above, the observation that innovation may benefit from agglomeration economies does not necessarily imply that technology transfer is globally harmful or that international agreements to curtail it would be globally beneficial.

3.2.2.4 “Short termism.” An additional possible concern about CSR relates to the popular discussion among business commentators (Carey et al. 2018) and

31 For an introduction to the early strategic trade literature, see Krugman (1987).

some politicians (Galston 2015) about “short termism” in the business world. Corporate managers, some suggest, are unduly concerned with short-term earnings reports and profits, to the detriment of the long-term health and profitability of their companies. Such managers, if confronted with CSR practices in China, might agree to technology transfer to gain the benefit of immediate new business opportunities at the expense of their companies’ long-term best interests. Analytically, this possibility is another form of externality problem, here due to agency costs (with the negative externality falling on the business principal).

Although such behavior is certainly a logical possibility, it has no particular connection to CSR in China but is a much broader concern that may afflict all manner of corporate decisions. The fundamental problem here is an agency problem, and the solution would seem to lie with changes in corporate governance. One doubts that governments have the capacity to identify situations or companies in which the problem arises with any reliability, and there is no reason to imagine that it afflicts companies across the board that happen to have investment opportunities in China. It seems fanciful to suggest that curtailment of CSR is needed because U.S. investors in China are incapable of managing their own affairs competently.

3.2.3. *Summary and Implications*

The analysis to this point indicates that CSR, viewed in isolation, may reduce U.S. national welfare. Other things being equal, it transfers surplus from the USA to China. And even though the U.S. investors who agree to CSR presumably expect a net profit from their joint enterprises with Chinese partners, negative externalities may exist that reduce U.S. national welfare.

At the same time, the issues considered to this point do not suggest any global inefficiency from CSR, and to the contrary point out several possible sources of global efficiency gain. On the premise that international agreements are only feasible when they yield mutual benefits, the analysis to this point offers little basis for thinking that an agreement to eliminate CSR is feasible.

Absent such an agreement, one might ask whether the USA can benefit from unilateral measures to curtail the role of CSR in China, such as by limiting the ability of U.S. investors to agree to it without U.S. government approval. Likewise, technology transfer through the formation of joint enterprises with Chinese investors can occur in the USA as well as in China, and the USA might undertake to limit it through constraints on inbound Chinese investment in the USA.

More will be said about such possibilities in Section 5 but note two cautions at this stage. First, the ability of the U.S. government to identify reliably situations in which technology transfer is detrimental to the USA may be

questionable, and efforts to limit it may simply deny U.S. investors profitable investment opportunities and access to foreign capital without yielding any systematic benefits. Second, under current law, China has many instruments that it can deploy to tax inbound U.S. investments, and unilateral efforts to stifle technology transfer may induce China to substitute other instruments for extracting surplus from the U.S. investors or to retaliate against any new burdens placed on Chinese investors.

3.3 Further Global Welfare Considerations

We now turn more broadly to the global welfare effects of CSR. The last section has already noted two possible benefits of CSR in that regard—the dissemination of technology to lower cost loci of production and the introduction of greater competition into imperfectly competitive industries. The focus below will be shifted to three other issues: the effects of CSR on the efficiency of investment levels in China; the effects of CSR on R&D incentives; and the implications of the fact that CSR necessitates a bargaining process between inbound investors and potential Chinese partners.

A natural starting point is a well-known implication of the “Coase Theorem”³²—parties to private contracts will tend to bargain toward mutually efficient outcomes. We begin with that perspective and then add various complicating factors.

3.3.1 A Benchmark Case: Investment Levels and R&D Incentives

We begin with a benchmark case under which CSR creates no obvious inefficiency, the caveat being that the welfare effects on R&D incentives are uncertain. As a preliminary, it is useful to reflect more generally on the possible consequences of weak IP protection in China. Suppose, for example, that “technology transfer” results from fraud and theft, possibilities that we put to the side for purposes of this essay. A potential source of inefficiency comes immediately to mind. If foreign investors fear that investment in China will facilitate the theft of their IP, or that Chinese regulators will use deceitful regulatory requirements to gain access to technology and disseminate it to Chinese competitors, the investors may be reluctant to invest at all and those who do invest may well do so on a smaller scale or with less advanced technology than they would otherwise employ. Production will be driven elsewhere even if China would be the most efficient locus of production

32 The reference is to the so-called “Coase Theorem” that has its genesis in [Coase \(1960\)](#).

using advanced foreign technology (Lai 1998; Branstetter & Saggi 2011). Global efficiency will decline, other things being equal, because with better IP protection in China, the same global output could be produced at a lower cost. In addition, the diminution of the returns to proprietary technology reduces the *ex ante* incentive to develop it and may lead to inadequate incentives for R&D.

The offsetting consideration, of course, is that IP rights may initially be more generous than necessary to induce appropriate levels of R&D. It is notoriously difficult to determine the “optimal” level of protection for IP (Landes & Posner 2003). If IP protection is initially more stringent than necessary, R&D incentives may initially be excessive, and the economic costs associated with monopolistic exploitation of proprietary technology may be unjustifiably high. For this reason, the possibility arises that a weakening of IP rights may generate offsetting efficiencies. But if one assumes that the initial level of IP protection is *not* excessive, technology transfer through theft is inefficient as described above.

Now contrast CSR as defined herein, whereby investors knowingly and voluntarily agree to technology transfer to secure access to Chinese investment opportunities. Will the same inefficiencies arise? The answer may well be no.

To see why, consider an investment opportunity in China that is most efficiently exploited by a U.S. investor using some proprietary technology. Chinese law requires, however, that the investor partner with a Chinese entity that may demand or gain access to that technology. For purposes of analysis in this section, we assume (an assumption relaxed below) that each party to the venture can calculate the other party’s returns accurately given the terms of the deal, and thus can figure out what demands would cause the other party to walk away from the deal. We also assume for the moment that the bargaining process itself is inexpensive.

Because of the law requiring a Chinese venture partner, foreign investors must share their technology in a manner that creates a reduction in the total returns that they earn on their proprietary technology from operations elsewhere due to a prospect of future competition from Chinese entities. At first blush, it again seems that the foreign investor may decline to invest altogether, invest on a smaller scale to reduce the degree of technology transfer, or use a less advanced technology than is ideal, causing an inefficient dislocation of production.

But this analysis is too simplistic as it ignores the incentive of Chinese venture partners to strike a deal. It is not in China’s interest to demand technology transfers that would drive foreign investors away from profitable investment

opportunities or lead them to undertake them in a manner that foregoes potential profit. Rather, China's interests are best served by offering partnerships in which technology transfer is accompanied by royalty payments or other consideration to ensure that foreign investors are willing to participate in every venture that generates a positive return that the parties can somehow split. We may define the investor's "participation constraint" as follows: the investor's share of returns to the investment, less any reduction on its returns elsewhere and over time due to technology transfer, must exceed what the investor can obtain by eschewing the investment in China. Chinese partners have every incentive to offer a deal that satisfies this constraint to ensure the exploitation of mutually profitable investment opportunities.³³ Thus, it is not obvious that CSR will lead to underinvestment in China, conditional on the existing state of technology. And as noted, its effect on the efficiency of *ex ante* incentives for R&D is entirely unclear.

Moreover, as noted in the last section, China has other instruments available for the extraction of surplus from foreign investors. If it were somehow induced to give up CSR policies, it might well substitute other instruments with much the same effect on *ex ante* R&D incentives.

Finally, if it could somehow be determined that greater incentives for R&D are needed and that CSR inefficiently reduced them, other policy instruments exist to promote R&D on a tailored basis. An across-the-board attack on Chinese investment policies seems a crude approach to addressing the problem of inadequate returns to R&D, a problem that is likely to be industry-specific if it exists at all and can be reliably identified.

In sum, the benchmark case offers little basis for concern about CSR from a global welfare perspective. We now consider two complications relating to capital market monopsony and bargaining costs.

3.3.2 Capital Market Monopsony

The analysis to this point elides an important issue—what makes investment in China so attractive? Consider the global capital market with tens of trillions of dollars in investment capital.³⁴ Investment opportunities exist all over the world, and one might expect capital to flow to the best available options wherever located. If returns are higher in one location, investors will flock to that location until the rate of return equilibrates across jurisdictions. At that point,

33 This proposition draws the link to Coase, and the idea that parties to agreements will negotiate arrangements that maximize their joint surplus, subject to transaction costs.

34 One recent estimate suggests that the combined global bond and stock markets have a valuation of roughly US\$160 trillion. See <https://www.fool.com/knowledge-center/5-bond-market-facts-you-need-to-know.aspx>.

there is no particular advantage to investing in one place over another. Once the market equilibrium establishes the international “competitive rate of return,” investors will expect and demand it. Should a capital-importing country demand that investors forego returns in a fashion that would drive the rate of return below this competitive rate, as by transferring their proprietary technology, investors will not invest unless some other source of returns compensates for the loss and restores the competitive return. In such an equilibrium, investors become indifferent to the locus of investment. Capital-importing countries must offer the competitive rate of return to attract capital and need pay no more. But they also have no leverage to enact policies that would drive investor returns below the competitive rate. On this account, investors would be indifferent to policies such as CSR, and capital-importing countries could not profit from them.

Plainly, something is wrong with this story. China evidently believes that it can profit from CSR and foreign investors evidently believe that it reduces their investment profits. Chinese capital market monopsony offers an explanation.³⁵

The reader may be immediately skeptical at this claim, however, in light of the tens of trillions of dollars of investment capital in global markets. China’s market is enormous to be sure, but is it really large enough to enable China to affect the rate of return for foreign investors?

The answer is yes because it is a mistake to think of “capital” as homogeneous in a single global capital market (Sykes 2019). Money is fungible to be sure, but capital is not simply money. Capital in the auto industry, for example, includes intellectual, managerial, and human capital that is specialized in auto production and cannot earn comparable returns in other industries. Accordingly, imagine an American auto manufacturer that wishes to sell automobiles into an important market like China, but faces heavy tariffs

35 Monopsony refers to the existence of monopoly power on the buyer’s side of a market, which can create inefficiency analogous to that created by monopoly on the seller’s side. The classic textbook monopsony model posits a single large buyer facing a competitive industry supplying some good to the buyer. The “supply curve” for the industry slopes upward, reflecting the fact that as output of that good increases, production costs increase as well so that price must increase to induce additional units of output. Assume that the monopsonist cannot discriminate in the prices that it pays to different suppliers but pays them all a price equal to the amount necessary to induce the last unit of production that the monopsonist purchases. Such a buyer will recognize that purchasing additional units of the good causes the price that it pays for all units of the good to increase. Accordingly, in deciding how much of the good to purchase, the monopsonist compares the value of an additional unit to the total increment in its costs for all units of the good, not simply to the price of the last unit purchased. Fewer units will be purchased than in a situation where buyers are small and cannot influence the prices that they pay for their purchases. An inefficiency arises from the social standpoint because in equilibrium, the monopsonist declines to purchase units of the good even though its valuation (presumed to be the social value) of those units exceeds their production costs (and price). See Scherer (1980, chap 10).

(15 percent in the case of China, see [Trivedi 2018](#)) and sizeable transportation costs. The automaker will value the opportunity to set up a production facility in China to avoid these costs and reach Chinese consumers more effectively, a fact that gives China leverage to extract surplus from the automaker in return for access to the Chinese market.

Likewise, specialized capital will value new investment opportunities in places where complementary inputs into production are relatively inexpensive. Consider a company that specializes in the sale of smartphones and imagine that a large potential labor force of smartphone assembly workers is available at low wages in China. The smartphone manufacturer will value the opportunity to open a production facility in China even if it may not expect to sell a lot to Chinese consumers because it can hire a labor force at favorable wages. The added profit available from such an investment in China again gives the government leverage to extract surplus from the investor in exchange for the opportunity to invest.

Specialized capital investment thus explains why access to foreign markets often “matters” to foreign investors, sometimes a great deal, notwithstanding the enormous size of the global capital market in a broader sense. And the Chinese market is a leading candidate for a market that really “matters” because of the unequaled number of potential consumers and enormous labor force.

Once we recognize that China has monopsony power in certain markets for specialized capital, however, does it necessarily follow that a global inefficiency arises from the exploitation of China’s monopsony power?³⁶ The answer is no. In the textbook case of monopsony in a goods market, inefficiency arises because the exploitation of monopsony power drives a wedge between the cost of what is being purchased and its valuation, leading the monopsonist to forego purchases even though their social value exceeds their cost. The analogous problem with respect to investment capital would arise if China imported less capital than is optimal, foregoing additional capital at the margin to reduce the rate of return paid to foreign investors on the capital that it does import.

But CSR is not a simple tax on units of imported capital that operates at the margin to reduce the quantity of imported capital. In fact, it need not reduce the total quantity of imported capital at all. Rather, in keeping with the benchmark case of the last section, properly calibrated CSR can act as a tax on inframarginal capital investment that earns returns above what the investor

36 [Branstetter \(2018\)](#) suggests that China’s practices are objectionable because they are akin to the creation of a cartel facing inbound investors.

can obtain elsewhere. Investments that earn returns just sufficient to satisfy the investors' participation constraint can be left unburdened by CSR or any other investment restriction that might drive them elsewhere.

Put differently, CSR may simply facilitate *de facto* monopsony price discrimination. It is well known that the conventional inefficiency of monopoly, whereby price to consumers exceeds marginal cost, disappears if the monopolist can engage in perfect price discrimination and charge each consumer a different price equal to the consumer's maximum willingness to pay for the good in question. The same principle applies to a monopsonist if the monopsonist is able to pay each supplier of units that it purchases an amount equal to the supplier's reservation price for that unit. Such a monopsonist will not purchase fewer than the socially optimal number of units, although it will extract all the surplus from purchase transactions for itself.

In short, because CSR occurs in the context of a negotiation between a foreign investor and its potential Chinese partner, the investor's participation constraint can be satisfied for any investment opportunity and all profitable investment opportunities can be exploited notwithstanding Chinese "monopsony." If so, the effect of CSR is once again exclusively on the division of surplus from investment, and not on the efficiency of investment levels conditional on the existing state of technology. The observation that China has monopsony power in certain markets for specialized capital does not necessarily offer any basis for concluding that CSR creates global inefficiency, again with the caveat that the effect on the efficiency of *ex ante* R&D incentives is unclear.

3.3.3. *Bargaining Costs and Bargaining Failures*

The benchmark case was constructed on the assumption that foreign investors and their Chinese partners can bargain cheaply and can ascertain the other party's returns with enough accuracy to know what demands would cause the counterparty to walk away and forego a mutually valuable investment opportunity. Both assumptions may be unrealistic at times.

Potential parties to profitable ventures will no doubt squabble over the division of surplus. If only two parties are in play, the situation poses a classic "bilateral monopoly" problem in which the division of joint gains is generally thought to be indeterminate and can depend on a range of factors such as the "patience" of each bargainer and its "outside options" if bargaining fails to reach an agreement (Scherer 1980, pp. 299–300; Osborne & Rubinstein 1990). If multiple potential partners are involved on one or both sides of the deal, the situation is further complicated. Either way, the bargaining process may be lengthy and involve substantial costs as various agents on each side to try and

obtain the best possible deal for their principals. Bargaining in relation to proprietary technology may raise particularly sensitive concerns that make for costly and expensive negotiations.

Moreover, bargaining breakdowns occur at times due to various forms of strategic behavior and misjudgments about the other side (*id.*, § 4.2). A classic source of difficulty arises in bargaining with “incomplete information,” where counterparties are not able to determine what demands would leave the other party with inadequate returns and induce them to walk away. Impasse may arise because the refusal of the other side to come to terms may be seen as a “bluff” (Myerson & Satterthwaite 1983).

With substantial bargaining costs and the possibility of bargaining failure, profitable investment opportunities may be left on the table, leaving opportunities to be exploited by others with higher costs. Those that are eventually exploited may be inefficiently delayed.

These observations offer the first clean argument for concern about CSR from a global welfare perspective. Chinese restrictions on the corporate form of inbound investments force investors to bargain with potential Chinese partners over partnership or equity participation and its privileges. Absent the restrictions on corporate form associated with CSR, these bargains would be unnecessary. Of course, foreign investors might choose to partner with Chinese firms anyway for a variety of reasons, but they could walk away completely from negotiations with potential partners if negotiations proved difficult. On this basis, one might argue that CSR is objectionable from a global efficiency standpoint precisely because of considerations suppressed by the benchmark case—the transaction costs of bargaining and the associated impediments to concluding efficient deals.

As with all the analysis to this point, however, this proposition comes with caveats. The first concerns R&D incentives, and the uncertainty as to whether they are excessive or too weak in the absence of CSR. Second, one must again be mindful of China’s ability to substitute other instruments for CSR should it become impermissible. Imagine that China replaced CSR with a policy that required potential investors to negotiate with the Chinese government over a fee for an investment license. Bargaining costs and bargaining breakdowns might still arise.

3.3.4. Summary and Implications

The global welfare implications of CSR are uncertain and ultimately depend on empirical issues, but there is little basis for a belief that it is systematically harmful. CSR disseminates technology to new producers who can take advantage of lower local input prices to use it more efficiently. It also introduces

greater competition into imperfectly competitive markets, which are surely common in industries with important proprietary technologies. And because CSR allows private actors to bargain freely over the terms of their joint enterprises in the shadow of their participation constraints, it does not preclude the exploitation of all jointly profitable investment opportunities. Its effect on the division of surplus between the parties to the joint enterprise can be inframarginal, and thus produces no inefficiency even though China has a degree of “monopsony” power over inbound capital.

This optimistic perspective is subject to two general caveats. First, other things being equal, CSR reduces the returns to investments in R&D. This effect is constructive in the face of socially excessive protection for proprietary technologies, and counterproductive in the face of inadequate protection. Which effect predominates is unknown, although it seems quite unlikely that R&D incentives are deficient across the board in all of the industries subject to CSR. Moreover, one must consider the possibility that in the absence of CSR, China would simply substitute other lawful instruments for the extraction of surplus from foreign investors, with the same impact on R&D incentives.

Second, CSR necessitates bargaining between inbound investors and potential Chinese partners. Bargaining costs and breakdowns no doubt arise which reduce investment returns and may lead some valuable investment opportunities to remain unexploited or divert them to less efficient ventures. The magnitude of the problem is unclear, to be sure, and it might resurface in the absence of CSR if China were to substitute other instruments that imposed bargaining or other transaction costs on inbound investors.

4. UNDERSTANDING THE TRADE/INVESTMENT DICHOTOMY AND THE TECHNOLOGY TRANSFER ASPECTS OF THE CHINESE WTO PROTOCOL AND THE PHASE ONE TRADE AGREEMENT

We now turn to a core puzzle raised in the introduction—why do international investment agreements such as those of the USA prohibit CSR, while trade agreements generally do not? The analysis will also address two subsidiary puzzles: why do China’s WTO Protocol and the new Phase One Trade Deal prohibit formal technology transfer requirements for inbound investors, thereby creating an obligation that does not apply generally to all WTO members? And given that prohibition, why do the Protocol and the Phase One Agreement not also prohibit corporate structure requirements that can have much the same effect in practice as formal technology transfer requirements?

4.1 Trade Agreements Versus Investment Agreements

As outlined in Section 2, conventional trade agreements such as GATT do not constrain the ability of signatories to restrict inbound investment or to place conditions on the right of foreigners to make investments. Their focus is on trade protectionism—barriers to imports and exports—rather than investment, with limited exceptions such as the sectoral services commitments introduced in 1994 by GATS that facilitate foreign investment in specified sectors. No generally applicable constraints exist, in particular, on technology transfer requirements applicable to foreign investors, or on corporate structure requirements.

Investment agreements present a different picture. Most investment agreements contain “national treatment” provisions prohibiting discrimination between domestic and foreign investors under certain circumstances,³⁷ and an increasingly important subset of investment agreements, including all those of the USA,³⁸ require national treatment in the “establishment” of investments.³⁹

The U.S. Model BIT, for example, which serves as the basic negotiating text for U.S. BITs, provides in Article 3.1: “Each Party shall accord to investors of the other Party treatment no less favorable than that it accords, in like circumstances, to its own investors with respect to the establishment [of investments].”⁴⁰ Language to the same effect appears in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership.⁴¹

Pre-establishment national treatment commitments reflect a desire on the part of treaty counterparties to eliminate *investment protectionism* by leveling the playing field between domestic and foreign investors. This objective is *not* present in conventional trade agreements.

Equal treatment for foreign investors in the establishment of investments has an obvious efficiency explanation—just as free trade in goods and services increases economic welfare by allowing production to occur wherever it is most efficient, the elimination of barriers to inbound foreign capital increases economic welfare by allowing the most efficient investors to take advantage of

37 See UNCTAD, Investment Policy Hub, Mapping of IIA content (reporting that 2189 of 2577 mapped treaties contain national treatment clauses), <https://investmentpolicy.unctad.org/international-investment-agreements/ii-mapping#section-38>.

38 These include both BITs with the USA and free trade agreements that include investment provisions (such as the new U.S.-Mexico-Canada Agreement).

39 See *id* (reporting that 168 out of 2577 mapped treaties include pre-establishment national treatment commitments).

40 <https://ustr.gov/sites/default/files/BIT%20text%20for%20ACIEP%20Meeting.pdf>.

41 CPTPP Art. 9.4, <https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/tpp-ptp/text-texte/09.aspx?lang=eng>.

investment opportunities. Domestic investors may resist such liberalization, of course, and the political will to eliminate investment protectionism may or may not exist in any particular context. Accordingly, only some investment agreements pursue it, while others focus primarily on eliminating opportunistic behavior toward established investors who are vulnerable because of sunk investments.⁴²

When the treaty objective includes equality of investment opportunities for foreign investors, it is necessary to prohibit a range of policies that impose costs on foreign investors but not domestic investors. Pre-establishment national treatment commitments thus rule out measures such as discriminatory licensing fees, taxes, and regulatory requirements for would-be foreign investors. Likewise, technology transfer requirements applicable to foreign investors become impermissible, as do corporate structure requirements that compel foreign investors to partner with domestic entities as a condition of the right to invest.⁴³

This analysis, along with that of Section 3, offers a clear account of why typical trade agreements do not address technology transfer requirements and related policies such as CSR, while some investment agreements do. Section 3 showed that when capital-importing countries retain the right to discriminate against inbound investment generally—a matter of investment

42 Pre-establishment national treatment commitments are much like tariff commitments in that they prevent capital-importing countries with monopsony power over specialized capital from exploiting it to the detriment of capital exporters. The rationale for post-establishment national treatment commitments to investors is different, as they protect against opportunistic behavior after sunk investments are incurred. See Sykes (2019).

43 A prohibition on technology transfer requirements and corporate structure requirements is implicit in a general pre-establishment national treatment commitment. Moreover, since the bilateral investment treaty with Jamaica in 1994, all U.S. BITs have prohibited “performance requirements” in relation to inbound investments. The list of prohibited performance requirements has evolved to include technology transfer requirements, and the U.S. “Model BIT” that serves as a template for negotiations with potential treaty partners now prohibits requirements “to transfer a particular technology, a production process, or other proprietary knowledge to a person in [a counterparty’s] territory.” 2012 U.S. Model Investment Treaty, Art. 8(1)(f), <https://ustr.gov/sites/default/files/BIT%20text%20for%20ACIEP%20Meeting.pdf>. This language was incorporated into the investment provisions of the now defunct Trans-Pacific Partnership. See Art. 9.10(1)(f), <https://ustr.gov/trade-agreements/free-trade-agreements/trans-pacific-partnership/tpp-full-text>. It was preserved in the Comprehensive and Progressive Agreement for Trans-pacific Partnership (CPTPP) among the remaining TPP parties. See <https://www.mfat.govt.nz/assets/Trans-Pacific-Partnership/Text/9.-Investment-Chapter.pdf>. Similar language appears in the investment chapter of the new Comprehensive Economic and Trade Agreement (CETA) between Canada and the EU. See CETA Art. 8.5(1)(f), <https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/ceta-aecg/text-texte/toc-tdm.aspx?lang=eng>. CETA goes even farther—in addition to the national treatment principle, it specifically prohibits limitations on “the participation of foreign capital in terms of maximum percentage limit on foreign shareholding” as well as any measure that “restricts or requires specific types of legal entity or joint venture.” See CETA Art. 8.4(1)(a).

policy that conventional trade agreements do not address—the global welfare case against CSR is at best inconclusive. We would not expect trade treaties to contain obligations that do not offer clear, mutual benefits. By contrast, for the subset of investment agreements that seek to eliminate investment protectionism, it is necessary to address all of the policy instruments that allow a capital-importing nation to impose discriminatory costs on foreign investors. Formal technology transfer requirements and CSR are examples.

4.2 The Technology Transfer Obligations in China's WTO Protocol and the Phase One Trade Agreement

We now turn to three subsidiary puzzles: Why did China's WTO Protocol of Accession prohibit China from imposing mandatory technology transfer requirements as a condition of the right to invest in China, a commitment that no other WTO member had been required to make? And given that prohibition, why did the drafters not extend it to include corporate structure requirements that also promote technology transfer? Finally, why does the Phase One Trade Agreement follow the model of the WTO Protocol, and also omit to address corporate structure requirements?

Beginning with the first question, an initial conjecture might be that the prohibition on formal technology transfer requirements in China's Protocol is not an efficiency-enhancing provision at all, but simply a mechanism for transferring some of the surplus from China's WTO accession to WTO counterparties. Access to China's investment opportunities is clearly of value to other WTO members, and the prohibition on formal technology transfer requirements might have been thought to sweeten the accession deal. Further support for this hypothesis might be drawn from the fact that the constraints on China are not reciprocal. If formal technology transfer requirements for investors are problematic in general, why would other WTO members not have agreed to eschew them as well?

The difficulty with this account relates to an issue already noted—China's Protocol does not preclude it from engaging in other policies to capture surplus from foreign investors, such as a variety of tax policies or fees for investment licenses. If the goal were to enhance the profits of foreign investors by protecting them against Chinese policies that might somehow shift some of their returns, the Protocol falls woefully short.

Accordingly, one is led to seek other explanations for the prohibition on formal technology transfer requirements in the Protocol. "Cheap talk" is a possibility. Perhaps the drafters of the Protocol wished to appear tough on China by

demanding investment constraints that did not apply to other members. China may have agreed to the limited restriction on formal technology transfer requirements knowing that it would have limited practical consequences given that it retained the ability to utilize corporate structure requirements along with an array of additional instruments that deny national treatment to foreign investors.

A second possibility is that the prohibition on technology transfer requirements for inbound investment is an artifice in a text that was primarily concerned with barriers to trade with only an incidental impact on investment. Consider the text of the Protocol:

... China shall ensure that the distribution of import licences, quotas, tariff-rate quotas, or any other means of approval for importation, the right of importation or investment by national and sub-national authorities, is not conditioned on: whether competing domestic suppliers of such products exist; or performance requirements of any kind, such as local content, offsets, the transfer of technology, export performance or the conduct of research and development in China.

Although the text mentions investment, it is primarily focused on barriers to imports. Performance requirements as a condition of importation have long been a concern to WTO members and have been seen as a violation of either GATT Article III (national treatment for imported goods) or GATT Article XI (elimination of quantitative restrictions and “other measures” restricting importation). These principles were codified in the WTO Agreement on TRIMS (Jackson, Davey, & Sykes 2013, pp. 1233–1243). As an example of an investment restriction that impairs importation and has been found to violate GATT, governments have required foreign investors to use local goods as input products, thereby discouraging the importation of substitutes.⁴⁴ So too, a requirement that foreign producers of imported goods transfer their technology as a condition of importation would present a substantial trade barrier that would impair market access for exports from other WTO members. This provision of the Protocol might thus be viewed as little more than a restatement of already existing WTO obligations under GATT and TRIMS and may not have been intended to work any substantial change in China’s investment regime.

A final possibility relates to the second of the subsidiary puzzles set forth above—why prohibit formal technology transfer requirements but not

⁴⁴ See Canada – Administration of the Foreign Investment Review Act, 30th Supp. BISD 140 (GATT panel report adopted February 7, 1984).

corporate structure requirements? The disparate treatment of these policies has a clear efficiency explanation. First, in contrast to formal technology transfer requirements, corporate structure requirements are not just about technology transfer. Participants in joint ventures, and equity partners with access to corporate management, learn how to manage a business, comply with regulatory and tax policies, develop sensible hiring practices, and so on—all important aspects of successful entrepreneurship. Accordingly, joint venture policies are often touted as an aid to economic development for reasons unrelated to any transfer of proprietary technologies (Bishop 2007). These benefits may be substantial, particularly in North–South treaties involving a developing country.

Second, formal technology transfer requirements are likely a greater source of inefficiency in investment levels than the negotiating leverage created by joint venture requirements and equity caps. Formal transfer requirements are mandatory constraints on the terms of inbound investment. Private-sector actors have no discretion to deviate from them if they might stand in the way of an agreement to exploit a valuable investment opportunity. If any discretion at all exists to relax them, it lies with government officials rather than private actors who will better appreciate the problems that they can create. In short, mandatory requirements have considerable potential to get in the way of valuable investment opportunities. Negotiating leverage associated with CSR is less worrisome, however, as developed at length in Section 3. Potential investors can always adapt their demands to satisfy each party's participation constraint and have every incentive to do so rather than forego valuable investment opportunities (recognizing, of course, that bargaining breakdowns are still possible).

Whatever the rationale for prohibiting formal technology transfer requirements, therefore, the economic case against CSR is considerably weaker. And given the relative disadvantages of formal technology transfer requirements, it is not surprising that China's Protocol might prohibit one but not the other. Likewise, China's willingness to give up formal technology transfer requirements imposed a very little cost on China given the lack of constraint on the CSR substitute, as well as on the broader array of policy instruments that China can deploy to deny national treatment to foreign investors.

Much the same can be said about the provisions of the Phase One Trade Agreement, which appears to impose few substantive obligations regarding technology transfer beyond those already applicable to China through its WTO Protocol. To be sure, it extends those obligations reciprocally to the USA, but that extension is largely costless from the U.S. perspective because technology transfer has been a nonreciprocal issue in the past—U.S. technology is generally superior.

5. POLICY IMPLICATIONS FOR THE ONGOING U.S.–CHINA NEGOTIATIONS AND BEYOND

Should the USA demand a halt to CSR in its future (“Phase Two”) negotiations with China (assuming that they go forward)? The analysis above raises doubts about the mutual benefits of any such initiative, at least absent a decision to pursue broad-based elimination of restrictions on investment in each direction. It does not necessarily follow that the USA should do nothing in the face of CSR, however, and this section briefly considers some policy options. We begin with the current approach of the Trump administration and proceed to consider some alternatives.

5.1 Punitive Tariffs

The section 301 investigation initiated by the Trump administration in 2018 concluded that a few Chinese practices violated commitments to the USA under existing international law (certain provisions of TRIPS) and found that various other practices are “unreasonable or discriminatory” and “burden or restrict United States commerce.” CSR falls into the latter category, which serves as a catch-all for practices that the USA seeks to change but that do not violate existing international law. Section 301 affords the President discretion to take countermeasures against such practices,⁴⁵ including the authority “to impose duties or other import restrictions” on the exports of the offending trading partner.⁴⁶ Pursuant to this authority, President Trump imposed 10 percent tariffs on roughly \$250 billion (annualized) of Chinese imports, and later an additional 10 percent on another \$300 billion in imports (Wong & Coty 2020). The latter tariffs were reduced to 7.5 percent on \$120 billion in imports in accordance with the Phase One trade deal (Baccardax 2019). The evident strategy is to create negotiating leverage through tariffs, and the administration has made clear that CSR, broadly understood, is a central issue in the ongoing negotiations.

China’s initial response to U.S. complaints about technology transfer was to “fast-track” a new foreign investment law that would “prohibit” forced technology transfer (Lynch 2019). Article 22 of the draft law provides⁴⁷:

The State protects the intellectual property rights of foreign investors and foreign-invested enterprises according to law, protects the lawful

45 19 U.S.C. § 2411(b).

46 19 U.S.C. § 2411(c)(1)(B).

47 <https://www.chinalawtranslate.com/en/中华人民共和国外商投资法（草案）>.

rights and interests of intellectual property right holders and relevant right holders, and encourages technological cooperation based on the principle of voluntariness and business rules.

The conditions for technological cooperation in the course of foreign investment are to be negotiated by the various parties to the investment, and administrative organs and their employees must not force the transfer of technology through administrative measures.

Commentators express great skepticism, however, that the new law will make any material difference because Chinese officials do not formally require technology transfer presently but instead accomplish it through various non-transparent or surreptitious practices (Chen & Jourdan 2018; Elmer 2018). In addition, nothing in the draft law pertains to corporate structure requirements. A suspicion arises that this new provision is little more than cosmetic.

The Phase One Trade Agreement between the USA and China likewise does little to advance the ball beyond what was contained in the Chinese WTO Protocol of Accession. It elaborates the prohibition on mandatory technology transfer and makes it directly enforceable by the USA through unilateral action, but does not change the ability of China to foster technology transfer using corporate structure requirements for inbound investment.

Thus, the current strategy to date has failed to yield clear results on the technology transfer issue from the U.S. perspective, yet the ongoing punitive tariffs create deadweight costs to the U.S. economy, threaten the efficiency of global supply chains, and create considerable business uncertainty (Baker, Bloom, & Davis 2019; Crowley 2019; Lawder 2020). Other things being equal, measures to create negotiating leverage that do not carry such costs would be preferable.

A further problem with the Trump administration approach is that it entails its own serious violations of international law. The new tariffs on Chinese imports in many cases violate tariff commitments or “bindings” under WTO law (pursuant to GATT Article II). These tariff commitments on a wide range of goods have been negotiated with numerous trading partners over the history of the WTO/GATT system, and China is entitled to the benefits of these tariff commitments by virtue of its accession to the WTO and the “most-favored-nation clause” of GATT Article I. Unsurprisingly, China has now filed three cases in the WTO dispute process challenging the punitive tariffs.⁴⁸ Thus, the administration strategy places the USA in the awkward position of trying to generate negotiating leverage through a flagrant violation of its legal

48 See United States – Tariff Measures on Certain Goods from China I, II & III (WT/DS543, 565 & 587), details https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds565_e.htm.

commitments to China, for the purpose of pressuring China to change practices that do not violate international law at all.

If the administration strategy ultimately results in meaningful concessions from China that benefit the USA, many will no doubt argue that the end justifies the means. But the precedent set by the willingness of a major player in the trading system to cast aside its previous legal commitments for the purpose of extracting new concessions is a worrisome one, and the USA is by no means the only nation capable of playing that game in the future.

5.2 A U.S.–China BIT?

A more ambitious option that does not threaten the international legal order is the creation of a BIT with China, modeled on the existing U.S. BITs with numerous other countries. As indicated in Section 4, modern U.S. BITs include tight market access commitments secured by a national treatment obligation governing the “establishment” of foreign investments. Corporate structure requirements applicable to inbound foreign investment are foreclosed by the national treatment obligation and can even be made explicit as in CETA.

Such an agreement would afford a more comprehensive legal structure to address the panoply of instruments associated with technology transfer. And it would go far beyond the CSR issue and generate potentially sizeable efficiencies from improved market access for investors in both countries. Most U.S. investment treaties also confer private rights of action on aggrieved investors through investor–state dispute resolution.⁴⁹ Preliminary negotiations between China and the USA regarding a BIT have already taken place.

Not surprisingly, however, these negotiations have recently been on hold. Foreign access to Chinese investment opportunities potentially clashes with China’s emphasis on developing indigenous innovation and manufacturing capacity, while U.S. suspicions about the motivations of Chinese investors in U.S. high-tech industries have led to efforts to curtail inbound Chinese investment rather than expand it, as discussed below. Whatever the merits in principle of a U.S.–China BIT, therefore, it does not seem to be a realistic option at the moment.

Moreover, even if a U.S.–China BIT could be concluded, a danger might arise that China would shade on compliance with its commitments. Many investors in China are repeat players that may fear retaliation if they raise objections to Chinese policies. If such an investor were to feel pressure for

49 The notable exception is the new U.S.–Mexico–Canada Agreement, which omits investor–state dispute settlement between the USA and Canada and limits it with respect to Mexico.

technology transfer despite a formal prohibition on such pressures, the investor might thus be reluctant to pursue any remedy.

5.3 Strategic Policies Toward Chinese Inbound and Outbound Investment

Whatever the global efficiency implications of China's existing CSR policies, they can reduce the national economic welfare of the USA as indicated in Section 3. If the USA has no legal recourse and the prospect of negotiating an end to China's CSR policies is slim in the near term, an alternative option is to fall back on parochial counterstrategies aimed at promoting national economic welfare and pressuring China to undertake broader reforms of its investment restrictions with the potential to benefit U.S. companies. The ability of the USA to engage in such policies rests in large measure on the same leverage that China has over inbound U.S. investors—a degree of monopsony power over investors seeking access to the valuable U.S. market.

In short, the USA can play the same game as China, slightly modified. The ability of the USA to employ mirror image CSR policies to extract technology from China is likely limited because U.S. technology is generally superior already, but China has become a major investor in overseas markets, including the USA. It is now the second largest holder of foreign direct investment assets globally (behind the USA) (McCaffery 2017). China is aggressively pursuing venture capital investments in the USA, with record-high venture investments in 2018 (Saiidi 2019). China is also the largest foreign buyer of residential real estate in the USA (*id.*). The value to China of access to investment opportunities in the USA is thus considerable, and likely to increase with time as China grows and generates more investment capital.

Yet, the USA owes few legal obligations toward China regarding market access for Chinese investors. U.S. obligations are actually somewhat less than those of China because the investment provision in the Chinese WTO accession Protocol does not apply to the USA. Mandatory technology transfer policies are foreclosed by the Phase One Trade Agreement, to be sure, but those are of little utility to the USA anyway given the general superiority of U.S. technology. Instead, the USA could legally adopt a wide range of policies that discriminate against Chinese investors, tax them, charge them license fees, and so on. It could condition access to U.S. investment opportunities on certain types of favorable terms for U.S. counterparties. It could even tax inbound investments in U.S. real estate.

Moreover, in particular situations where technology transfer may be at odds with the national interest of the USA because of the externalities identified in Section 3, policies toward inbound Chinese investment can be used to reduce technology transfer. Indeed, policies to restrict technology transfer associated

with foreign investment have already surfaced in the Phase One Trade Agreement. Article 2.1(3) provides: “A Party shall not support or direct the outbound foreign direct investment activities of its persons aimed at acquiring foreign technology with respect to sectors and industries targeted by its industrial plans that create distortion.” The terms “industrial plans” and “distortion” are undefined, but seemingly represent a reference to Made in China 2025.

Concomitantly, nothing in existing law would prevent the USA from preventing inbound investment for the purpose of *retarding* (rather than promoting) technology transfer. The USA can limit or forbid Chinese acquisitions and partnerships, for example, involving advanced U.S. technology that the USA seeks to protect. The legal superstructure for this purpose is largely in place through the Committee on Foreign Investment in the USA (CFIUS), and its expanded authority pursuant to the Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA). CFIUS was established by the Defense Production Act of 1950, as modified by the “Exon-Florio amendment” of 1988, to review proposed mergers, acquisitions, and takeovers of U.S. companies that may affect national security. It has the power to block or order modifications in such transactions.⁵⁰ FIRRMA expands the authority of CFIUS to restrict transactions that do not involve the acquisition of a controlling interest. Most importantly here, it allows CFIUS to require a review of noncontrolling transactions that nevertheless provide a foreign investor with “access to material nonpublic technical information in the possession of the U.S. business” pertaining to “critical technologies,” membership on the board or its equivalent in a critical technology company, or substantive decision-making authority in relation to “the use, development, acquisition, or release of critical technology.”⁵¹ The focus of FIRRMA includes both national security and broader concerns about “U.S. technological superiority,” and the initial list of twenty-seven “critical technology” industries is broad indeed, ranging from aircraft manufacturing to storage batteries, chemicals, semiconductors, and telephone apparatus.⁵² It remains to be seen how this enhanced authority under FIRRMA will be deployed, but the legal authority for using it to shield the U.S. position in high technology industries is plainly available.

50 See Regulations Pertaining to Mergers, Acquisitions and Takeovers by Foreign Persons, 7 Fed Reg. 70702 (November 21, 2008).

51 See U.S. Treasury, Fact Sheet: Interim Regulations for FIRRMA Pilot Program, <https://home.treasury.gov/system/files/206/Fact-Sheet-FIRRMA-Pilot-Program.pdf>.

52 See FIRRMA Takes Form as CFIUS Enacts a New Pilot Program Targeting “Critical Technologies,” National Law Review, October 11, 2018, <https://www.natlawreview.com/article/firrma-takes-form-cfius-enacts-new-pilot-program-targeting-critical-technologies>.

Going beyond the inbound investment review process, no legal impediment exists to the imposition of constraints on outbound investment into China that might result in technology transfer. The USA already employs an extensive collection of export control regulations regarding the exportation of goods that might contain sensitive technology and in-country transfers of such technology pursuant to the Export Control Reform Act of 2018.⁵³ An expansion of this regime to regulate outbound investment that has the potential to transfer technology to China remains an option.

Such policies need not be implemented on a long-term basis but can be deployed temporarily for the purpose of generating negotiating leverage toward a more comprehensive investment agreement with China. They can be used to target not only Chinese CSR policies but also other practices that limit market access for U.S. investors or diminish their profits, including a failure to provide vigorous enforcement of U.S. IP rights under international and Chinese law.

To be sure, any effort by the USA to intervene in the flow of inbound and outbound investment amounts to a kind of industrial policy. A broad swath of economic commentary questions the ability of any government to engage in such policies competently to promote the national interest, especially given the possible strategic response by other countries. The danger arises that inappropriate industries will be favored due to error or protectionist politics, efficient commerce will be impeded (including desirable access to cheaper foreign capital), and the strategic equilibrium following retaliatory responses abroad may leave everyone worse off than before (Krugman 1986, 1987).

There is much merit in these concerns, particularly in regard to any long-term efforts by government to manage the flow of investment and technology. But limited-term measures focused on investment policy are a potential source of negotiating leverage that would not violate existing international law and, if properly crafted, have the potential to promote the national interest in protecting its technological edge. If the USA is to pursue unilateral measures to pressure China into concessions on investment policy—an issue on which I ultimately take no position—the USA's own investment policy warrants serious consideration as a superior alternative to punitive tariffs.

6. CONCLUSION

“Forced technology transfer” is a central complaint of the USA in its ongoing trade dispute with China. Much of the concern relates to Chinese investment

53 Text available at <https://www.congress.gov/bill/115th-congress/house-bill/5040/text?format=txt>.

policies that require partnerships between U.S. and indigenous investors, policies that this essay terms corporate structure requirements or CSR. These policies can have adverse effects on the national interest of the USA, but their implications for global economic welfare are unclear and the prospects of securing changes in Chinese policy through ongoing negotiations accordingly cloudy. Short of pursuing a BIT with China guaranteeing nondiscriminatory market access for investors in both directions, the USA has embarked on a strategy of trying to create negotiating leverage through punitive tariffs that violate existing U.S. legal commitments. These tariffs have high economic costs and, viewed in isolation, hurt rather than benefit the U.S. economy. The USA might better focus on policies toward inbound Chinese investment that do not violate existing law and that, if soundly constructed, can directly benefit the national economic interest while concurrently creating leverage for future negotiations with China over its investment policy.

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