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## Why Ricardo's Theory of Comparative Advantage regarding Foreign Trade Doesn't Work in Today's Global Economy

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## Why Ricardo's Theory of Comparative Advantage Regarding Foreign Trade Doesn't Work in Today's Global Economy

CHARLES W. MURDOCK<sup>†</sup>

### ABSTRACT

Paul Samuelson, an esteemed economist, asserted that the principle of comparative advantage was the most beautiful idea in economics. However, he took this position at a time when America was a leader in global trade, not when we were running an overall trade deficit of \$566 billion and a trade deficit with one country, China, of \$375 billion. Thus, there was little impetus to examine the underlying basis of Ricardo's theory of comparative advantage.

Once Ricardo's theorem is examined in its entirety, two under-identified factors stand out: that Ricardo assumed that capital would be loyal to the country of origin and that adjustments in the value of currencies would eventually even out imbalances in trade. Even here, he recognized that, when one country consistently runs a trade deficit, there is a transfer of wealth from that country. Ricardo's example of cloth and wine also did not involve dual-use technologies that have not just industrial uses but military uses as well.

When capital is free to move around the world in search of higher returns and when the conventional wisdom is that the purpose of a corporation is to maximize shareholder value, and not worker well-being, international trade turns into labor arbitrage and jobs are shipped from the importing nation to the exporting nation. As a consequence, the United States has lost much of its manufacturing base. From 2000 to 2009, the United States lost over five million manufacturing jobs, almost one-third of the total.

While it has been argued that these job losses have been caused by automation, when entire industries, such as the wood furniture industry examined in this article, move offshore to a nation with low labor standards, it is labor arbitrage and not automation that is the culprit. And when Boeing contracts out portions of its planes to countries and companies that arguably have no more technical superiority than Boeing, in order to obtain sales from such countries, this transfer of jobs is not caused by automation, but rather by the desire to enhance sales, corporate profitability, and shareholder wealth.

This article first analyzes Ricardo's theorem, not just his argument in favor of comparative advantage, but also the conditions that are necessary for the theory to work, namely, that capital is loyal to the country of origin and that currencies will adjust to level out imbalances in trade. It

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then traces the flow of foreign direct investment into China and the basis for that flow – cheap labor. It then analyzes China’s manipulation of the yuan and the changes in the relative valuation of currencies.

The next section of the article addresses China’s entry into the World Trade Organization and its failure to live up to its agreement and move to a market-based economy. China’s reliance on state-owned enterprises, its subsidization of export and high-tech industries, and its direct and indirect coercion of technological transfer and know-how from the U. S. and other countries – all stand in opposition to the principles to which other countries have agreed in connection with their participation in the World Trade Organization.

A critical factor that has not been understood in connection with global trade is that the transfer of dual-use technology to China also carries with it national security implications. The next sections look at forced technology transfer and China’s military goals, including its policy to be both industrially and militarily self-sufficient (something the United States should aim at as well). This leads to a discussion of industrial policy. China has clearly articulated its industrial policy and the steps that it will take to implement it. The United States cannot afford to be dependent upon products originating from, or supply chains running through, other countries – particularly when such countries are hostile to the United States. It cannot afford it from the standpoint of providing good paying jobs for its citizens, from the standpoint of being a leader in research and development, nor from the standpoint of national security.

The conclusion asserts that Sen. Rubio’s ”Made in China 2025 and the Future American Industry” may be the opening for a critically necessary dialogue that assesses the nature of, and the need for, an industrial policy for the United States. Just relying upon the mantra that free trade benefits all, and supporting such mantra on the basis that it is “proved” by Ricardo’s theorem of comparative advantage, is to put our head in the sand and ignore the evidence set forth in this article.

#### KEYWORDS

*Global Trade; Comparative Advantage; Labor Arbitrage; Technology Transfer; Industrial Policy*

#### JEL CODES

*E27, P52, O47*

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## INTRODUCTION

Advocates of “free” trade generally refer to David Ricardo’s “proof” as laid out in his 1817 book, *ON THE PRINCIPLES OF POLITICAL ECONOMY AND TAXATION*<sup>1</sup> in which he postulated his theory of comparative advantage in foreign trade. Using English cloth and Portuguese wine as an example, he “proved” that both countries would be better off if the English focused upon cloth and the Portuguese on wine, even though it was cheaper in terms of labor to produce both in Portugal.

This theory has been a standard item in basic economics textbooks<sup>2</sup> and a prime justification for advocates of free trade.<sup>3</sup> With President Trump threatening a trade war, the benefits of “free” trade are broadly espoused by businesses, academia and the

<sup>1</sup> DAVID RICARDO, *ON THE PRINCIPLES OF POLITICAL ECONOMY AND TAXATION* (Library of Economics and Liberty 3rd ed, 1999) (1817).

<sup>2</sup> See e.g., N. GREGORY MANKIW, *BRIEF PRINCIPLES OF MACROECONOMICS* (8th ed. 2017) (“The gains from specialization and trade are based not on absolute advantage but on comparative advantage. When each person specializes in producing the good for which he or she has a comparative advantage, total production in the economy rises. This increase of the in the size of the economic pie can be used to make everyone better off”).

<sup>3</sup> *Id.* at 3-3b. “Yet, contrary to the opinion sometimes voiced by politicians and pundits, international trade is not like war, in which some countries win and others lose. Trade allows all countries to achieve greater prosperity”.

media.<sup>4</sup> However, there is a fundamental difference between “free” trade and “fair trade” and that foreign trade, as well as its effects, are a matter of political and military, and not just economic, concern. Moreover, those who routinely parrot the notion that Ricardo’s theory of comparative advantage demonstrates that foreign trade is necessarily beneficial to both countries have never read Ricardo and fail to be aware of the caveats he asserted in order that foreign trade be mutually beneficial. In short, Ricardo’s proof of mutual benefit is conditioned upon capital being loyal to the country of origin and the value of a country’s currency being a function of the relationship between imports and exports. Part I of this article focuses on Ricardo’s theorem and the conditions for its applicability.

Part II considers the reality today. In no way is capital loyal to the country of origin, but rather flows around the world in search of the best return. The net effect of this, as Ricardo implicitly recognized, is labor arbitrage. Moreover, using China as an example, the yuan has not risen in value to reverse the huge trade deficit for the U.S. versus China. This is, at least in part, due to manipulation by the Chinese government. Thus, Part II develops these factors which demonstrate that the underpinnings upon which Ricardo based his theory do not exist today. Consequently, the “assured mutual benefits of global trade” are illusory.

One basis for competitive and comparative advantage is technological superiority. This, supposedly, is one of the major advantages that the United States enjoys. However, this technological advantage dissipates when it is stolen. And, today, we know that some of our trading partners, such as China, not only do not enforce the patent and copyright laws that protect our technological advantage, but also engage in piracy and theft to steal our technological advances, as well as requiring technological transfer as a condition of doing business in China. Thus, the benefits of foreign trade are undercut by the misfeasance and malfeasance of foreign governments.

Part III then examines the policy implications of so-called free trade. Some of the basic tenets of free trade are respect for the rule of law, including intellectual property rights, and the non-existence of governmental barriers to trade or subsidization of domestic manufacturing. These basic tenets have never been observed by China. By such abuses, China has appropriated technological know-how from other countries and used its export subsidies to destroy industries in other countries. It makes no sense to retrain workers for jobs that will only exist in another country.

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<sup>4</sup> See e.g., Robert E. Rubin, *Why the World Needs America and China to Get Along*, N. Y. TIMES (Jan. 2, 2019), <https://www.nytimes.com/2019/01/02/opinion/america-china-climate-change-nuclear-weapons.html>.

Part IV then begins an examination of the policy implications of the foregoing for the United States. Much of our technical know-how was developed as a result of taxpayer funding, which raises the question as to the entitlement of American businesses to give this away in exchange for market share, to the detriment of American workers. In addition, transfer of this know-how has serious national security implications.

Part V continues the policy examination by examining the national security consequences of having transferred, voluntarily or involuntarily, so much technology and manufacturing know-how to China. Much of technology is dual-use, that is, it has both industrial and military applications. In about twenty years, the United States has transformed China into a manufacturing and military powerhouse, with serious national security implications for the United States. This does not mean that China might not, on its own, have eventually arrived where it is today. But our technology transfers have accelerated the process. At the same time, we have established our dependence on China as an integral part of the supply chain for the technology and raw materials that are essential for our industrial development and military security.

Part VI asserts that it is essential that the United States itself establish an industrial policy. “No decision” is actually a decision. We are probably the only major country in the world that does not have an industrial policy. The mantra of free trade in the United States has been that we can give away low-tech jobs and divert our resources and workers into high-tech jobs. But China does have an industrial policy and it is determined to be a leader, not just in low-tech manufacturing, but also in high-tech industrial and military activities. Unless we focus our attention upon maintaining a manufacturing base, we are going to be second to China in not just solar energy but many other industries as well and, from a military standpoint, will have lost much of our leverage to ensure peace in the world.

For the most part, the focus of this article is upon China because even Chinese researchers acknowledge that the industrial policy of China was initially to create a low-wage, export driven industrial base and then expand into high-tech areas. The trade imbalance between the United States and China dwarfs that of other countries. As the Appendix at the end of this article illustrates, the United States trade deficit with China has steadily risen from just over \$33 billion in 1995 to over \$375 billion in 2017. The deficits with Germany and Mexico rose from about \$15 billion in 1995 to around \$70 billion in 2017. The deficit with Japan rose from about \$60 billion in 1995 to hold relatively steady at between \$70 and \$80 billion through 2017. The trade deficit with Canada rose from about \$17 billion in 1995 to almost \$80 billion in 2008 and recently has dropped back to about \$17 billion. Moreover, these countries observe the rule of law, do

not manipulate their currencies, and embody labor rates that, except for Mexico, are comparable to those of the United States.

From the standpoint of reversing the trade deficit with China by the supposed market discipline of a higher yen or a reversal of China's low-wage policy, any developments in these areas will not change the reality that the Chinese policy has already captured dominant market share in many industries and has short-circuited the time necessary for high-tech development by appropriating technology and manufacturing know-how from the United States and other countries.

The conclusion asserts that, in effect, the horse is out of the barn and that closing the barn door will not return the horses. Rather, what the United States must do is to adopt an industrial policy to rebuild manufacturing capability, particularly in the industries of the future and those industries that are essential for national security.

## 1. DAVID RICARDO AND COMPARATIVE ADVANTAGE

David Ricardo was the first "economist"<sup>5</sup> to articulate the theory of comparative advantage in his 1817 work *ON THE PRINCIPLES OF POLITICAL ECONOMY AND TAXATION*.<sup>6</sup> Paul Samuelson, a leader in economic thought in the twentieth century, has argued that "the principle of comparative advantage is the most beautiful idea in economics."<sup>7</sup> According to one current academic, "during the past two centuries, no one has proposed a legitimate counterargument to comparative advantage as the basis for mutually beneficial exchange."<sup>8</sup> The principle of comparative advantage "is the stated logic for negotiating, drafting, implementing, and enforcing rules to liberalize trade on a multilateral, regional, or bilateral basis."<sup>9</sup> It is "a shattering insight that continues to form the basis of conventional international trade theory today."<sup>10</sup>

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<sup>5</sup> While Ricardo was not formally trained as an economist's experience in business gave him insights about the functioning of England's economic system and he wrote prodigiously about these matters.

<sup>6</sup> Ricardo, *supra* note 1, ch.7 "On Foreign Trade".

<sup>7</sup> ROBERT G. GILPIN ET AL., *REALISM: RESTATEMENT AND RENEWAL* (Benjamin Frankel ed., Frank Cass 1996), see also Robert G. Gilpin, *No One Loves a Political Realist*, 5 *SECURITY STUD.*, Dec. 24, 2007 ("As Nobel laureate in economics Paul Samuelson has argued, the principle of comparative advantage is the most beautiful idea in economics since it supports the crucial liberal belief in a harmony of interests uniting all people") (Mr. Gilpin was a professor at Princeton University where he focused upon international political economy).

<sup>8</sup> ROGER WHITE, *MAKING SENSE OF ANTI-TRADE SENTIMENT* 3 (Palgrave Macmillan 2014).

<sup>9</sup> RAJ BHALA, *INTERNATIONAL TRADE LAW: INTERDISCIPLINARY THEORY AND PRACTICE* 207 (3d ed. 2008).

<sup>10</sup> MICHAEL TREBILCOCK, ROBERT HOWSE & ANTONIA ELIASON, *THE REGULATION OF INTERNATIONAL TRADE* 3 (4th ed. 2012).

What is comparative advantage and why is this principle so important? Consider an illustration used by one author involving the legal profession:

When the world champion typist goes to law school and receives a law degree he has time to handle his new law business and type his own briefs. As he becomes also the best lawyer in town, he finds it impossible to accept all the legal business offered and, at the same time, continue to do his own typing. He decides that he is better off specializing in legal work, which is more profitable to him, and hires a secretary to type his briefs, even though her typing may not be nearly as good as his.<sup>11</sup>

To understand the principle of comparative advantage, one must first contrast that with the principle of absolute advantage. In the foregoing example, if our typist, after establishing his law practice, found a typist whose skill exceeded his own, he would hire her because she had an absolute advantage in typing and he had an absolute advantage in legal work. Prior to Ricardo, absolute advantage was thought to be the basis for trade.<sup>12</sup>

Under the concept of comparative advantage, however, the assumption is that everyone will be better off producing products they produce relatively best.<sup>13</sup> This is illustrated in the above example by the fact that, even if the lawyer could type faster than any secretary he could hire, he is better off doing legal work rather than deferring legal work to type his own briefs.

Advocates of free trade, in a somewhat Pollyannish manner, utilize this principle as an argument that trade must of necessity be beneficial to both countries:

When free trade is allowed to occur, the trading countries will find incentives in specializing in the production of those commodities in which they enjoy comparative advantage – that is, commodities in the production of which they incur the least opportunity cost viz.-a-viz other nations. Lowest opportunity cost implies a maximum productivity and cost-efficiency. When nations undertake production and export activity on the basis of their comparative advantage, they choose to operate on the most optimum path of economic growth and scarce resources owned by them get allocated most efficiently. This maximizes global output, economic

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<sup>11</sup> RUDOLPH W. TRENTON, BASIC ECONOMICS 416 (4th ed. 1978).

<sup>12</sup> GARY E. CLAYTON, ECONOMICS: PRINCIPLES & PRACTICES 469 (2003).

<sup>13</sup> *Id.* at 470.

prosperity and welfare. In short, free trade maximizes economic gains through efficient allocation of resources.<sup>14</sup>

However, those who assume that the doctrine of comparative advantage assures mutual benefits to both countries are often unaware of some of the limitations that Ricardo himself placed upon his doctrine. This will be considered in the next section.

### 1.1. RICARDO'S MODEL

Ricardo developed his theory of competitive advantage<sup>15</sup> by using the following model: assume that, in England, it takes 100 men, working one year, to produce a given quantity of cloth (say 200 units) and 120 men, working one year, to produce a given quantity of wine (say 100 units); assume further that, in Portugal, it takes 90 men, working one year, to make the same quantity of cloth (200 units) and 80 men, working one year, to make the same quantity of wine (100 units). Further assume that, in both countries, 200 units of cloth and 100 units of wine are needed.

In the above model, it can be seen that Portugal has an absolute advantage, that is, is more efficient, in producing both cloth and wine. If absolute advantage were the key to international trade, Portugal would buy neither cloth nor wine from England since it is more expensive. Note that this assumes that wages are the same in both countries.

However, England is more efficient in producing cloth than in producing wine; conversely, Portugal is more efficient in producing wine than cloth. This is where comparative advantage comes in. If England were to specialize in making cloth, and divert manpower from the making of wine, it would then be able to produce 2.2 times as much quantity of cloth (namely, 440 units) as before. Conversely, if Portugal were to specialize in producing wine, it could divert manpower from the making of cloth and could produce 2.125 times as much wine (namely 212.5 units) as before.

Thus, when the two countries specialize, there will be an increase in the total amount of both cloth and wine produced by the two countries. In England, cloth requires 0.5 man-years to produce one unit of cloth, whereas wine requires 1.2 man-years to produce a unit of wine. Therefore, wine costs 2.4 times as much as cloth and cloth costs 0.42 times as much as wine. Thus, to replace the 100 units of wine that it has forgone,

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<sup>14</sup> Renita D'souza, *Free Trade a Win-Win for All: Making Competitive Advantage Work*, (Jun. 28, 2018) (Observer Research Found). The author does recognize that, "in the short run, adjustment costs will have to be incurred by some stakeholders." However, "increased competitiveness and efficiency will increase the profits of these stakeholders in the long-run." As discussed later in the article, free trade is not a win-win situation, but rather there are losers.

<sup>15</sup> RICARDO, *supra* note 1, ch.7 "On Foreign Trade".

England would be willing to trade 240 units of cloth. If it sent 240 units of cloth to Portugal, it would still have 200 units of cloth left.

In Portugal, on the other hand, cloth requires 0.45 man-years to produce a unit of cloth and 0.8 man years to produce a unit of wine. Therefore, wine costs 1.78 times as much as cloth and cloth costs 0.56 times as much as wine. Thus, to replace 200 units of cloth that Portugal has diverted into the making of wine, Portugal would be willing to pay 112 units of wine and would trade 112 units of wine for 200 units of cloth. Consequently, Portugal could trade its 112 units of wine and still have 100 units of wine left, together with 200 units of cloth.

At this point, it looks as though both countries are in the same place because of trade. However, Portugal would not need to trade 112 units of wine to obtain 200 units of cloth from England because England would trade 200 units of cloth for 84 units of wine. Similarly, England would not need to trade 240 units of cloth to obtain 100 units of wine because Portugal would trade 100 units of wine for 178 units of cloth. Consequently, a trade equilibrium would be established whereby England transferred less than 240 units of cloth to Portugal and Portugal would transfer less than 112 units of wine to England.

For example, if England transferred 220 units of cloth to Portugal, Portugal might transfer 105 units of wine to England. In this case, both countries would have both more wine and more cloth than if trade did not exist.

Thus, according to the theory of comparative advantage, everybody is better off by specializing.

## 1.2. RICARDO'S LIMITATIONS ON HIS MODEL – LOYALTY OF CAPITAL

In looking at the foregoing model produced by Ricardo, since it assumes that production and income could be transferred from producing wine to producing cloth, why wouldn't the owners of capital, instead of switching resources in England, simply move all production to Portugal which is more efficient in producing both wine and cloth.

One response to this, from a common-sense standpoint, is that Ricardo was working at a time when production was constrained, among other factors, by geography and climate. It could be that the cloth producing area in Portugal is elevated and there is a limited amount of elevated land on which to raise sheep for cloth.

However, Ricardo explicitly addressed the possibility that capital should move to Portugal where both cloth and wine can be produced more efficiently:

It would undoubtedly be advantageous to the capitalists of England, and to the consumers in both countries, that under such circumstances, the wine and the cloth should both be made in Portugal, and therefore that the capital and labor of England employed in making cloth should be removed to Portugal for that purpose.<sup>16</sup>

Ricardo, however, rejected this possibility on the basis that capitalists, namely, men of property, are loyal to their country of birth, even though a greater profit might be made elsewhere:

Experience, however, shews that the fancied or real insecurity of capital, when not under the immediate control of its owner, together with the natural disinclination which every man has to quit the country of his birth and connexions, and intrust himself with all his habits fixed, to a strange government and new laws, check the emigration of capital. These feelings, which I should be sorry to see weakened, induce most amount of property to be satisfied with a low rate of profits in their own country, rather than seek a more advantageous employment for their wealth in foreign nations.<sup>17</sup>

It goes without saying that Ricardo's view of the loyalty of capital is not only utterly incorrect today, but would be regarded as foolishness by most business managers and business academics.

One comparative advantage that the United States once had was its supply of capital but, as discussed below, such advantage has been squandered by the investment of capital by American bankers and American businesses in low-wage countries.

### 1.3. RICARDO'S ANALYSIS OF THE IMPACT OF UNBALANCED TRADE ON THE RESPECTIVE WEALTH OF COUNTRIES

At the time Ricardo was writing, gold and silver were the medium of exchange in international trade:

Gold and silver having been chosen for the general medium of circulation, they are, by the competition of commerce, distributed in such proportions amongst the different countries of the world, as to accommodate themselves

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<sup>16</sup> RICARDO, *supra* note 1, at 4, 10.

<sup>17</sup> *Id.*

the natural traffic which would take place if no such metals existed, and the trade between countries was purely a trade of barter.<sup>18</sup>

When trade is balanced, that is, exports and imports are equal in value, Ricardo's analogy of the situation to barter works well and there is no change in the relative wealth of the two countries:

If the markets be favorable for the exportation of wine from Portugal to England [and of cloth from England to Portugal], the exporter of the wine will be a seller of a bill, which will be purchased either by the importer of the cloth, or by the person who sold him his bill; and thus without the necessity of money passing from either country, the exporters in each country will be paid for their goods. Without having any direct transaction with each other, the money paid in Portugal by the importer of cloth will be paid to the Portuguese exporter of wine; and in England by the negotiation of the same bill the exporter of the cloth will be authorized to receive its value from the importer of wine.<sup>19</sup>

But when one country stops exporting, say Portugal, there is a transfer of wealth from that country to the other country, England. Ricardo assumes that, if there is an improvement in the process of making wine in England such that the price of wine in England falls from £50 pounds to £45, England will no longer import wine from Portugal. Thus:

[I]f the prices of wine were such that no wine could be exported to England, the importer of cloth would equally purchase a bill; but the price of that bill would be higher, from the knowledge which the seller of it would possess, that there was no counter bill in the market by which you could ultimately settle the transactions between the two countries; he might know that the gold or silver money which he received in exchange for his bill must be actually exported to his correspondent in England, to enable him to pay the demand which he authorized to be made upon him, and he might therefore charge in the price of his bill all the expenses to be incurred, together with his fair and usual profit.<sup>20</sup>

Ricardo then concludes:

If then this premium for a bill on England should be equal to the profit on imported cloth, then the importation would of course ease; but if the

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<sup>18</sup> *Id.* at 4-5.

<sup>19</sup> *Id.* at 5.

<sup>20</sup> *Id.*

premium on the bill were only two per cent, if to be enabled to pay a debt in England of £100, £102 to should be paid in Portugal, whilst cloth which cost £45 would sell for £50, cloth would be imported, bills would be bought, and money would be exported, till the diminution of money in Portugal, and its accumulation in England, have produced such a state of prices as would make it no longer profitable to continue these transactions.<sup>21</sup>

What Ricardo asserts, and what advocates of “free” trade – who assert that comparative advantage means that any trade is always desirable – fail to recognize, is that when one country is a net exporter and another country is a net importer, there is a transfer of wealth from the importing country to the exporting country. And that is what is happening in the China/U.S. trade situation. As Ricardo states: “Estimated in money, the whole revenue of Portugal would be diminished; estimated in the same medium, the whole revenue of England would be increased.”<sup>22</sup>

We no longer have gold or silver as the medium of exchange in foreign trade and transactions. Rather, we have a system of floating currencies that, supposedly, reflect the market demand for particular currencies. Again, taking the China/United States trade situation as an example, since the United States has a substantial trade deficit with China, there should be a great demand for Chinese yuan to enable United States companies and individuals to purchase Chinese goods, which should increase the value of the yuan vis-à-vis the United States dollar. As the yuan would increase in value and the dollar decrease in value, the cost of Chinese exports would also increase and the cost of United States exports would decrease, thereby bringing the China/United States trade into balance.

But, if the Chinese government manipulates the value of the yuan vis-a-vis the United States dollar, there will be no self-regulating mechanism to restore the balance of trade between the two countries. This, and the fact that capital is not loyal to the country of origin will be more fully developed in the next section.

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<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

## 2. FOREIGN TRADE TODAY DOES NOT MEET RICARDO'S CONDITIONS FOR COMPARATIVE ADVANTAGE

### 2.1. SINCE CAPITAL IS NOT LOYAL, INVESTMENT BY U.S. COMPANIES IN CHINA LEADS TO LABOR ARBITRAGE

At one time, in the aftermath of World War II, the United States was the leading exporter of goods in the world. From the seventies until the nineties, the United States basically shared that status with Germany and Japan. However, after China achieved most favored nation status with United States and was admitted to the World Trade Organization, Chinese exports rose rapidly and United States exports dropped, as a percentage of total world exports:<sup>23</sup>

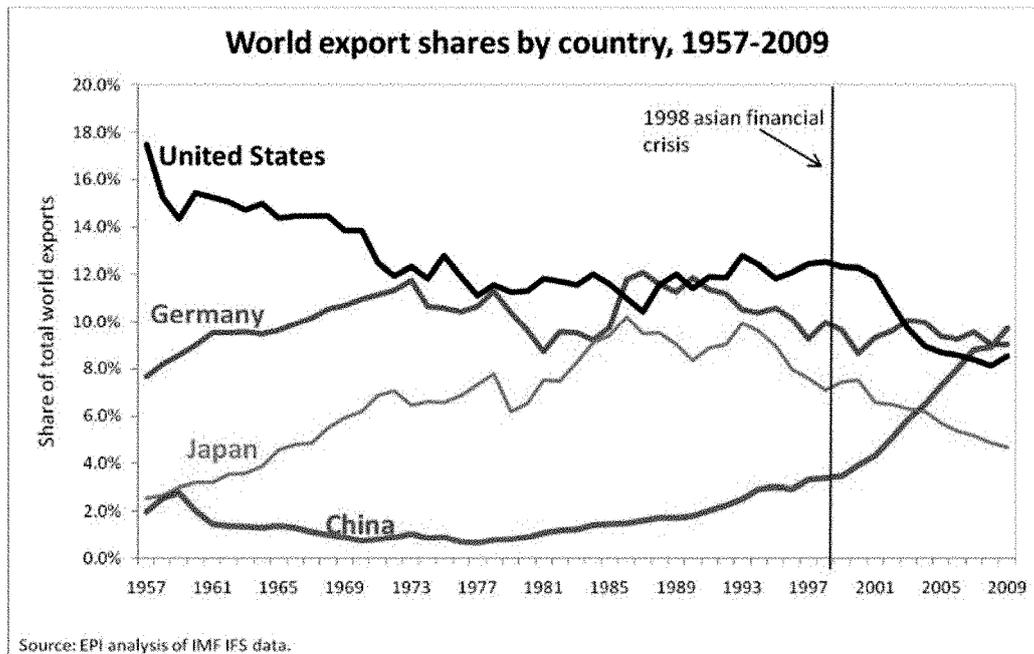


Chart 1: (Source: see footnote 23)

Recall that one of the assumptions by Ricardo in arguing that trade was always beneficial, even if one country had an absolute advantage (could produce both hypothetical products more efficiently than the other country), was that capital was loyal and would not flee to the low-cost producer. That assumption in nowise holds true today. The following graph reflects the pattern of foreign direct investment in China from 1978-2010:<sup>24</sup>

<sup>23</sup> World Export Shares by Country, 1957-2009: Hearing on Chinese State Owned Enterprises and U.S.-China Bilateral Investment Before the U.S.-China Economic Security Review Commission, 112th Cong. 71 (2011), <https://www.uscc.gov/sites/default/files/transcripts/3.30.11HearingTranscript.pdf>.

<sup>24</sup> *Id.* at 67.

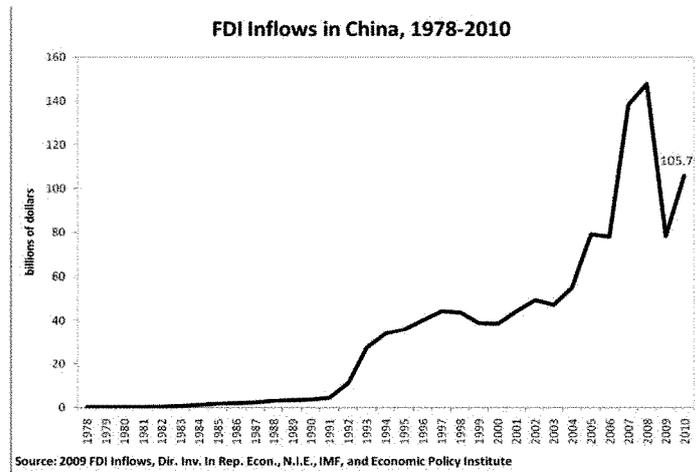
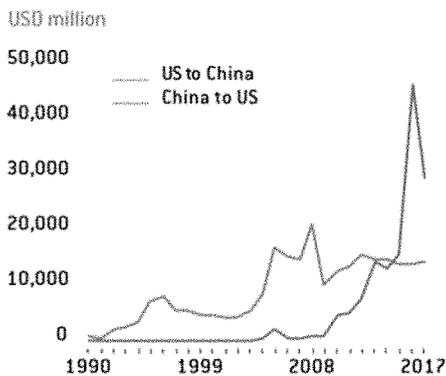


Chart 2

Now, consider the investment of U.S. companies in China from 1990 to 2017, illustrated in the graphs below. The first graph reflects data from the Rhodium Group:<sup>25</sup>

**FIG ES-1: Annual Value of FDI Transactions between the US and China, 1990-2017**



**FIG ES-2: Cumulative Value of FDI Transactions between the US and China, 1990-2017**

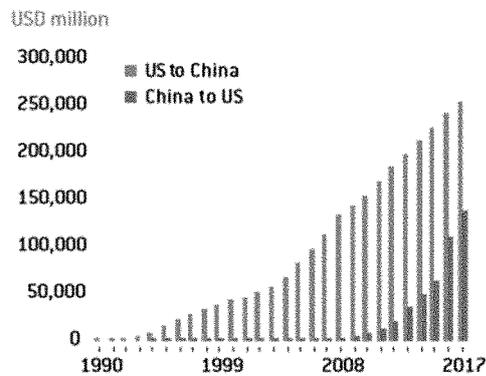


Chart 3

According to the Rhodium Group,<sup>26</sup> by the time that China was admitted to the World Trade Organization, United States companies had already invested about \$50 billion into the Chinese economy, and subsequent thereto have invested about another \$200 billion. Note however that it shows United States investment in China to be

<sup>25</sup> Thilo Hanemann, Daniel H. Rosen & Cassie Gao, Two-Way Street: 2018 Update US-China Direct Investment Trends, Rhodium Group (Apr. 10, 2018).

<sup>26</sup> According to its website, the Rhodium group “has the most highly respected independent China research team in the private sector. For more than twenty years our principals and staff have used a multidisciplinary approach to produce path-breaking analyses and insights on China.”

relatively flat at around \$15 billion from 2005 to 2017, and that the cumulative investment was a relatively constant slope upward.

Another study sets forth somewhat different figures – a study by Yuqing Xing sets forth the value of foreign direct investment in China from 1985-2008 as \$854.3 billion, of which the United States was responsible for \$55.1 billion or 6.4%.<sup>27</sup>

**Table 3: Major Sources of FDI in China, 1985-2008**

Sources	1985-1990		1991-2000		2001-2008		1985-2008	
	Value (Billion USD)	Share (%)						
The World	15.9	100.0	327.7	100.0	510.7	100.0	854.3	100.0
Hong Kong	9.7	60.9	159.0	48.5	178.2	34.9	346.9	40.6
Taiwan	0.0	0.0	25.8	7.9	21.4	4.2	47.2	5.5
Japan	2.2	13.6	25.2	7.7	37.4	7.3	64.7	7.6
Korea	0.0	0.0	10.5	3.2	31.5	6.2	42.0	4.9
Singapore	0.2	1.3	16.8	5.1	20.6	4.0	37.6	4.4
USA	1.9	12.1	27.6	8.4	29.5	5.8	55.1	6.4
Germany	0.2	1.3	6.1	1.9	9.2	1.8	15.5	1.8
UK	0.2	1.2	8.4	2.6	6.9	1.4	15.5	1.8
France	0.1	0.9	4.0	1.2	4.4	0.9	8.6	1.0

Chart 4: (Source: see footnote 27)

Now consider that a relatively pro-trade group, the Peterson Institute for International Economics, bemoaned the fact that U.S. foreign direct investment in China in 2012 was *only* “around \$54 billion” and that that “represented only about 1.2 percent of the \$2.2 trillion of total FDI in China.”<sup>28</sup> In contrast, the Rhodium Group graph above indicates that the foreign direct investment in China by the United States in 2012 was less than \$15 billion, and was generally less than that in the period between 2005 to 2017.

While these data sources reflect a substantial difference, consider now the testimony of Dr. Robert E Scott of the Economic Policy Institute at the China hearings, where he asserted that the U.S. foreign direct investment in China “reached \$162 billion in 2008, about 16.6% of total FDI in China.”<sup>29</sup> Total cumulative foreign direct investment in China by 2010 was about \$1 trillion;<sup>30</sup> the pattern indicated by Chart 4 above. The chart below sets forth Dr. Scott’s analysis of U.S. foreign direct investment in China:<sup>31</sup>

<sup>27</sup> Yuqing Xing, *Facts about Any Impacts of FDI on China and the World Economy*, 8 CHIN : AN IN . J. 309, 27 (2010).

<sup>28</sup> Peterson Institute For International Economics, *Towards a U.S.-China Investment Treaty* (2015).

<sup>29</sup> CHINA HEARINGS, *supra* note 23, at 59.

<sup>30</sup> *Id.* at 60.

<sup>31</sup> *Id.* at 69.

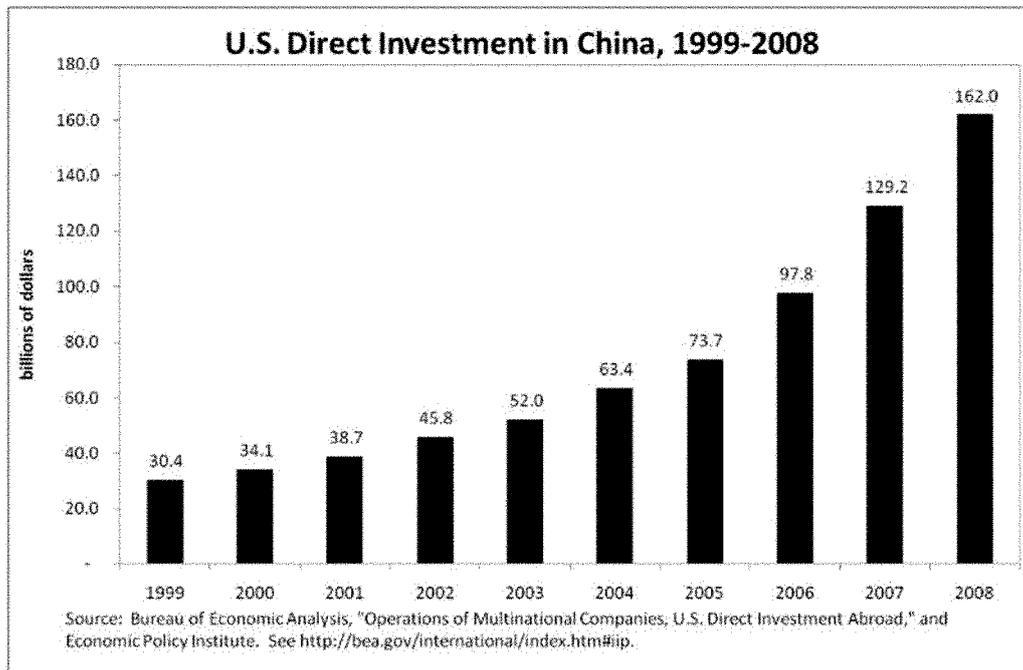


Chart 5

What the above data illustrates is the variance of opinion on a very fundamental and politically and economically significant fact, namely the amount and sources of direct foreign investments in China. Part of the uncertainty arises from the fact that much money flows through financial intermediaries. For example, Luxembourg is one of the leading countries in foreign direct investment, as is Hong Kong. Much of this money is undoubtedly redirected to other countries, since these jurisdictions cannot absorb internally all the foreign direct investment that is made to them. In addition, “[f]unding for construction of a new factory in China can flow directly from the home company in the United States, from retained earnings abroad, and from borrowed capital [from Chinese banks].”<sup>32</sup> Moreover, capital can indirectly come from guaranteed orders from a “parent” company in the United States that is outsourcing its manufacturing.

Be that as it may, the foregoing conclusively demonstrates that capital is not loyal to the country of origin, but will flow wherever costs are low and returns are high, which basically is labor arbitrage.

<sup>32</sup> *Id.* at 59.

## 2.2. LABOR ARBITRAGE AS REFLECTED IN LOW CHINESE WAGES DRIVING AN EXPORT ORIENTED ECONOMY

As asserted in the previous section, if capital is free to move from one country to another, then global trade may become nothing more than labor arbitrage, if there are significant differences in labor costs from country to country. In the case of China, its explosive export growth initially had been driven by low-wage manufacturing of consumer goods.<sup>33</sup>

According to a study that was jointly funded by the International Labour Organization and the National Natural Science Foundation of China,<sup>34</sup>

China's rapid growth in industrial output has owed much to the impacts of globalization, in particular, influx of foreign capital. Exploiting low-cost labour has been described in the literature as one of the key motivations for foreign direct investment (FDI) into China. The primary objective behind the early FDI that came from overseas Chinese in the 1980s was to exploit China's low-cost labour in the manufacture of consumer products for export. Later on, in the late 1990s, the major Japanese and Western MNCs [multinational corporations] entered China with significant FDI for the same cost-based reasons. Surveys regarding the motivation of MNCs to establish R & D facilities in China also confirm that most of the FDI has pursued cost reduction by using more local raw materials as well as labour.<sup>35</sup>

As with much information about China, data about wages is often inconsistent and of questionable validity. The more recent data, to the extent reliable, suggests that wages in China have been rising substantially in the last decade, increasing from about \$3500 a year or \$300 a month in 2008 to about \$9000 a year or \$750 a month in 2017:<sup>36</sup>

(See Chart in the next page)

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<sup>33</sup> Jici Wang & Lixia Mei, *Dynamics of labour-intensive clusters in China: relying on low labour costs or cultivating innovation?* (Int. Institute for Labour Studies, Discussion Paper No. 1, 2009). The International Institute for Labour Studies is also known as the International Labour Organization.

<sup>34</sup> The funding by this latter organization should give credibility to the conclusions and data incorporated in the study.

<sup>35</sup> Wang & Mei, *supra* note 33, at 1.

<sup>36</sup> *China Average Yearly Wages in Manufacturing Chart*, TRADINGECONOMICS.COM, <https://tradingeconomics.com/china/wages-in-manufacturing>.

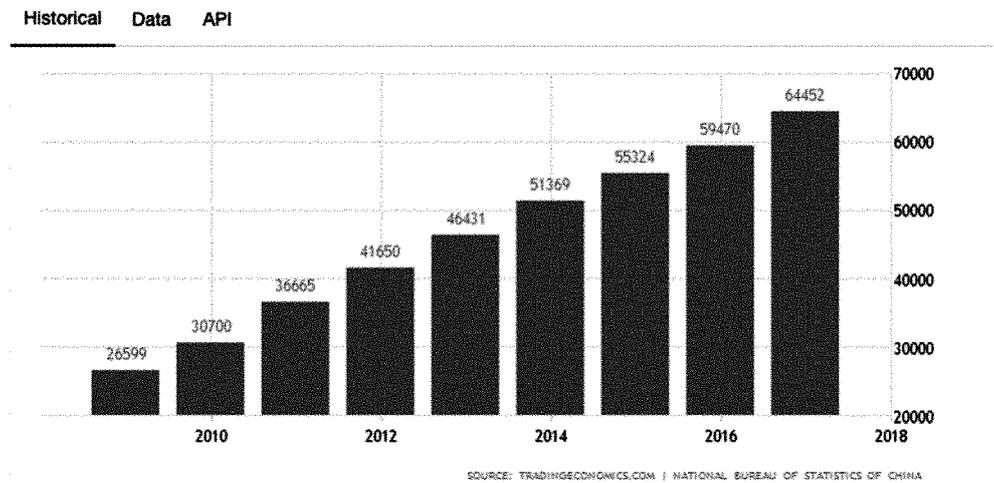


Chart 6: (Source: see footnote 36)

However, manufacturing wages prior to 2008 were markedly lower, as reflected in the extension of the above chart:

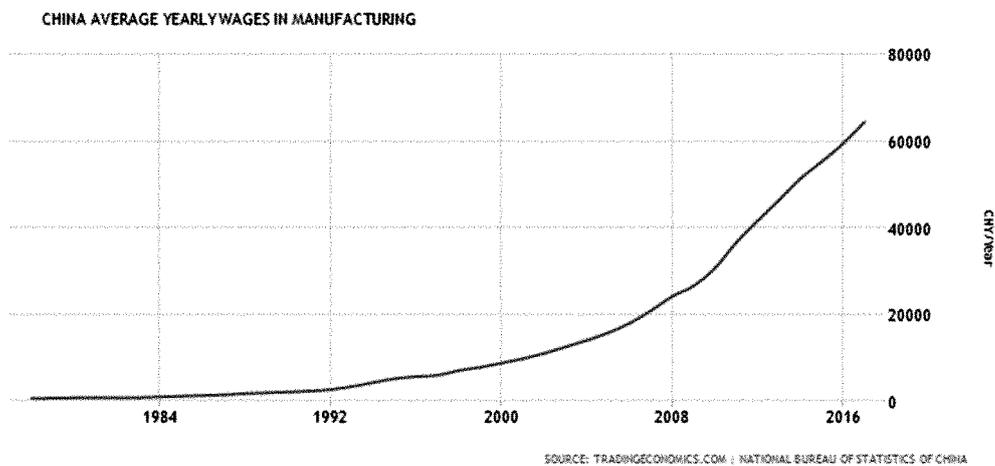


Chart 7: (Source: see footnote 36)

From 1995 through 2005, the exchange rate for the yuan was about 8.3 yuan to the dollar. Since the above tables are in yuan, annual wages approximately ranged from \$1,000 per year in 1995 to \$1,700 in 2005, or from about \$80 per month in 1995 to \$140 per month in 2005.

By way of comparison, the same source reports U.S. manufacturing wages as slightly over \$21/hour or over \$42,000/year for a 2,000-hour year.

The low wages and dismal working conditions are confirmed by another source, China Labor Watch. In a 2007 report by this organization which discussed labor violations at a furniture manufacturer employing 3000 workers, the report set forth monthly wage rates of 1700 yuan (a little over \$200) during the busy season – about half the year – and 1000 yuan (about \$125) during the slow season.<sup>37</sup> However, the workers were required to work 12 hour days, six hours a week during the busy season and a nine hours a day six days a week during the slow season. Migrant workers resided in a factory dormitory room which usually housed about 10 workers with one toilet.<sup>38</sup>

Another recent source, The Conference Board, setting forth its data in terms of unit labor costs, also supports the difference in wages between China and other industrialized countries:<sup>39</sup>



Chart 8: (Source: see footnote 39)

<sup>37</sup> JU QIAN, FURNITURE FACTORY REPORT (2007). (Founded in 2000, China Labor Watch (CLW) is an independent not-for-profit 501(c)(3) organization. Over the past 17 years, CLW has collaborated with unions, labor organizations, and the media to conduct in-depth assessments of factories in China that produce toys, bikes, shoes, furniture, clothing, and electronics for some of the largest multinational brand companies. CLW's New York office creates reports from these investigations, educates the international community on supply chain labor issues, and pressures corporations to improve conditions for workers. CLW's China office in Shenzhen interacts closely with factory workers, providing a free hotline service that offers advice and counseling to workers facing perceived violations in the workplace. This office also further supports the labor movement in China by organizing labor rights, collective bargaining, and capacity-building training programs for workers and labor rights advocates).

<sup>38</sup> *Id.* at 4.

<sup>39</sup> SIQI ZHOU, RISING UNIT LABOR COSTS THREATEN CHINA'S EXPORT COMPETITIVENESS (2018).

The above chart indicates that unit labor costs from 2005 to 2007 in China were 32% to 39% of those in the U.S. But the wage data discussed above indicates that Chinese wages were less than 5% of U.S. wages. Conceivably, the difference could be attributable to higher worker productivity in the U.S. and exchange rate differences, but such a large variation is hard to reconcile.

The above chart also demonstrates that unit labor costs in Japan and Germany were actually higher than in the U.S., while those in Korea averaged about 90% of those in the U.S.

### 2.3. LABOR ARBITRAGE INVOLVES NOT JUST COMPENSATION, BUT ALSO WORKING CONDITIONS

Low monthly wages are only one part of the labor arbitrage issue with respect to investment in China. The International Labour Organization, in a report co-funded by the National Natural Science Foundation of China, reported:

A research report on "China's rural migrant workers" conducted by the Research Office of the State Council of China (2005) concluded that the average monthly wages of rural migrant workers was between 500 – 800 yuan RMB (about U.S. \$60-100) at that time. However, for this sum, workers within many labour-intensive clusters worked over 10 hours a day, sometimes either 6 or 7 days a week, in some cases without overtime pay, which reduced their average hourly wage. That is compared with the U.S. minimum wage of \$5.15 per hour at the same. (Although since then, the U.S. federal minimum wage was raised to \$7.25 per hour as of 24 July, 2009 according to the U.S. Department of Labor).<sup>40</sup>

By way of comparison, it should be noted that manufacturing workers in the United States are not paid the minimum wage, but rather several times the minimum wage. Assuming a wage \$20 per hour, a factory worker in the United States would make \$3,440 per month, as opposed to the \$60-\$100 per month wages for a Chinese worker reported in the above study. Even at the then federal minimum wage of \$5.15 per hour, a worker in United States would make about \$900 per month.

The above report also noted:

Delayed wage payment had become so widespread in many locations and sectors, that the Premier Wen Jiabao signed a series of official documents in

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<sup>40</sup> WANG & MEI, *supra* note 33, at 19.

2004 designed to protect rural migrants' basic right to receive their wages on time. The central government intervention helps large numbers of rural migrant workers in China to receive their earned wages.<sup>41</sup>

Poor working conditions have been a long-standing problem in China. In a 1994 report, the author stated:

[L]abor exploitation and oppression have progressively worsened over the past 15 years. Long working hours, unreasonable wage cuts and remuneration, poor living conditions, a dangerous working environment, lack of health provisions, arbitrary dismissals, harsh and abusive treatment are the common problems.<sup>42</sup>

In commenting upon the plight of workers in developing nations and the lack institutional concern by those who argue for the benefits of international trade, William Greider, an investigative reporter, stated:

The lawyerly contradiction in this is profound: global commerce insists on a legal system that will protect the contractual rights of capital but treats the same rights for individual workers as an impediment to economic progress or a luxury that is reserved only for the wealthy nations. The same opinion leaders who celebrate the virtues of free competition among firms are strangely silent on the subject of free labor. The trade lawyers who lobby for liberalizing terms of trade are oblivious to the repressive, manipulative terms in which people are employed in many markets. The lawyers might insist that there is no contradiction since they are serving the interests of their clients, the multinational producers. Whatever the rationale, a barbaric transaction is still barbaric, regardless of local culture and political realities.<sup>43</sup>

This pattern hardly reflects a level playing field against which American workers should be expected to compete.

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<sup>41</sup> *Id.*

<sup>42</sup> WILLIAM GREIDER, ONE WORLD, READY OR NOT: THE MANIAC LOGIC OF GLOBAL CAPITALISM 406 (1997) (Referencing Trini Wing-yue Leung, EPZs in China, a report prepared for the International Confederation of Free Trade Unions, August 1994. This latter report has also been referenced at <https://www.cambridge.org/core/journals/international-labor-and-working-class-history/article/contesting-class-organization-migrant-workers-strikes-in-chinas-pearl-river-delta-197820101/A00EEFC54483FA8C7B2444FE94CCA4F8>).

<sup>43</sup> *Id.* at 408.

## 2.4. LABOR ARBITRAGE AS IT HAS PLAYED OUT IN ONE LOW-TECH INDUSTRY

While it might seem paradoxical to the American reader that there could be a problem of labor shortages in China giving rise to increases in wages, this was one of the themes of the joint report of the International Labour Organization and the National Natural Science Foundation of China. Consider the furniture industry as an example. Around 2005, one of the case studies in the report discussed the fact that Lecong, a town of 100,000 and the “capital of the furniture trade of China,” which is located in one of the industrial sectors along the eastern area of China, needed to import over 110,000 migrant workers, nearly half of whom worked in the furniture industry.<sup>44</sup> At that time, workers were paid 1000 Yuan, or about \$125 a month. However, governmental policies with regard to the western provinces encouraged many of these migrant workers to stay home. As one worker from the Sichuan province stated:

I have to work for more than 12 hours a day and very adverse conditions, only to get about 1000 Yuan in Lecong; however, now the Central Government, [sic] and I can earn almost 1000 Yuan in my hometown without any transportation fee, and what's more, I can stay with my family more often. Of course I prefer to work locally.<sup>45</sup>

This caused employers to raise wages and some sought to relocate to inland China to reduce costs. However, the inland location, though cheaper, did not have the synergies available from the cluster style industrial network along the coast.<sup>46</sup>

Consider now the impact of the foregoing “problem” encountered by employers in the furniture industry in China. Wages of \$125 a month in the furniture industry were considered problematic. How could American manufacturers and American workers compete with foreign companies that employed such cheap labor. And labor was even cheaper in the preceding 10 year period.<sup>47</sup>

Now consider the impact the foregoing competition had upon the furniture industry in the United States during a comparable 10 year period, 1995–2005. But, first, go back a decade earlier:

Back in the early 1980s, most of the Taiwanese exporters were novices at furniture-making, especially where the finishing process was concerned. But how long it would last was anybody's guess. U.S. furniture workers were

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<sup>44</sup> *Id.* at 22.

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> TradingEconomics, *supra* note 36.

averaging \$5.25 an hour, while the Taiwanese made \$1.40 an hour, and the Chinese labored for \$.35. The Far East may not have had the machinery or the lightening-fast conveyor belts that the Bassett Speed Lines did, but when it came to throwing labor at a problem, no one worked harder, longer, or cheaper than the Chinese.<sup>48</sup>

Smaller items, like coffee tables<sup>49</sup> and chairs, were the first to be impacted by Chinese imports in the late 1980s. A Queen Anne dining chair made by an American company was selling for \$220. An Asian import first sold for \$50, and \$39.<sup>50</sup>

During this period, many furniture manufacturers sold out, often in leveraged buyouts, with the result that cash generated by profits was used to pay off debt, rather than modernize the equipment. The unhappy aftermath was chronicled as follows:

From their faraway corporate perches, these executives aim to teach the slow-drawling Southerners new ways of merchandising and marketing, reaping giant profits for all. They bought out family owners of profitable businesses in an industry they knew nothing about, promising to leave the local management alone except when they felt their financial expertise was required. The honeymoon ended when the profits had been milked to meet a corporation's earnings targets, and usually after management had demeaned the local guys and sapped initiative on the factory floor. When the conglomerates sold or spun off their acquisitions, citing "poor performance" or "failure to meet profit goals," the businesses parted ways for good.<sup>51</sup>

Takeovers, even when unsuccessful, were problematic from a financial perspective. One furniture executive, who asked how much it would cost to ward off the takeover, was told: "At least two million, came the reply, and worse: Goldman Sachs needed him to pay a retainer of \$465,000 by the next day."<sup>52</sup>

By 1998 imports of wood furniture accounted for 30% of the market and concern was raised for the future of North Carolina's number two industry and its 70,000 jobs.<sup>53</sup> However, at that time, notwithstanding cheap Asian labor, negligible environmental regulations and foreign governmental support, the manufacturers of bulky items, such

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<sup>48</sup> BETH MACY, *FACTORY MAN* 148 (2014).

<sup>49</sup> Scott Andron, *Furniture Imports the Talk of Market*, GREENSBORO NEWS AND RECORD, May 3, 1998 (industry segments such as coffee tables and dinettes, once dominated by American companies, were taken over by foreign firms years ago).

<sup>50</sup> MACY, *supra* note 48, at 168.

<sup>51</sup> *Id.* at 166.

<sup>52</sup> *Id.* at 167.

<sup>53</sup> Andron, *supra* note 49.

as bedroom furniture, were less threatened because of the expense and time delay in shipping such bulky items from China to the U.S. Moreover, manufacturers of high-end products did not believe the Chinese could match their quality.<sup>54</sup>

Such complacency proved faulty. By 2001, China was admitted to the World Trade Organization and was selling high-quality bedroom suite for \$400, whereas one of the cheapest American versions cost twice that amount to produce, without factoring in any profit.<sup>55</sup> This led some of the domestic manufacturers to pursue an anti-dumping claim against the Chinese and the imposition of tariffs. The U.S. manufacturers claimed that the “wave of Chinese-made wooden furniture swamped the U.S. market beginning in 2000 [with the result that] about 35,000 employees or 27% of the total workforce at U.S. woodworking factories have lost their jobs.”<sup>56</sup>

But not all American companies favored the imposition of tariffs. Large retailers, such as Crate & Barrel, JCPenney Co., and Berkshire Hathaway's Nebraska Furniture Mart campaigned against the tariffs because it was profitable to sell the Chinese imports.<sup>57</sup> In addition, some American manufacturers had also imported Chinese furniture to take advantage of what they anticipated to be higher profit margins.<sup>58</sup>

One Taiwanese businessman told John Bassett III, the owner of a family business in the industry, that “[i]f the price is right, you [Americans] will do *anything*. We have never seen people before you who are this greedy – or this naïve.” He continued “[w]hen we get on top . . . don't expect us to be dumb enough to do for you what you've been dumb enough to do for us.”<sup>59</sup>

Not all furniture manufacturers were “this greedy.” When John Bassett was told by a Communist Party official, He Yun Feng, that the Chinese would be happy to provide Bassett with the dressers he was manufacturing at a fraction of the cost that Bassett

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<sup>54</sup> *Id.* (The Thomasville president stated that: “Not every factory over there is capable of doing what we can do”).

<sup>55</sup> MACY, *supra* note 48, at 232.

<sup>56</sup> Wall Street Journal Staff Reporter, *Chinese Furniture Faces U.S. Tariffs*, WALL ST. J., June 17, 2004.

<sup>57</sup> *Id.* (Furniture stores that buy heavily from China have waged a counterattack against U.S. furniture makers that supports the trade duties. At least 15 retailers across the U.S. have removed Mr. Bassett's products from their stores or if stopped ordering new styles from him, Mr. Bassett said, “wiping out \$8 million in orders.” “Why support anyone who is trying to hurt me?”, said Jake Jabs, owner of American Furniture Warehouse, a nine-store chain based in Englewood Colorado, that has banished products from four U.S. suppliers that are pushing for the tariffs. About two-thirds of the wooden furniture he sells is imported. Of those imports, two-thirds comes from China”).

<sup>58</sup> MACY, *supra* note 48, at 246 (“As American furniture makers flew to check out the possibilities of ordering from the Taiwanese, the fledging Asian companies flattered them, asking them constantly for advice. Once the Americans became customers, the advice morphed into full-bore instruction, far beyond helping convert inches to centimeters on design sketches. ‘It just snowballed,’ Tothill said, ‘it wasn't that the Asians came over to take our business. We went over there, and, before we knew it, we had *given* it to them”).

<sup>59</sup> *Id.* at 4.

incurred,<sup>60</sup> instead of taking the offer he instituted an investigation into the Chinese selling furniture below cost,<sup>61</sup> which ultimately led to the imposition of tariffs<sup>62</sup> and the Byrd amendment,<sup>63</sup> which directed the tariffs to the affected manufacturers. The following sets forth Bassett's motivation:

Close his factories? John Bassett pictured the whole lot of his hard-charging forbearers turning en masse in their graves. He thought of his 1730 workers – plainspoken mountain types, many of whom had followed their parents and grandparents into the factories – standing in unemployment lines instead of assembly lines. He thought of the smokestacks that for a century had borne his family's name and of the legacy he wanted to leave his kids.<sup>64</sup>

As another furniture manufacturer, this one located in Mississippi, reported: "... I may not be the brightest bulb, but I know that when my people don't have a job in Columbus, Mississippi, they're out of work forever," he told me. "There's nothing here for them to retrain for."<sup>65</sup>

It is hard for the one-percenters – who run large corporations, engage in financial engineering, and live in gated communities, and who grasp at cheap Chinese imports to improve margins – to understand the effect of offshoring manufacturing on communities and the people who live in them. Consider one example – Galax, Virginia: <sup>66</sup>

Among the displaced thirteen hundred furniture workers in Galax, those in their fifties and sixties had the toughest time recovering from the closings. Luper [a sawmiller] has friends his age who now mow grass, clean homes, wash cars, and make crafts and foodstuffs – anything to manage until their Social Security kicks in. A minister and food-bank operator told me she's counseled a handful of folks who are camping out in the woods.

A Facebook yard-sale page . . . gets visited by nearly everyone in the town of seven thousand. In January 2013, it had more than eleven thousand members, counting residents of surrounding counties, and featured house-cleaning and clothes-washing services for as little as four dollars an hour. One continuing controversy involves members who try to resell drink mixes, power bars, and canned goods that have been donated to them by a local charity. "Is that right

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<sup>60</sup> *Id.* at 5.

<sup>61</sup> *Id.* at 254-265.

<sup>62</sup> *Id.* at 296.

<sup>63</sup> *Id.* at 274.

<sup>64</sup> *Id.* at 5.

<sup>65</sup> *Id.* at 311.

<sup>66</sup> See BETH MACY, *DOPESICK: DEALERS, DOCTORS, AND THE DRUG COMPANY THAT ADDICTED AMERICA* 35 (2018). Galax is described as follows: "a factory town that it just witnessed the closing of two of its largest employers, Haynes-Brands clothing and Webb Furniture, and continued downsizing in the town's remaining plants."

or wrong? It's not for me to say," moderator Jessy Shrewsbury told me. "Some people are just very desperate for money to pay their bills."<sup>67</sup>

In Galax "40 percent of Galax residents qualify for food stamps; two-thirds of the town schoolchildren are on free or reduced-rate lunches; and nearly a quarter of the population lives in poverty."<sup>68</sup>

Beth Macy, the author of *Factory Man*, in another book, *Dopesick*, discussed the opioid drug addiction which has been spreading through rural communities and arguably began in the Appalachian area near Galax. One contributing factor to the drug crisis was a lack of hope and the loss of self-respect that was triggered by the loss of jobs. She recounted the importance of even a poor paying job:

Even though the pay wasn't great, those [production] jobs gave two things to our communities: one, families on the margin didn't always have to be on the brink of not having food on the table or money for utilities. And the second, more important thing was the behavior it modeled for families, where people got up in the morning and went to work.<sup>69</sup>

One resident of the area summed it up: "I guess we traded our jobs for somebody somewhere else in the world to have a better life, I don't know."<sup>70</sup>

The purpose of government is to act in the best interests of all its people, not to buy in to an unrealistic theory of trade that benefits some but results in the deprivation of others.

## 2.5. YUAN MANIPULATION

### 2.5.1. CHINESE INTERVENTION TO STEM THE RISE IN THE VALUE OF THE YUAN.

Since 1985, the United States has consistently and continually run a trade deficit with China. This means that the U.S. importers would need to purchase Chinese yuan in order to pay for the Chinese goods and that China would build up a huge store of US dollars. This, in turn, has resulted in a huge transfer of dollar reserves to China and should have, over time, caused a relative increase in the value of the yuan and a decrease in the value of the dollar.

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<sup>67</sup> MACY, *supra* note 48, at 372-373.

<sup>68</sup> *Id.* at 373.

<sup>69</sup> MACY, *supra* note 66, at 36.

<sup>70</sup> MACY, *supra* note 48, at 374.

The flow of American dollars and Chinese yuan is illustrated by the chart below:<sup>71</sup>

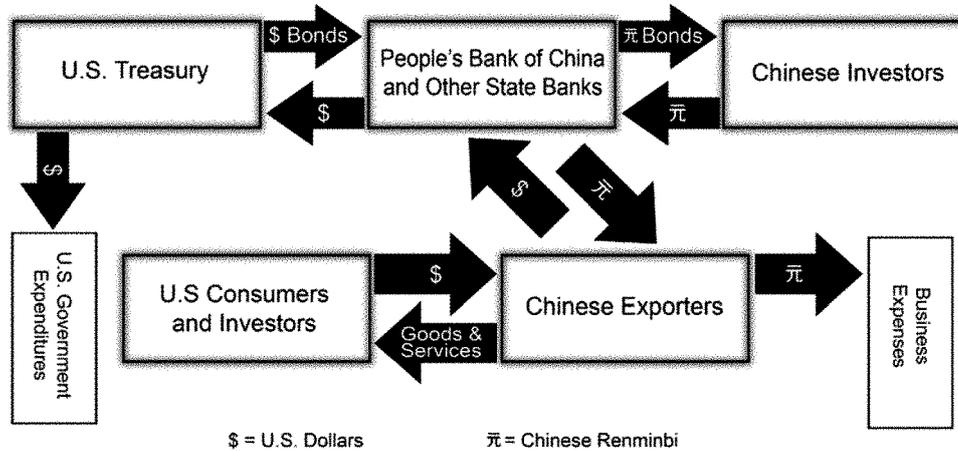


Chart 9

As of 2008, even though the yuan had appreciated over 18% since July 2005, it was still estimated to be undervalued against the dollar by about 30%. This is a huge export subsidy.<sup>72</sup>

One expert in international trade, Presad Eswer, summarized the situation as follows:

China's exports began to pick up soon thereafter [becoming a member of the World Trade Organization], which meant more foreign currency coming into the country. As the economy started registering strong growth and also began opening up its capital account, foreign capital flowed in increasingly, putting further upward pressure on the RMB. China did not want its export machine to lose momentum, so it started intervening in foreign exchange markets to prevent the value of the RMB from rising. With China's manufacturing sector registering strong productivity growth, the RMB should have appreciated markedly. The PBC's [People's Bank of China] intervention made the RMB increasingly undervalued – in other words, kept it at a level that was lower than it would have been had it been subjected to unfettered market forces. The increase in manufacturing sector productivity, in tandem with low domestic wages and an undervalued exchange rate, make Chinese exports very competitive in world markets. Consequently, the trade surplus grew by leaps and bounds, forcing the PBC

<sup>71</sup> See U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, 2008 REPORT TO CONGRESS 27 (2008).

<sup>72</sup> *Id.*

to intervene even more aggressively, buying up<sup>73</sup> dollars, euros, yen, and other currencies that were flooding into China as payments for its exports. This maneuver was intended to offset the rising demand for RMB in exchange for those currencies that would otherwise have driven up the price of the RMB (i.e., the exchange rate).

As can be seen from the chart below, the value of the yuan from 1985 until November 1993 decreased in a fairly regular pattern from about 3.2 yuan to the dollar at the end of 1985 to about 5.8 yuan to the dollar in November 1993. Then, in November 1993, it decreased dramatically from about 5.8 yuan to the dollar to about 8.7 yuan to the dollar. In May 1995, it rose to about 8.3 yuan to the dollar and remained constant at that level until July 2005. From 2005 to 2014, the yuan slowly and gradually appreciated to approximately 6 yuan to the dollar and then decreased to about 7 yuan to the dollar at year-end 2016.<sup>74</sup>

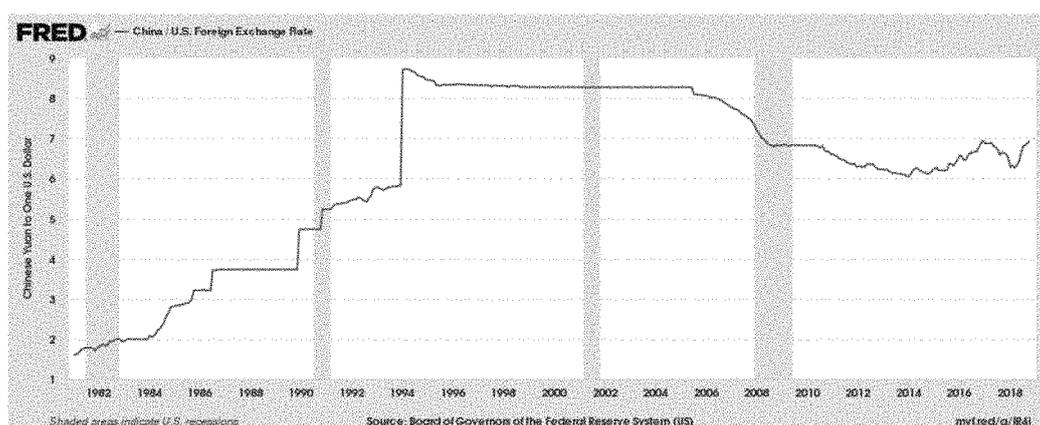


Chart 10: (Source: see footnote 74)

During this period of time U.S. trade deficit with China increased to over \$33 billion in 1995, to over \$200 billion in 2005, and to over \$375 billion in 2017. As a result, it has been argued that the yuan has been overvalued by as much as 40 percent.<sup>75</sup>

A study by the Congressional Research Service summarized the issue of China's manipulation of the yuan as follows:

China's policy of intervention to limit the appreciation of its currency, the renminbi (RMB) against the dollar and other currencies has become a major

<sup>73</sup> ESWAR S. PRESAD, *GAINING CURRENCY: THE RISE OF THE RENMINBI 77* (2017) (Prof. Presad Esver, is the Tolani Senior Prof. of Trade Policy at Cornell University and a fellow at the Brookings Institution he was formerly the head of the International Monetary Fund's China division).

<sup>74</sup> *Dollar Yuan Exchange Rate*, MacroTrends (<https://www.macrotrends.net/2575/us-dollar-yuan-exchange-rate-historical-chart>).

<sup>75</sup> Gordon Chang, *G-20 in Seoul: Global Currency War Is Inevitable*, THE DAILY BEAST, (Nov. 10, 2010), <https://www.thedailybeast.com/g-20-in-seoul-global-currency-war-is-inevitable>.

source of tension with many of its trading partners, especially the United States. Some analysts contend that China deliberately “manipulates” its currency in order to gain unfair trade advantages over his trading partners. They further argue that China’s undervalued currency as been a major factor in the large annual U.S. trade deficits with China and has contributed to widespread job losses in the United States, especially in manufacturing. Pres. Obama stated in February 2010 that China’s undervalued currency puts U.S. firms at a “huge competitive disadvantage,” and he pledged to make addressing China’s currency policy a top priority. At a news conference in November 2011, Pres. Obama stated that China needed to “go ahead and move towards a market-based system for their currency” and that the United States and other countries felt that “enough is enough.”<sup>76</sup>

However, President Obama’s bark was worse than his bite and little was done, probably, in part, due to the worldwide economic turmoil at that time and, in part, due to the leverage China enjoyed due to its huge buildup of dollar reserves as a result of the U.S. growing trade deficit with China. This, in turn, has led to huge investments in U.S. Treasury bonds, with the result that China now holds more than \$1 trillion of U.S. debt. Consequently, there was a fear that China would begin selling its U.S. treasury investments. If China were to sell, rather than buy, US debt, this could raise interest rates and negatively impact the American economy.

#### 2.5.2. RECOGNITION OF THE RELATION OF TRADE DEFICITS TO NATIONAL WEALTH.

Ricardo’s theory of comparative advantage contemplated that relative currency values would move in the direction that would smooth out imbalances in trade over time. One author acknowledged that Ricardo’s theory recognizes that the value of a country’s imports could exceed the value of such country’s exports, and thus result in a decrease in national wealth:

To return to the Ricardian example of the exchange of wine and cloth between England and Portugal, what if England’s wine imports yield Portugal £100 a year, yet the English cloth it requires cost £200? In this example, to maximize the gains from trade, Portugal must draw down its national reserves of wealth (e.g. gold) in order to obtain the additional £100 it needs to purchase English

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<sup>76</sup> WAYNE M. MORRISON & MARC LABONTE, CHINA’S CURRENCY POLICY: AN ANALYSIS OF THE ECONOMIC ISSUES 1 (2013).

cloth. It thus seems that the mercantilist objection that liberal trade could reduce accumulated national wealth has not really been met by the theory of comparative advantage.<sup>77</sup>

The author then credits Hume with identifying the possibility that a rebalancing of exchange rates could reduce this problem:

The philosopher David Hume is thought to be the first to have developed a theory of the balance of payments that could meet this objection. In essence, the theory suggests that since the demand for a country's currency depends on demand for its exports, where the latter rises, so will the former. Where a country has a trade surplus, the extra demand for its exports would increase the value of its currency and therefore make its exports more expensive and its imports cheaper. This, in turn, will reduce the surplus, as demand for exports goes down in response to their relatively higher cost, whereas demand for imports goes up owing to their relatively lower cost. In theory, an equilibrium will eventually be reached where trade and payments are balanced at a given exchange rate.<sup>78</sup>

As discussed earlier in this article, I submit that Ricardo himself did recognize that the impact of unbalanced trade would result in a flow of wealth from the importing country to the exporting country.<sup>79</sup> Ricardo's analysis was predicated upon the existence of something akin to what we might consider the "gold standard."

One authority characterizes this as the "market equilibrium" view of exchange rates and asserts that a version of this was adopted in connection with the post-Second World War Bretton Woods agreement:

This "market equilibrium" view of exchange rates and the balance of payments is fundamental to understanding the interface between the legal order of international trade and the international monetary system. The post-Second World War Bretton Woods arrangements contemplated a system of fixed exchange rates tied to the gold standard. Under this system, a country would in theory be required to hold sufficient reserves of gold to back the quantity of its currency in circulation. Where a temporary imbalance of payments occurred (i.e. where a country could not meet payments for imports with its receipts of foreign currency from export sales without selling gold for foreign currency), this would be financed by a

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<sup>77</sup> TREBILCOCK ET. AL., *supra* note 10 at 227.

<sup>78</sup> *Id.*

<sup>79</sup> RICARDO, *supra* note 18-22.

country borrowing from the International Monetary Fund. In the case of a structural or persistent imbalance, a country would devalue its currency under the supervision of the IMF, which might recommend domestic policy adjustments to ensure that further devaluations are not required in order to maintain the balance of payments. In the case of a country running a persistent trade surplus, foreign demand for its currency, i.e. by purchasers of its exports, would eventually exceed the amount of its currency that could be backed by gold reserves, thereby calling for a reevaluation of the exchange rate and/or domestic policy changes to dampen exports/or boost imports.<sup>80</sup>

The United States has certainly run a “persistent imbalance” in its trade with China and, were the above system in effect, the United States would have needed to devalue its currency vis-a-vis China, i.e., the value of the yuan would increase vis-a-vis the U.S. dollar.

However, the above system did not remain in place very long, in part due to the fact that, while the U.S. enjoyed a substantial trade surplus immediately following The Second World War, the U.S. surplus trade declined after the economies of Europe and Japan began to recover. However, the Johnson and Nixon administrations declined to revalue the dollar and, in 1971, the U.S. unilaterally refused to back the dollar with gold any longer and proposed a new system of floating exchange rates.<sup>81</sup>

### 2.5.3. THE CURRENT SYSTEM FOR VALUING CURRENCY.

Under the current system of free capital flows, the value of the currency is affected, not just by government intervention, but also by the activity of speculators who make their own assessment as to the appropriate respective values of the Chinese yuan and American dollar.<sup>82</sup> Balance of trade is not the sole factor upon which a currency speculator would focus. Relative interest rates and relative inflation as well as an overall view of the stability of the economy will also be taken into consideration. Consider a recent analysis expressing concern about whether the yuan will weaken to more than seven yuan to the dollar:

While China hasn't raised interest rates, the Federal Reserve in Washington has. That makes it attractive for many people to sell their renminbi and buy dollars. Would you rather have a one-year renminbi certificate of deposit

<sup>80</sup> TREBILCOCK ET AL., *supra* note 10, at 227-228.

<sup>81</sup> *Id.* at 228.

<sup>82</sup> *Id.* at 230. See also Mico Loretan, *Indexes of the Foreign Exchange Value of the Dollar*, FED. RES. BULL. (2005).

that pays 1.5 percent interest now, or a one-year dollar C. D. that pays out 2.6 percent or more? <sup>83</sup>

Today, there is no agreed international standard against which a currency can be viewed as either over or undervalued.<sup>84</sup> As one authority recounts: “Economists have attempted various estimates of a ‘correct’ exchange rate between the Renminbi and the U.S. Dollar, but these estimates vary considerably depending on the methodology used.”<sup>85</sup>

One of the organizations that sought to assess whether a country is manipulating its exchange rate is the Economic Policy Institute. It has suggested a three-fold test for determining whether a country is manipulating the value of its currency for competitive advantage:

First, does it have a high and rising bilateral trade surplus with the United States? Second, is its *global* current account surplus (the broadest measure of its trade and income flows) high and rising? Third, does it possess a high and rising accumulation of international reserves?<sup>86</sup>

It then analyzed nine situations in which currency manipulation has been found.<sup>87</sup>

		Trade surplus w/ U.S. annual rate (US\$ billions)	GDP	Trade surplus w/ U.S. annual rate (% of GDP)	Global Current Account most recent year (US\$ billions) (% GDP)	Accumulation of reserves 12-month change (US\$ Billions)	Total reserves (Months of imports)
Taiwan	Oct-88	17.4	97.8	17.8%	18.1 18.5%	31	28.0
	Apr-88	13.9	122.9	11.3%	10.2 8.3%	-	-
	May-92	9.8	179.1	5.5%	12.0 6.7%	14	17.0
	Dec-92	10.5	179.1	5.9%	12.0 6.7%	13	18.0
South Korea	Oct-88	9.4	120.5	7.8%	<b>10.0</b> 8.3%	7	-
	Apr-88	9.0	157.1	5.7%	14.3 9.1%	9	<b>3.0</b>
	Oct-89	<b>8.1</b>	169.0	4.8%	14.2 8.4%	9	-
China	May-92	12.7	369.7	3.4%	12.2 <b>3.3%</b>	14	10.0
	Dec-92	16.7	409.1	4.1%	13.5 3.3%	<b>6</b>	8.0
<b>Current position of China</b>							
China		203.8	2,259.2	9.0%	160.8 7.1%	207	12.9

**Bold** indicates lowest level with finding of manipulation.

Historical data source: U.S. Treasury Report to the Congress on International Economic and Exchange Rate Policy.  
Current data source: U.S. International Trade Commission and the International Financial Statistics Database of the International Monetary Fund.

Chart 11: Currency manipulation found nine times in the past, (source: see footnote 27)

<sup>83</sup> Keith Bradsher, *The Number 7 Could Make China's Currency a Trade-War Weapon*, N.Y. TIMES, Oct. 31, 2018, <https://www.nytimes.com/2018/10/30/business/china-renminbi-currency-trade-war.html>.

<sup>84</sup> See TREBILCOCK ET. AL., *supra* note 10, at 231.

<sup>85</sup> *Id.* at 234.

<sup>86</sup> Robert E. Scott & Josh Bivens, *China Manipulates Its Currency: A Response Is Needed*, ECON. POL. INSTIT. (Sept. 25, 2006), <https://www.epi.org/publication/pm116/>.

<sup>87</sup> *Id.*

In concluding that, in 2006, China was manipulating the value of the yuan to assist in maintaining its trade surplus with the United States, the Institute set forth the following supporting data:

The bilateral U.S.-China surplus (as measured by the U.S. government) was \$203 billion for 2005. This bilateral surplus has risen by \$119 billion over the past five years and represents over 9% of China's total GDP. In seven of the nine cases where damaging currency manipulation was found, the U.S. bilateral trade deficit was lower than 9%, and in May 1992—the first time China was found guilty of currency manipulation—its surplus with the United States was only 3.4% of China's GDP.

China's *global* current account surplus is now over 7% of its GDP, up 5 percentage points in five years. China's reported current account surplus exceeds levels reached in four of the nine previous cases. Furthermore, there is evidence that demonstrates that China's own trade data may substantially under-estimate its global trade and current account surpluses.<sup>3</sup> Using data on Chinese imports and exports from its top 40 trading partners (covering 88-95% of China's total trade), the China Currency Coalition estimated that China's total trade surplus in 2003 was \$203 billion, 341% more than China's officially reported trade surplus of only \$46 billion.

China's international reserves increased by \$207 billion in 2005, ending the year at \$821 billion. The best estimates are that 70% of these are dollar reserves and that this share has remained stable over time. These international reserves constitute 36% of China's total GDP and are sufficient to finance over a year of Chinese imports. China's purchase of reserves in the form of dollar-denominated assets has propped up the value of the dollar, keeping the Chinese currency from gaining value. In short, these reserve purchases act as a *de facto* subsidy for Chinese exports into the U.S. market.<sup>88</sup>

However, neither the Bush administration nor the succeeding Obama administration moved aggressively to challenge the Chinese manipulation. The situation is reminiscent of that in banking: if you borrow \$1 million, the bank will foreclose, but, if you borrow \$1 billion, the bank will not seek foreclosure but rather attempt to work something out.<sup>89</sup>

So long as the economies of the Asian nations were small vis à vis the United States, we could take a tough stand. However, as the Chinese economy grew, we became

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<sup>88</sup> *Id.*

<sup>89</sup> See Brendan Murphy, *Trump Obtains \$20 Million Bridge Loan, Pays Bonds*, UPI (June 26, 1990), <https://www.upi.com/Archives/1990/06/26/Trump-obtains-20-million-bridge-loan-pays-bonds/5513646372800/>.

too dependent upon China's exports, and too concerned about China's leverage resulting from its accumulation of U.S. dollars, to take a hard stand.

### 3. CHINA'S "FREE TRADE" VIOLATIONS OF WTO PRINCIPLES TO ACQUIRE TECHNOLOGY AND KNOW-HOW TO SUPPLANT THE AMERICAN MANUFACTURING BASE

As can be seen thus far, circumstances have greatly changed since Ricardo posited his theory of comparative advantage. Capital is no longer loyal to the country of origin, and something akin to the gold standard, which would adjust currencies to even out imbalance in trade flows, no longer exists. Ricardo also did not contemplate that the government of one trading partner will sanction or even participate in industrial espionage.

#### 3.1. THE CONSEQUENCES OF A NAÏVE APPROACH TO GLOBAL TRADE

At the low-end of the technological scale, consider T-shirts and wood furniture industries. When I went to China in 1992, you could purchase five cheap T-shirts for a dollar and a better-quality T-shirt for about one dollar. Comparable T-shirts in this country would cost about three dollars. China clearly had a competitive advantage. On the other hand, through technology and skilled workmanship, the United States could produce quality wooden furniture that China could not begin to meet.<sup>90</sup> Thus, we had a competitive advantage there. But China could produce cheap wooden furniture, which did not require the same degree of skilled workmanship or technological input, more efficiently than we could. Therefore, under a comparative advantage approach, if we could produce cheap wooden furniture more efficiently than we could produce T-shirts, then China should make the T-shirts and the United States should make the cheap wooden furniture. But soon China not only made T-shirts, but also cheap wooden furniture because capital, including some from United States sources, flowed into China to fund the Chinese furniture industry.

In the process of making cheap wooden furniture, China's workplace skills increased and undoubtedly found American manufacturers willing to sell woodworking equipment. Representatives of the Chinese wood furniture industry visited American

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<sup>90</sup> See U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, 2004 REPORT TO CONGRESS 179 (2004).

factories and gleaned our know-how, bought the necessary technological equipment, and began to undercut our quality wooden furniture industry. The American wholesalers and retailers, to obtain the greater margins possible through buying Chinese quality wooden furniture, further funded the development of a quality wooden furniture industry in China by now buying quality wooden furniture from the Chinese, and America ended up producing neither T-shirts, nor cheap wooden furniture, nor quality wooden furniture.

According to the advocates of free trade, America would simply adjust by then producing more high technology goods. Even if this were possible, there is no assurance that such high technology goods would be produced in the same communities or by the same workers that were laid low by the loss of the American high-quality wooden furniture market. The loss of jobs, and attendant devastation of communities, in part, accounts for the attractiveness of President Trump's "Make America Great Again" spiel.

However, China has never been content to be a low-tech producer. In 2004, the United States-China Commission stated that the Chinese government "has a coordinated, sustainable vision for science and technology development." In 2017, the United States-China Commission reported:

The Chinese government has laid out industrial plans where the government – not market forces – plays a central role in developing Chinese firms into the global leaders in cutting-edge, dual-use technologies. These industrial plans establish the government strategy for sector development at the national and local government levels, and set targets for localization, market creation, and productivity. To meet these objectives and cultivate local and national market leaders (the so-called "national champions"), central and local governments implement comprehensive industrial policies such as strong state funding, a protected domestic market, selective recruitment of foreign investment, imports and talent, and, in some cases, industrial espionage.<sup>91</sup>

China's "Made in China 2025" and "Internet Plus" initiatives target 10 key sectors for additional government support: (1) new energy vehicles, (2) next-generation of information technology, (3) biotechnology, (4) new materials, (5) aerospace, (6) ocean engineering and high-tech ships, (7) railway, (8) robotics, (9) power equipment, and (10) agricultural machinery.<sup>92</sup>

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<sup>91</sup> U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, 2017 REPORT TO CONGRESS 509 (2017).

<sup>92</sup> *Id.* at 513.

### 3.2. CHINA'S WTO OBLIGATIONS

Admitting China to the World Trade Organization was a great experiment, founded on unbridled optimism. The focus in the United States was on opening up markets of over 1 billion Chinese customers; little thought was given to the productive capability of China and its impact on United States manufacturing and employment. As a report commissioned by the United States-China Commission stated:

Because China is a huge country, with a very rapidly expanding economic base and an economy which continues to reflect significant state involvement in decisions of resource allocation, there was no certainty at the time of accession that China's economic system would mesh well with the World Trade Organization rules and other trading partners' generally market-oriented economies.

Indeed, in the history of the GATT, and now World Trade Organization, never has a country of such trading importance been admitted with a system that was still so far from conformance with GATT/WTO norms.<sup>93</sup>

The rules of the World Trade Organization, but often in general terms, preclude domination of the economy by state owned enterprises, subsidies to local industry, forced technology transfers, and piracy of technology and intellectual property. By entering the WTO, and agreeing to the Protocol on the Accession of the People's Republic of China,<sup>94</sup> China agreed to abide by these rules. But it is one thing to agree to rules and another to observe and enforce them. From the outset, China has avoided compliance in order to facilitate the development of its export driven economy.

The expectation of the WTO is that its members will have a market-oriented economy, not a command-and-control economy. Article XVII of GATT provides:

Each contracting party undertakes that if it establishes or maintains a State enterprise, wherever located, or grants to any enterprise, formally or in effect, exclusive or special privileges, such enterprise shall in its purchases

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<sup>93</sup> TERENCE P. STEWART, CHINA'S COMPLIANCE WITH WTO OBLIGATIONS: A REVIEW OF CHINA'S FIRST TWO YEARS OF MEMBERSHIP 1 (2004) <https://www.uscc.gov/sites/default/files/Research/china%20compliance%20with%20wto%20obligations%20first%20two%20years.pdf> (the report recounts how China has sought to undermine the utility of provisions added to its accession protocol to ensure timely compliance with its agreements and to permit other countries to limit imports from China, as well as how China lobbied the US to delay addressing import surges from China, thus adversely impacting the US textile industry. See executive summary at 4, 6-7. In a market economy, the delay of a couple of years in responding to unfair competition can devastate a company or an industry; contrariwise, and a command-and-control economy, the government can carry a company or industry as long as it believes it is in the best interest of the country).

<sup>94</sup> World Trade Organization, Protocol on the Accession of the People's Republic of China, WTO Doc. WT/L/432 (2001) [hereinafter *Accession Protocol*].

or sales involving either imports or exports, act in a manner consistent with the general principles of non-discriminatory treatment prescribed in this agreement for governmental measures affecting imports or exports by private traders.

With respect to subsidies, Article XVI of the GATT recognizes that governmental subsidies are inconsistent with the policy of GATT.<sup>95</sup> More particularly, the Agreement on Subsidies and Countervailing Measures treats “subsidies [that favor] the use of domestic over imported goods” as prohibited subsidies,<sup>96</sup> while such matters as covering operating losses, forgiveness of debt, impeding the imports of a product, displacing exports, significant price undercutting, or other actions that result in an increase in the world market share that constitutes a consistent trend are treated as matters of serious prejudice.<sup>97</sup> A member is under an obligation not to cause serious prejudice to the interests of another member.<sup>98</sup>

The Accession Protocol provides that state trading enterprises will comply with the WTO agreement and that China “shall refrain from taking any measure to influence her direct state trading enterprises as to the quantity, value, or country of origin of goods purchased or sold, except in accordance with WTO provisions.”<sup>99</sup> The Accession Protocol also provides that China shall ensure that the “distribution of import licenses and other means of approval for importation . . . or investment shall not be 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 for the conduct of research and development in China.”<sup>100</sup>

In many respects, WTO and its rules are ineffectual. If a country games the system and evades the rules, in many circumstances the violations will not be challenged, and, even if challenged and the result is successful, China will have won and other countries and their manufacturing enterprises will have lost because of the time delays involved and the advantages that China obtains in the interim. As reported by the U.S. – China Commission:

But there is only one sure way to judge whether a dispute is satisfactorily concluded, and that is the effect on sales of products or services to which the complained-of restriction applied. In the case of auto parts, where the U.S.

<sup>95</sup> *Additional Provisions on Export Subsidies* (July 4, 1986), GATT BISD, at 26 (1986).

<sup>96</sup> Agreement on Subsidies and Countervailing Measures, pt.2, § 3.1 (b), Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 U.N.T.S. 229.

<sup>97</sup> *Id.* at pt. 3, § 6.

<sup>98</sup> *Id.* at pt. 3, § 5.

<sup>99</sup> *Accession Protocol*, *supra* note 94, § 6.

<sup>100</sup> *Accession Protocol*, *supra* note 94, § 7.

won its case, it would be interesting to ask whether China's restrictions may have served their purpose, with the favorable WTO result coming too late to reverse the damage to U.S. commercial interests. The same is true of local content or technology transfer requirements or applied to investments. The requirements may be lifted after they have had the desired effect. Even then, the case may have resolved only part of the problems faced. The United States has had some 'wins' in the area of IP [intellectual property] enforcement, but the Chinese market is still saturated with pirated software and DVDs.<sup>101</sup>

### 3.3. CHINA'S FAILURE TO COMPLY WITH ITS WTO OBLIGATIONS

As stated above, Ricardo's notion of comparative advantage did not contemplate an export-oriented government that would eliminate other countries competitive advantage by theft and by conditioning technological transfer as a requirement to entering its markets, nor one that would subsidize exports at the expense of its own citizens. Peter Navarro, President Trump's Director of Trade and Industrial Policy, summarized China's policies, somewhat pejoratively, as follows:

1. An elaborate web of illegal export subsidies.
2. A cleverly manipulated and grossly undervalued currency.
3. The blatant counterfeiting, piracy, and outright theft of America's intellectual property treasures.
4. An incredibly short-sided willingness by the Chinese Communist Party to trade massive environmental damage for a few more pennies of production cost advantage.
5. Ultra-lax worker health and safety standards so far below international norms that they make brown lung, butchered limbs, and a dizzying array of cancers not just occupational hazards but virtual certainties.
6. Unlawful tariffs, quotas, and other export restrictions on key raw materials from A to Z – antimony to zinc – as a strategic ploy to gain greater control over the world's metallurgy and heavy industry.
7. Predatory pricing and “dumping” practices designed to push foreign rivals out of key resource markets and to then gouge consumers with monopoly pricing.

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<sup>101</sup> U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, 111TH CONG., REPORT TO CONGRESS 20 (2010).

8. China's vaunted "Great Walls of Protectionism" – to keep all foreign competitors from setting up shop on Chinese soil.<sup>102</sup>

While Mr. Navarro sometimes uses hyperbolic language, the various objections he raised to the unfair trading practices by China have been supported down through the years by the U.S.-China Commission.

China's use of cheap labor, toiling in deplorable conditions, and its currency manipulations have previously been discussed. The following focuses upon the various subsidies that China has provided to its export sector and its forced transfer of technology and know-how and piracy of intellectual property.

The U.S. – China Commission, in 2009, summarized this issue as follows:

To accelerate the growth of the information technology sector, the Chinese government has used direct and indirect subsidies, including low- or no-cost loans, tax concessions, grants of land and infrastructure, and government support for graduate education and for research and development. At the same time, the Chinese government has fostered the development of Chinese manufacturers through requirements that foreign suppliers establish joint ventures with Chinese partners, build manufacturing plants in China, transfer technology, and offset their imports of component parts through domestic purchases.<sup>103</sup>

In its 2009 report, the Commission also stated:

China has long provided subsidized energy and water to many manufacturers, despite the fact that China must import large quantities of oil and gas and already has very limited supplies of water for agricultural purposes. Also, many manufacturers have been offered free or discounted land, particularly in the vast, government-run industrial parks. Today, China's subsidies still include free land and discounted electricity, but support for business is also growing more subtle and harder to detect. This support includes tax incentives for investment, funding for research and development, refunds of value added taxes (VAT) on exports, and the construction of strategically planned industrial parks in favored locations.<sup>104</sup>

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<sup>102</sup> PETER NAVARRO, GREG AUTRY, *DEATH BY CHINA* 50 (2011).

<sup>103</sup> U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, 2009 REPORT TO CONGRESS 70 (2009).

<sup>104</sup> *Id.* at 50.

Subsidization of Chinese industry continues today and has actually accelerated as a result of the industrial policies that the Chinese government has been implementing. In 2017, the U.S.-China Commission reported:

The Chinese government has laid out industrial plans where the government – not market forces – plays a central role in developing Chinese firms into the global leaders and cutting-edge, dual-use technologies. These industrial plans establish the government strategy for sector development at the national and local government levels, and set targets for localization, market creation, and productivity. To meet these objectives and cultivate local and national market leaders (the so-called “national champions”), central and local governments implement comprehensive industrial policies such as strong state funding, a protected domestic market, selective recruitment of foreign investment, imports and talent, and, in some cases, industrial espionage.<sup>105</sup>

With respect to forced technology transfer and industrial espionage, the Office of the U.S. Trade Representative conducted a recent investigation into whether China's practice of forcing technology transfer by U.S. companies was still ongoing:

The evidence collected in this investigation from hearing witnesses, written submissions, public reports, journal articles, and other reliable sources indicates there are two key aspects of China's technology transfer regime for inbound foreign investment.

First, the Chinese government uses foreign ownership restrictions, such as formal and informal JV requirements, and other foreign investment restrictions to require or pressure technology transfer from U.S. companies to Chinese entities. These requirements prohibit foreign investors from operating in certain industries unless they partner with a Chinese company, and in some cases, unless the Chinese partner is the controlling shareholder. Second, the Chinese government uses its administrative licensing and approvals processes to force technology transfer in exchange for the numerous administrative approvals needed to establish and operate a business in China.

These two aspects of China's technology transfer regime are furthered by the non-transparent and discretionary nature of China's foreign investment approvals system. Prior to 2001, China often explicitly mandated technology transfer, requiring the transfer of technology as a quid pro quo for market access. In 2001, China joined the WTO and committed not to condition the

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<sup>105</sup> U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, *supra* note 91.

approval of investment or importation on technology transfer. Since then, according to numerous sources, China's technology transfer policies and practices have become more implicit, often carried out through oral instructions and "behind closed doors".<sup>106</sup>

### 3.4. PIRACY AND INDUSTRIAL ESPIONAGE

In addition to requiring American and other companies to transfer technology and know-how, directly or indirectly, to Chinese companies, the Chinese government, its companies, and individuals sympathetic to China have engaged in industrial espionage and theft of intellectual property. Industrial espionage, as practiced by China, was beyond imagination at the time Ricardo developed his theory.

This has been a long-standing problem with China. The International Intellectual Property Alliance reported that, in 2002, intellectual property theft translated to a \$1.8 billion loss to the pirated industries and the Motion Picture Association of America reported that 95% of video discs in China were pirated.<sup>107</sup> The U.S.-China Commission estimated that unauthorized copying of business software applications generated a loss of over \$2.7 billion.<sup>108</sup>

In 2011, the Office of the National Counterintelligence Executive reported on the increased pace of theft of U.S. technologies and trade secrets:

The pace of foreign economic collection and industrial espionage activities against major U.S. corporations and U.S. government agencies is accelerating. Foreign intelligence services, corporations, and private individuals increase their efforts in 2009-2011 to steal proprietary technologies, which cost millions of dollars to develop and represented tens or hundreds of millions of dollars in potential profits. The computer networks of a broad array of U.S. government agencies, private companies, universities, and other institutions – all holding large volumes of sensitive economic information – were targeted by cyber espionage; much of this activity appears to have originated in China.<sup>109</sup>

<sup>106</sup> OFF. OF THE U.S. TRADE REPRESENTATIVE, Findings of the Investigation into China's Acts, Policies and Practices Related to Technology Transfer, Intellectual Property, and Innovation Under Section 301 of the Trade Act of 1974, at 19 (2018).

<sup>107</sup> See e.g., U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, 2004 REPORT TO CONGRESS 184 (2004).

<sup>108</sup> *Id.* at 184-185.

<sup>109</sup> OFF. OF THE NAT'L. COUNTERINTELLIGENCE EXECUTIVE, FOREIGN SPIES STEALING U.S. ECONOMIC SECRETS IN CYBERSPACE 9 (2011).

More recently, the Department of Justice indicted a Chinese company, Huawei Device Co. Ltd., and its U.S. subsidiary with the theft of trade secrets, wire fraud and obstruction of justice.<sup>110</sup> The facts underlying the indictment were summarized by the Department of Justice release:<sup>111</sup>

According to the indictment, in 2012 Huawei began a concerted effort to steal information on a T-Mobile phone-testing robot dubbed “Tappy”. In an effort to build their own robot to test phones before they were shipped to T-Mobile and other wireless carriers, Huawei engineers violated confidentiality and non-disclosure agreements with T-Mobile by secretly taking photos of “Tappy,” taking measurements of parts of the robot, and in one instance, stealing a piece of the robot so that the Huawei engineers in China could try to replicate it. After T-Mobile discovered and interrupted these criminal activities, and then threatened to sue, Huawei produced a report falsely claiming that the theft was the work of rogue actors within the company and not a concerted effort by Huawei corporate entities in the United States and China. As emails obtained in the course of the investigation reveal, the conspiracy to steal secrets from T-Mobile was a company-wide effort involving many engineers and employees within the two charged companies.

The indictment also charged that the Chinese company offered bonuses to employees, based on the value of the information that they stole from other companies around the world. This wrongful conduct clearly is an ongoing problem. According to the U.S. Trade Representative:

For over a decade, the Chinese government has conducted and supported cyber intrusions into U.S. commercial networks targeting confidential business information held by U.S. firms. Through these cyber intrusions, China's government has gained unauthorized access to a wide range of commercially-valuable business information, including trade secrets, technical data, negotiating positions, and sensitive and proprietary internal communications. These acts, policies, or practices by the Chinese government are unreasonable or discriminatory and burden or restrict U.S. commerce.<sup>112</sup>

<sup>110</sup> See *United States v. Huawei Device Co.*, No. CR19-010 (W.D. Wash. 2019).

<sup>111</sup> See also Press Release, Department of Justice, Chinese Telecommunications Device Manufacturer And Its U.S. Affiliate Indicted for Theft of Trade Secrets, Wire Fraud, and Obstruction of Justice (Jan. 28, 2019), <https://www.justice.gov/opa/pr/chinese-telecommunications-device-manufacturer-and-its-us-affiliate-indicted-theft-trade>.

<sup>112</sup> See *Trade Representative Findings*, *supra* note 106, at 153.

The foregoing is a consistent pattern, but not a pattern that is consistent with the principles of free trade. Rather, it is consistent with industrial, and in some instances national security, war.

### 3.5. CHINESE FINANCING OF AMERICAN COMPANIES AS A TOOL TO ACQUIRE TECHNOLOGY

Over the last few years, China has embarked upon another strategy to obtain technology and know-how – through acquisition of American and other companies and through providing venture capital to start-up companies in promising industries. This has been possible through China’s huge aggregation of foreign currency reserves and has enabled the Chinese government to control foreign investments through its control of such reserves. The Office of the United States Trade Representative reported:

The Chinese government continues to direct and/or unfairly facilitate the systemic investment in, and/or acquisition of, US companies and assets by Chinese companies to obtain cutting-edge technologies and intellectual property and generate large-scale technology transfer and industries deemed important by Chinese government industrial plans.<sup>113</sup>

The Chinese government has instituted an outbound investment approval system which applies to all enterprises, not just SOEs. This gives the state a decisive role in determining which industry sectors should be targeted or closed for overseas investment. “As a result, any enterprise seeking to receive government support for such acquisitions is incentivized to invest in sectors favored by the government, including those classified as” encouraged “in outbound investment measures and those identified in major S&T plans such as the *Made in China 2025 Notice*”.<sup>114</sup>

“Control over the use of foreign exchange is a crucial tool for the government to influence outbound investment. China operates a closed capital account that restricts currency convertibility, as well as monetary inflows and outflows.”<sup>115</sup> The Section 301

<sup>113</sup> OFF. OF THE U.S. TRADE REPRESENTATIVE, UPDATE CONCERNING CHINA’S ACTS POLICIES AND PRACTICES RELATED TO TECHNOLOGY TRANSFER, INTELLECTUAL PROPERTY, AND INNOVATION 31 (2018).

<sup>114</sup> *Trade Representative Findings*, *supra* note 106, at 87 (“Encouraged-type overseas investment projects” include “(1) investments that enable the acquisition of resources and raw materials that are in short supply domestically and which are “in urgent demand for national economic and social development;” (2) investments that support the export of products, equipment, technology, and labor for which China has a comparative advantage; and, (3) investments that “are able to clearly enhance China’s technology research and development capacity, including an ability to use international leading technology and advanced management experience and professional talent.” Thus, the acquisition and subsequent use of technology is a central feature of “encouraged” outbound investments.” *Id.* at 77).

<sup>115</sup> *Id.* at 75.

Report by the Office of the United States Trade Representative , which was updated above, noted that investments that are “encouraged” receive several forms of government support, including:

[S]ubsidies for fees incurred, and bank loans at government-subsidized interest rates; policy bank loan support; priority administrative approval; priority support for the use of foreign exchange; export tax rebates on exports of equipment and other materials relating to the overseas investment project; priority access to services relating to overseas financing, investment consultation, risk evaluation, risk control, and investment insurance; and coordinated support from several government departments with respect to information exchange, diplomatic protections, the travel of personnel abroad, and registration of import and export rights.<sup>116</sup>

Annual Chinese foreign direct investment in the United States prior to 2011 was less than \$5 billion.<sup>117</sup> By 2016, it had risen to over \$45 billion. In addition, Chinese investors have increased their participation in venture capital deals. In 2011, such participation was less than \$1 billion. It rose to over \$6 billion in 2015 and about \$9 billion in 2018.<sup>118</sup>

When the Senate considered a bill that would make it more difficult for foreign firms to make investments in U.S. technology companies on the basis that providing access to developing U.S. technology could produce a national security threat, venture capital advocates asserted that a minority interest in a high-tech firm cannot provide access to technology.<sup>119</sup> This illustrates that individual firms or individual industries cannot be expected to forgo their self-interests in light of what may or may not be a national security problem.

A commissioner at the U. S.-China Economic and Security Review Commission differed with the venture capital advocates, stating that “insights into the underlying technology can be a condition of participation in venture capital deals [and] participating Chinese firms might well ask to confirm patents, which provides access to underlying technology.”<sup>120</sup> This summer, the Foreign Investment Risk Review Modernization Act of 2018 was enacted which would strengthen the Committee on Foreign Investment in the United States.<sup>121</sup>

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<sup>116</sup> *Id.* at 78.

<sup>117</sup> *See China Hearings, supra* note 23.

<sup>118</sup> *See Trade Representative Findings, supra* note 106, at 41.

<sup>119</sup> *See also* Sarah McBride & David McLaughlin, *Venture Capitalists Fret over U.S. Bill Targeting Chinese Investors*, BLOOMBERG NEWS (May 16, 2018), <https://www.bloomberg.com/news/articles/2018-05-16/venture-capitalists-fret-over-u-s-bill-targeting-chinese-investors>, *Venture Capitalists Fret Over U.S. Bill Targeting Chinese Investors*.

<sup>120</sup> *Id.*

<sup>121</sup> *See generally* Press Release, U.S. Department of the Treasury, Treasury Secretary Mnuchin Statement on Sign-

The Trump administration has announced that it will utilize the expanded review system to more aggressively police foreign investment so as to prevent China from gaining access to sensitive American technology. “The investment restrictions will allow the United States to block a far wider array of foreign transactions that are deemed a threat to national security, including minority stakes and joint ventures in technology, telecommunications and other cutting-edge companies.”<sup>122</sup>

#### 4. THE LACK OF LOYALTY BY AMERICAN BUSINESS TO AMERICAN TAXPAYERS AND WORKERS

##### 4.1. THE ILLUSION THAT GLOBAL TRADE PREDICATED UPON LABOR ARBITRAGE WOULD BENEFIT AMERICAN WORKERS

Consider now the high technology goods to which our industrial base was supposed to turn, which required innovation and intellectual property, and which would provide the jobs for our supposedly retrained workers. The high-tech advantage, which American workers and manufacturers at one time enjoyed, unfortunately has been traded away to other countries. American businesses, which now consider themselves global enterprises, not American enterprises, have traded away such advantage in exchange for market access in other countries which, in the short run, increases the profitability of American businesses at the expense of American jobs, but which in the long run may ultimately result in loss of business by the companies that gave away their know-how and technology.

The most naïve people in the world are highly educated Republicans and conservative Democrats, such as former President Bill Clinton who believes that free trade is the norm in our global economy and that it is a win-win proposition for all concerned. According to the free-traders: “Expanding global trade would advance the well-being of all nations, it was said, because free markets rewarded price efficiency. Therefore, over time, the sales would gravitate to nations that each produced what they did best and at the lowest cost, whether it was textiles or automobiles.”<sup>123</sup>

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ing of FIRREA to Strengthen CFIUS (Aug. 13, 2018), <https://home.treasury.gov/news/press-releases/sm457>.

<sup>122</sup> Alan Rappeport, *In a New Slap at China, U.S. Expands Power to Block Foreign Investments*, N.Y. TIMES, Oct. 10, 2018, <https://www.nytimes.com/2018/10/10/business/us-china-investment-cfius.html>.

<sup>123</sup> See GREIDER, *supra* note 42 at 126.

The same people believe that the notion that the United States should have an industrial policy is anathema to our capitalistic system.

With regard to whether unfettered “free” trade is a win-win proposition for all concerned, try telling the highly skilled craftsmen in the wood furniture industry, described earlier in this article. Or try telling that to a highly skilled machinist in the aerospace industry as described below.

Once we adopt the notion that the purpose of a corporation is to maximize shareholder value, because shareholder value is a function of earnings, which in turn are a function of sales, the primary focus of a multinational corporation is market access so as to generate sales, irrespective of where the product is actually produced. If a product needs to be produced in another country so as to generate sales, then so be it. This then creates a benefit for the shareholder (and for management whose compensation is a function of profitability), but certainly not for the workers, if the jobs they formerly performed are outsourced to another country. And, if the price of access to a market in another country is the transfer, not just of jobs but of technology whose development was funded by the American taxpayer, so be it.

This certainly works in the short run – at least from the standpoint of shareholders and management. But what of the long run? If we outsource the jobs to another country and train their workers, and then transfer our technology and manufacturing know-how, what is to stop governments, businesses, and investors in such other country from setting up a competing business and appropriating the market for themselves?

President Clinton advocated for most favored nation status for China because he was enthralled with the possibility of opening up a market of 1.2 billion potential customers. But, putting to one side barriers to entry imposed by the host government, you can only sell to people who can afford to buy. If the policy of the host government is to create an industrial base for export and not necessarily to raise the standard of living of its citizens, instead of opening up a huge market into which American companies can sell, we have created a massive production machine which can sell into our affluent economy.

Now, if other countries can extract concessions as the price of accessing their market, could not the United States also extract concessions as a condition of other countries accessing our market? To do so, would be to have a so-called industrial policy. But this would violate our notions of a free enterprise, capitalistic economy which, supposedly, works best for everyone.

#### 4.2. CASE STUDY – THE AIRCRAFT INDUSTRY

The aircraft industry is a good case study in this regard since the technology and manufacturing know-how were clearly paid for by the American taxpayer in connection with funding the military budget from the start of World War II until today. It also exemplifies the reality that business does not unnecessarily go to the highly efficient, low-cost manufacturer.

Other countries desire to get into the high-tech business and to short-circuit the time and expense involved in developing the technology themselves. Consequently, they use the availability of their markets to extract technology and know-how from American companies that seek to enter their markets.

In the mid-1990s, Boeing was the world's preeminent manufacturer of large-body commercial aircraft:

Boeing was already, without dispute, the best. It was the world's most efficient low-cost producer, even with the \$20-an-hour wages for machinists. Boeing products and especially its design capabilities were without peer. If the economists' logic of comparative advantage ruled the world, then Boeing could be making all of the world's jet airliners.<sup>124</sup>

Boeing's massive assembly plant in Everett, Washington, had achieved the "act of bringing everything together perfectly."<sup>125</sup>

However, Boeing had overcapacity and sought to increase its export business. To get sales, it outsourced various sections of its aircraft:

The 777s entire fuselage traveled in quarter sections from Japan, shipped by Mitsubishi from Nagoya to Puget Sound, where the pieces were barged from Tacoma to the Port of Everett, then hauled by railcars of the steep grade to the factory. Wingtip assembly came from Korea. Rudders from Australia. Dorsal fins from Brazil. Main landing gears from Canada and France. Flight computers from the United Kingdom. And so on.<sup>126</sup>

In connection with a package of \$5 billion in future sales from China, the company announced that "complete tail sections for Boeing's most popular model, the mid-range 737, usually produced at Boeing's Wichita, Kansas, plant, would soon also be fashioned in China."<sup>127</sup>

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<sup>124</sup> *Id.* at 127.

<sup>125</sup> *Id.* at 129.

<sup>126</sup> *Id.*

<sup>127</sup> *Id.* at 124.

The following chart, with respect to the Boeing 787, illustrates the scope of outsourcing engaged in by Boeing:<sup>128</sup>

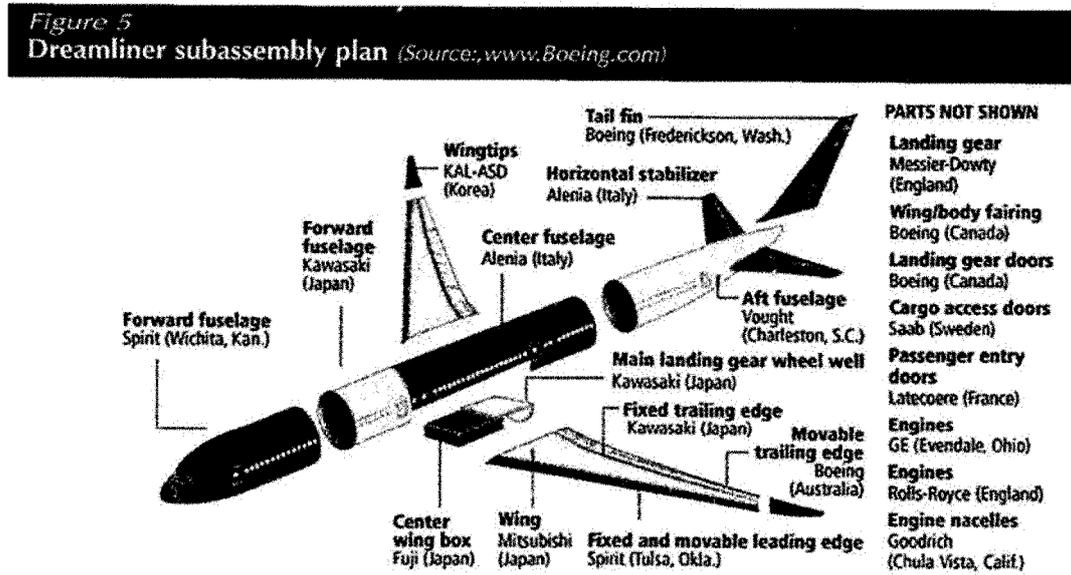


Chart 12

The reason for the foregoing outsourcing was not based on manufacturing efficiency, but rather upon a combination of labor arbitrage and the desire to increase sales. One Boeing middle manager stated: “[Y]ou’ve got to maintain the tit-for-tat if you expect to keep selling airplanes.”<sup>129</sup> According to Grieder, “[a]ssembly parts were disbursed to the foreign producers because the market demanded that, not because these things could be made better or cheaper somewhere else.”<sup>130</sup> A senior vice president of Boeing stated:

I am scratching their itch [other countries desires for outsourced work]. I have to create some jobs in those countries to get those markets. But what we’re trying to do in the net equation is to protect the jobs here. I think I can show that happened with China or with Japan. But, overall it’s a tougher problem as I look down the future. Will I have a lot of U.S. suppliers or will I have more international suppliers? I don’t know the answer, but it is clear that the U.S. suppliers don’t bring me any market.<sup>131</sup>

<sup>128</sup> *Id.*

<sup>129</sup> *Id.* at 129.

<sup>130</sup> *Id.*

<sup>131</sup> RANDY BARBER ROBERT E. SCOTT, JOBS ON THE WING: TRADING AWAY THE FUTURE OF THE U.S. AEROSPACE INDUSTRY (Economic Policy Institute 1995).

The reason for the foregoing outsourcing was not based on manufacturing efficiency or comparative advantage, but rather upon a combination of labor arbitrage and the desire to increase sales.

The problems some of which came to light in connection with the electrical problems Boeing experienced with its 787 Dreamliner<sup>132</sup>with outsourcing as a business model were raised in an internal Boeing symposium in 2001.<sup>133</sup>

## 5. THE NATIONAL SECURITY ASPECT OF CEDING

### 5.1. MANUFACTURING AND SPACE-AGE ASPECTS

Early on, after the admission of China to the World Trade Organization, concern was raised over the export of dual-use technology [technology that has both an industrial and a military use] to China. In 2002, the US-China Commission conducted a hearing on exporting dual-use technology to China. Dr. Paul Godwin, a retired professor at the National War College, testified about China's military capability and its interest in acquiring dual-use technology. According to Dr. Godwin: "[T]he major change [in China's military thinking from the 1950s until 2002 was] Beijing's recognition of the close interdependence now between civil and military technologies; further, that the design and production of advanced weaponry and supporting systems is dependent on components and processes that are essentially dual-use."<sup>134</sup>

Dr. Godwin also testified that, "what China wants to do with its defense, R and D, and production, it wants to have as close as possible an autarkic [self-sufficient] military-industrial capability."<sup>135</sup> He continued by noting "the PLA's [People's Liberation Army] recognition that the traditional three-dimensional battlefield has been transformed into a battle space where cyberspace and space join the land, sea, and air realms of military operations."<sup>136</sup>

<sup>132</sup> See Dominic Gates, *Boeing 787's Problems Blamed on Outsourcing, Lack of Oversight*, SEATTLE TIMES, Feb. 2, 2013. <https://www.seattletimes.com/business/boeing-787rsquos-problems-blamed-on-outsourcing-lack-of-oversight>.

<sup>133</sup> See L. J. Hart-Smith, *Out-Sourced Profits - The Cornerstone of Successful Subcontracting* (Boeing, Working Paper No. MDC 00K0096, 2001). [http://seattletimes.nwsourc.com/ABPub/2011/02/04/2014130646.pdf#\\_ga=2.112611264.532496093.1546385394-80545396.1546385394](http://seattletimes.nwsourc.com/ABPub/2011/02/04/2014130646.pdf#_ga=2.112611264.532496093.1546385394-80545396.1546385394).

<sup>134</sup> U.S.-CHINA COMMISSION, HEARING ON EXPORT CONTROLS IN CHINA 1079 (JAN. 17, 2002), <https://www.uscc.gov/sites/default/files/transcripts/1.17.02HT.pdf>.

<sup>135</sup> *Id.*

<sup>136</sup> *Id.*

The recent Worldwide Threat Assessment of the U. S. intelligence community reported:

Persistent trade imbalances, trade barriers, and a lack of market-friendly policies in some countries [read China] probably will continue to challenge U. S. economic security. Some countries almost certainly will continue to acquire U. S. intellectual property and proprietary information illicitly to advance their own economic and national security objectives.<sup>137</sup>

The report added that “China, for example, has acquired proprietary technology and early-stage ideas through cyber-enabled means. At the same time, some actors use largely legitimate, legal transfers and relationships to gain access to research fields, experts, and key enabling industrial processes that could, over time, erode America’s long-term competitive advantages.”<sup>138</sup> Thus, it is not just industrial espionage that poses a threat to our national security, but also transfers of technology and know-how, voluntary or involuntary, by American companies seeking to get market share.

With respect to the military threat, the Assessment further stated:

Foreign countries – particularly China and Russia – will continue to expand their space-based reconnaissance, communications, and navigation systems in terms of the numbers of satellites, the breath of their capability, and the applications for use.

Both Russia and China continue to pursue anti-satellite (ASAT) weapons as a means to reduce U. S. and allied military effectiveness. Russia and China aim to have nondestructive and destructive counter space weapons available for use during a potential future conflict.

China’s PLAs military units have begun initial operational training with counterspace capabilities that it has been developing, such as ground-launched ASAT missiles. Russia probably has a similar class of systems in development. Both countries are also advancing directed-energy weapons technologies for the purpose of fielding ASAT weapons that could blind or damage sensitive space-based optical sensors, such as those used for remote sensing or missile defense.<sup>139</sup>

As can be seen from the above, as a result of the capital and know-how that American businesses have provided to China, and China’s industrial espionage, China, as predicted

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<sup>137</sup> Statement for the Record, Worldwide Threat Assessment Of the U. S. Intelligence Community, February 13, 2018, at 12, available at <https://www.dni.gov/files/documents/Newsroom/Testimonies/2018-ATA—Unclassified-SSCI.pdf>.

<sup>138</sup> *Id.* at 12-13.

<sup>139</sup> *Id.* at 13.

by Dr. Godwin, in addition to developing its conventional weapons and military capability, has also developed space-age military alternatives:

China is pursuing a range of advanced weapons with disruptive military potential. Six types that China's leaders have prioritized are maneuverable reentry vehicles, hypersonic weapons, directed energy weapons, electromagnetic railguns, counterspace weapons, and unmanned and artificial intelligence-equipped weapons.<sup>140</sup>

While the United States appears to have an edge at present in the development of these weapons, "the United States cannot assume it will have an enduring advantage in developing next frontier military technology."<sup>141</sup> According to experts in this area, "a breakthrough that outpaces current predictions could magnify the military challenge and "change [U.S.] strategic calculations in the Asia Pacific and beyond."<sup>142</sup>

China has long anticipated the possibility of a military conflict with United States over Taiwan.<sup>143</sup> As the U. S.-China Commission stated in 2017, "China tightened its effective control over the South China Sea by continuing to militarize the artificial islands it occupies there and pressuring other claimants such as Vietnam and the Philippines to accept its dominance".<sup>144</sup> China has rejected the decision by the Permanent Court of Arbitration in the Hague in favor of the Philippines and the "free seas" tradition. The president of Taiwan has recently warned that the military threat

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<sup>140</sup> See, e.g., U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, 115TH CONG., REPORT TO CONGRESS 553 (2017) (a comparison between U.S. activities and those of China is set forth at 574-576 of the report. A maneuverable reentry vehicle is a ballistic missile reentry vehicle that is capable of maneuvering after reentering Earth's atmosphere; a hypersonic weapon is one that can exceed five times the speed of sound (3836 mph); directed energy weapons are those that use focused energy to destroy a target; electromagnetic railguns use electromagnetic force rather than an explosive propellant; counterspace weapons include striking a satellite directly, using lasers or microwave devices to degrade a satellite, using electromagnetic attacks to jam radio communications, or using cyber-attacks upon the transmitted data or the systems that use this data; and unmanned and artificial intelligence-equipped weapons are those in which a computer system performs the tasks normally requiring human intelligence, such as choosing between different courses of action and self-correction. *Id.* at 557-571).

<sup>141</sup> *Id.* at 582-583.

<sup>142</sup> *Id.* at 582.

<sup>143</sup> See generally *Godwin Testimony*, supra note 134, at 1079 (in discussing the motivation for China's acquisition of advanced technology, Dr. Godwin stated that China's advanced technology acquisitions are motivated by its "need to prepare for a potential military conflict with the United States over Taiwan. And finally, it is also likely that Beijing's long-term defense industrial objectives include preparing for an extended military confrontation with United States in the West Pacific").

<sup>144</sup> U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, 2017 REPORT TO CONGRESS 154 (2017). See also Andrew Browne, *China Throws out South China Sea Rulebook*, Wall St. J. Dec. 20, 2016. <https://www.wsj.com/articles/china-throws-out-south-china-sea-rule-book-1482226667>.

posed by China is growing daily and constitutes a danger to the rest of the world, particularly the Southeast Asian nations.<sup>145</sup>

The foregoing focus is upon high-tech activities. But there is a national security threat in the low-tech arena as well.

## 5.2. RAW MATERIAL ASPECTS

China's Belt and Road Initiative (BRI), publicly released in 2013 and formerly named "One Belt, One Road", on the surface would seem to be a force for good. The Initiative aims to expand economic and commercial ties to China by financing, constructing, and developing transportation infrastructure, natural gas pipelines, hydropower projects, technology and industrial parks throughout the Indo-Pacific, Africa, the Middle East, Europe, and the Americas. China views BRI as a way to enhance its trade connectivity, reduce surplus domestic industrial capacity, develop poorer interior provinces, promote energy security, and internationalize Chinese industrial and financial standards.<sup>146</sup>

But there is a darker side to this picture as well. There is some perception that the Belt and Road Initiative is a form of colonialism, whereby China will exploit Africa for its own benefit.<sup>147</sup> By providing development, such as in energy or infrastructure, financed by loans, ownership of such developments will pass to China if the African countries, overextended with debt, cannot service the loans.

The country of Sri Lanka can serve as an example. China provided the loans and a Chinese company, China Harbor Engineering Company, a state-owned enterprise, did the construction. Unfortunately, the project was not an economic success and Sri Lanka defaulted. Eventually, under pressure from the Chinese government, Sri Lanka handed over the port and 15,000 acres of land to China for ninety-nine years.<sup>148</sup> China now has a major port on the Indian Ocean and, if history repeats itself, the same will hold true in

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<sup>145</sup> See, e.g., Matt Rivers, Stephen Jiang and Ben Wescott, *Taiwan President Tsai Ing-wen Issues a Warning to the World*, CNN (Feb. 20, 2019), <https://www.cnn.com/2019/02/19/asia/tsai-ing-wen-china-us-interview-intl/index.html>.

<sup>146</sup> See, e.g., U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, 115th Cong., REPORT TO CONGRESS 261 (2018).

<sup>147</sup> But see, Panos Mourdoukoutas, *What is China Doing in Africa?*, FORBES (Aug. 4, 2018), <https://www.forbes.com/sites/panosmourdoukoutas/2018/08/04/china-is-treating-africa-the-same-way-european-colonists-did/#1041c83e298b>. See also Luke Daniel, *Debt Colonialism: Is China Trying to Buy Africa's Resources?*, THE S. AFR. (Sept. 3, 2018), <https://www.thesouthafrican.com/debt-colonialism-china-africa-resources/>.

<sup>148</sup> See Maria Abi-Habib, *How China Got Sri Lanka to Cough Up a Port*, N.Y. TIMES (June 25, 2018), <https://www.nytimes.com/2018/06/25/world/asia/china-sri-lanka-port.html>.

Tanzania where China is funding another port development.<sup>149</sup> This could give China a second major report on the Indian Ocean.

But, arguably, the bigger concern from the Belt and Road Initiative is not what China gains but what the United States loses. A less publicized activity of China in Africa is its attempt to lock up the supply of critical minerals, such as cobalt and the rare earth metals. In 2010, in a study commissioned by the Peterson Institute of International Economics, a pro-trade group, concluded that China's attempt to "lock-up" minerals in Africa was not anti-competitive, except that "Chinese attempts to exercise control over "rare earth elements" mining may constitute a significant exception."<sup>150</sup> The report stated:

The U. S. was self-sufficient in rare earth production until the mid-1980s, now more than 90% is imported from China.... Rare earth minerals are crucial for a growing array of civilian and military products. Historically the rare earth mining industry has been characterized by excess capacity, and oversupply. In August 2009 China's Ministry of Industry and Information Technology issued a draft policy to set an annual export quota of 35,000 tons, a potential ban on exports of at least five types of rare earth elements, and a series of steps to control mining and improve environmental practices. These actions may be directed at securing control over international markets; at the same time, they are being deployed as a tool to compel more foreign investment and more value-added ...in industries in inland China.<sup>151</sup>

U.S. Geological Survey data also confirms that, for the past decade, China has accounted for more than 90% of global production of rare earths and that China's restrictions on the supply of rare earth metals, beginning in 2010, has spurred efforts to explore for these metals outside of China.<sup>152</sup> While China dominates production, the same is not true of deposits and, outside North America and Australia, "southern and eastern Africa offer the greatest potential for rare earth production."<sup>153</sup> Based on China's pattern of seeking to

<sup>149</sup> See Nick Van Mead, *China in Africa: Win-Win Development, Or a New Colonialism?*, THE GUARDIAN (July 31, 2018), <https://www.theguardian.com/cities/2018/jul/31/china-in-africa-win-win-development-or-a-new-colonialism>. See also Ibrahim Anoba, *China Is Taking Over Zambia's National Assets but the Nightmare Is Just Starting for Africa*, AFR. LIBERTY (Sept. 10, 2018), <https://www.africanliberty.org/2018/09/10/china-is-taking-over-zambia-national-assets-but-the-nightmare-is-just-starting-for-africa/>.

<sup>150</sup> Theodora Moran, *Is China Trying To "Lock up" Natural Resources around the World?*, Center for Econ. Policy Research (Feb. 27, 2010), <https://voxeu.org/article/china-trying-lock-world-s-natural-resources>.

<sup>151</sup> *Id.*

<sup>152</sup> BRADLEY S. VAN GOSEN, PHILIP L. VERPLANCK, ROBERT R. SEAL II, KEITH R. LONG & JOSEPH GAMBONI, *Rare Earth Elements*, in CRITICAL MINERAL RESOURCES OF THE UNITED STATES — ECONOMIC AND ENVIRONMENTAL GEOLOGY AND PROSPECTS FOR FUTURE SUPPLY, at O1 (Klaus J. Schulz et al. eds., 2017).

<sup>153</sup> Ian Coles, *Africa Holds Promise of Rare Earth Riches*, FIN. TIMES (Mar. 6, 2017), <https://www.ft.com/content/88abbe52-0261-11e7-aa5b-6bb07f5c8e12>.

lock up African mineral deposits, discussed below, it is likely that China will seek to do the same with respect to rare earth elements.

Closer to home, Molycorp's Mountain Pass Mine, the only rare earth producer in North America, was shut down in 2016 and filed for bankruptcy. In 2010, Molycorp went public at \$14 per share and reached a high of almost \$80 per share in 2011. However, when rare earth prices became depressed, arguably as a result of Chinese dumping of rare earths, the stock crashed and bankruptcy ensued. In 2017, it was sold to a American consortium with a Chinese minority partner for \$20.5 million, \$500,000 over a bid made by an American, Australian and Swiss consortium.<sup>154</sup>

A CEO of an advanced-materials manufacturer has met with President Trump's staff to persuade him that the U.S. should nationalize the country's only rare earth mine because of its military implications.<sup>155</sup>

The dependency of the U.S. on other countries for rare earths is illustrated below.

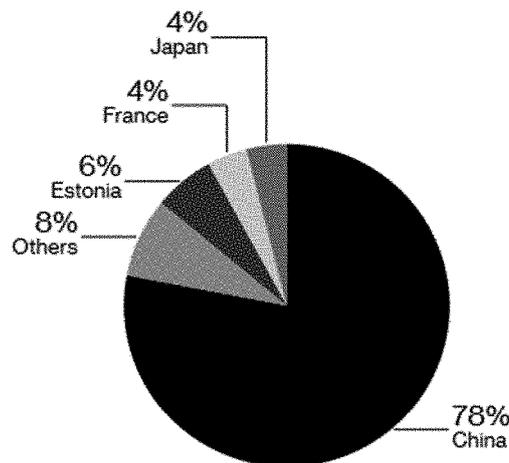


Chart 13: (Source: see footnote 155)

Availability of rare-earth minerals is critical for the development of electric cars, manned and unmanned aircraft, batteries that power guided missiles, and lightweight materials used to make jet engines and rocket noses. "Without a domestic supply, the

<sup>154</sup> See Andrew Topf, *Mountain Pass Sells for \$20.5 Million*, MINING.COM (June 16, 2017), <http://www.mining.com/mountain-pass-sells-20-5-million/>. See also *In the Matter of MP Mine Operations LLC; Order Approving Direct Transfer of Control of Licenses*, 82 FR 58455 (Issued Nov. 27, 2017), <https://www.federalregister.gov/documents/2017/12/12/2017-26748/in-the-matter-of-mp-mine-operations-llc-order-approving-direct-transfers-of-control-of-licenses>.

<sup>155</sup> See Sally Bakewell & Steven Church, *This CEO Wants Trump to Nationalize the Only Rare-Earth Mine in America*, BLOOMBERG NEWS (Jul. 18, 2017), <https://www.bloomberg.com/news/articles/2017-07-18/trump-urged-by-ceo-to-nationalize-the-only-u-s-rare-earths-mine>

Americans must rely on Chinese sources of rare earths to build ‘made in America’ military and space equipment.”<sup>156</sup> It makes little sense to rely upon a military competitor for access to materials essential for national security.

Rare earths are not the only strategic metal. Lithium, copper, chromium, cobalt, manganese, and platinum are also essential for industrial and military purposes. For example, manganese, aside from iron ore, is the most essential mineral in the production of steel. But most of our electrolytic manganese comes from China. This is clearly a supply chain vulnerability. But while the United States has not been aggressive in locking up sources of these metals, relying rather on market forces, China has been very aggressive in locking up needed resources.

China is the world’s largest producer of minerals, but its “burn rate” has caused concern to Chinese authorities. Consequently China has adopted a so-called “Two Resources, Two Markets” policy to encourage SOEs and private enterprises to actively pursue mining deals throughout the world.<sup>157</sup> The “Two Resources, Two Markets” policy was adopted in 2006 and in the subsequent decade the number of mining/mineral processing assets in Africa in which China has an interest has increased from “a handful in 2006 to more than one hundred and twenty in 2015.” The interests range from direct investment and ownership to production lockups.<sup>158</sup>

American companies have been somewhat reluctant to invest heavily in Africa because of the corruption and unrest in that part of the world. On the other hand, China has no scruples in dealing with dictatorships or corruption. Thus, its heavy investment in African mining interests.<sup>159</sup>

Consequently, we need an industrial policy that will assure a supply of essential materials necessary to feed our industrial and national defense systems.

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<sup>156</sup> Rick Mills, *How China Is Locking up Critical Resources In the U.S.'s Own Backyard*, MINING.COM (Feb. 20, 2019), <http://www.mining.com/web/china-locking-critical-resources-uss-backyard/>.

<sup>157</sup> See *Insights into China's Recent Investments in Mineral Resources Globally*, SAI INDUSTRIAL (2016), <https://www.saiindustrial.com/insights-into-chinas-recent-investments-in-mineral-resources-globally/>.

<sup>158</sup> See Vladimir Basov, *The Chinese Scramble to Mine Africa*, MINING.COM (Dec. 15, 2015), <http://www.mining.com/feature-chinas-scramble-for-africa/>.

<sup>159</sup> *Id.* (South Africa produces 52% of the world’s chromium, is the world’s leader in manganese, and controls about 95% of the platinum group metals reserves. The Democratic Republic of the Congo produces 50% of global cobalt Zimbabwe is the fifth largest producer of lithium and in the top five for platinum group materials. Rwanda is a leader in the production of tantalum).

## 6. THE UNITED STATES MUST DEVELOP ITS OWN INDUSTRIAL POLICY BECAUSE A "FREE MARKET" APPROACH RESULTING IN A LOSS OF MANUFACTURED JOBS HAS EVISCERATED THE MIDDLE CLASS

### 6.1. WHAT IS AN INDUSTRIAL POLICY?

At one time, Republicans were the party of Wall Street and Democrats were the party of labor.<sup>160</sup> But that changed along the way.<sup>161</sup> In the 2016 election, a Democrat, Hillary Clinton, was seen as having close ties with Wall Street, whereas Donald Trump, a Republican, was seen as the advocate for working people.

However, Republicans have traditionally been seen as opposed to an "industrial policy": "Republicans oppose any policies that are seen as interventionist, and that give the federal government control of industry. They feel that these policies allow the government to pick the winners and losers of the marketplace, rather than letting economics and business practices speak for themselves."<sup>162</sup>

One of the reasons that Wall Street has been favored over manufacturing is that, on the one hand, the simplicity of the notion of supply and demand and that markets are the best determinants of policy is a superficially easy concept to accept,<sup>163</sup> and, on the other hand, Wall Street has been able to attract the STEM<sup>164</sup> oriented graduates with higher compensation than academia and manufacturing can offer.

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<sup>160</sup> Contrast the policy of presidents Hoover and Roosevelt. See DORIS KEARNS GOODWIN, LEADERSHIP: IN TURBULENT TIMES 273-74, 294-96, 302-04 (2018).

<sup>161</sup> See THOMAS FRANK, WHAT'S THE MATTER WITH KANSAS?: HOW CONSERVATIVES WON THE HEART OF AMERICA (Picador 2007) (2004).

<sup>162</sup> *Republican Views on the Economy*, REPUBLICANVIEWS.ORG (May 24, 2014), <https://www.republicanviews.org/republican-views-on-the-economy/>. See also David Coates, *Taking Republicans to Task: (5) An Industrial Policy*, DAVID COATES BLOG (Apr. 24, 2012), <https://www.davidcoates.net/2012/04/24/taking-the-republicans-to-task-5-on-industrial-policy/>. ("Democrats over-tax, over-spend and over-regulate. Republicans, by contrast, do none of those things. They get government out of the economy. They set the private sector free. They reward rather than penalize initiative, innovation and success. They do not pick winners and losers. And let market forces do that. They do not put their trust in bureaucrats. They put their trust instead in the ingenuity and genius of the American people.").

<sup>163</sup> See Jeff Faux, *Industrial Policy: The Road Not Taken*, THE AMERICAN PROSPECT (Dec. 20, 2009), <https://prospect.org/article/industrial-policy-road-not-taken> (the industrial-policy debate consummated the marriage of Wall Street in the mainstream economics profession that continues today. For believers in the neoclassical synthesis, financial markets are easy to romanticize; buyers and sellers reacting almost instantaneously to mildew price changes that are supposed to reflect all of the available information on businesses, about which neither buyer nor seller has to know anything at all. This simulated perfect market let itself to the mathematical models needed to gain tenure and when Nobel Prizes in economics. And global investors, like neoclassical economists, are free-traders, indifferent to where exactly investment goals, so long as it maximizes what economists call the efficiency - and financiers call profit).

<sup>164</sup> STEM is the acronym for science, technology, engineering and mathematics.

What Republicans fail to realize is that how government taxes and how government spends is itself an indirect form of an industrial policy. When hedge fund managers compensation is taxed at capital gains rates, rather than ordinary income tax rates under the carried interest theory, this is a form of industrial policy. And when the federal government's budget is dominated by military expenditures, this is a form of industrial policy. Defense expenditures have subsidized the aircraft and technology area. While this is essential for national defense, it is also an industrial policy. And when President Kennedy decided to send a man to the moon, these expenditures were a form of industrial policy and in fact spawned many industries.<sup>165</sup>

At the other end of the spectrum, consider how a command-and-control economy, such as that of China, creates an industrial policy. The chart below illustrates the process by which the Chinese government establishes its industrial policy:<sup>166</sup>



Source: Compiled by Commission staff.

Chart 14

<sup>165</sup> See *NASA Technologies Benefit Our Lives*, NASA, [https://spinoff.nasa.gov/Spinoff2008/tech\\_benefits.html](https://spinoff.nasa.gov/Spinoff2008/tech_benefits.html).

<sup>166</sup> U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, 115TH CONG., REPORT TO CONGRESS 510 (2017).

Robert D. Atkinson, the president of the Information Technology and Innovation Foundation has warned that Chinese policymakers use industrial policies “to autarkically [autarkically is an economic system and an ideology based on implementing policies in a manner that supports national economic self-sufficiency and independence] supply Chinese markets for advanced technology products with their own production while still benefiting from unfettered access to global markets for their technology exports and foreign direct investment.”<sup>167</sup> In other words, China has an industrial policy.

In 2017, The United States-China Commission set forth a two-page table illustrating the scope of China’s industrial policy and setting forth nine items in China’s “Industrial Policy Toolbox.”<sup>168</sup>

1. Localization targets, i.e., setting targets for domestic and international market share that should be held by local technology and production;
2. State funding for industry development – subsidies, tax breaks and other forms of financial support for national champions;
3. R & D funding for strategic sectors;
4. Government procurement favoring domestic suppliers;
5. Technology standards that favor domestic companies;
6. Governmental regulations that create high thresholds for market entry and that are often vague so as to permit discretionary interpretation and enforcement;
7. Governmental direction of foreign investment and technological imports to fund or discourage certain industries;
8. Recruitment of foreign talent, including both Chinese and foreign individuals with desired expertise;
9. Industrial espionage to gain access to cutting-edge technologies, intellectual property and strategic sectors.

Recognition of the foregoing is not to suggest that the United States follow a similar track. However, the United States does need an industrial policy, not only to ensure the health of U.S. manufacturing to create both direct jobs and spinoff employment, but also to ensure, from a national security perspective, that we are not dependent upon other nations in having access to materials and production for national defense.

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<sup>167</sup> *Id.* at 511, n. 12.

<sup>168</sup> *Id.* at 511-513.

## 6.2. WHY WE NEED AN INDUSTRIAL POLICY

To suggest that United States manufacturers and labor can compete with subsidized Chinese manufacturing and harsh labor policies or that the United States economy can maintain a decent standard of living for American workers without a manufacturing base is not just foolish but irrational. It is all the more foolish and irrational to jeopardize national security by undercutting our industrial base through outsourcing manufacturing to China. One of the reasons that the entry of the United States into World War II was decisive was not just the skill and bravery of American fighting men and women, but also the might of the U.S. industrial base which quickly moved from a domestic focus to the production of military needs.

Solyndra is often used as an example of why an industrial policy is a failed enterprise. A Department of Energy loan guarantee provided critical funding for Solyndra's manufacturing growth which, unfortunately, ended in bankruptcy. But the situation is more complex than is often recounted. The price of silicon in the 2000s had risen dramatically from \$30 a kilogram in 2001 to \$450 a kilogram in early 2008.<sup>169</sup> Solyndra's innovative plan was to produce a solar panel that did not need expensive silicon.<sup>170</sup> At the time, it seemed like a good idea.

The rise in the price of silicon was sparked both by higher demand and a production base they could not keep up. However, in late 2008, the price of silicon started falling rapidly, "owing partly to better manufacturing technology, economy of scale and the entry of fully integrated Chinese manufacturers."<sup>171</sup> With the fall in the price of silicon, the business plan of Solyndra was undercut.

This does not mean that the development of a solar panel that did not need silicon was not a prudent concept. However, it was a concept that was destined to fail in a market-oriented economy. Contrariwise, in a command-and-control economy like China, a company like Solyndra might be kept alive as a precautionary matter until such time as its product becomes economically feasible.

The staying power provided by China's subsidization of the solar panel industry illustrates both the good and bad effects of governmental intervention. As a result of China's decision to dominate the solar panel industry, prices dropped 80% from 2008 until 2013. Making solar panels is difficult. To make them efficiently, the business

<sup>169</sup> See Jonas Hamberg, *Falling Silicone Prices Shakes Up Solar Manufacturing Industry*, DOWN TO EARTH (July 4, 2015), <https://www.downtoearth.org.in/news/falling-silicon-prices-shakes-up-solar-manufacturing-industry-34045>.

<sup>170</sup> See, e.g., *What Went Wrong at Solyndra*, FORTUNE (Sept. 1, 2011), <http://fortune.com/2011/08/31/what-went-wrong-at-solyndra/>.

<sup>171</sup> Hamberg, *supra* note 169.

requires large, semiautomated factories. Donald Chung, of the Department of Energy, stated: "It is not easy to add small bits of capacity to meet growing demands; you have to add it in big chunks. [This creates] a "yo-yo effect" that tends to create more and more capacity. That made solar still more attractive to China."<sup>172</sup>

But this also created a worldwide glut with the resultant drop in prices. While the shareholders of Chinese companies may have wanted profits, the Chinese government wanted jobs and wanted them long-term. Thus, from the Chinese perspective, the drop in price from dumping excess capacity on the market "[led] to eighty-six bankruptcies and closures (largely at U.S. and EU competitors) from 2009 to 2015".<sup>173</sup> This ensured long-term Chinese dominance of industry in which the United States invented the technology and still holds many of the patents. As another energy expert stated: "If there was ever a situation where the Chinese have put their whole governmental system behind manufacturing, it's got to be solar modules. I think they think they can wipe out all the competition in the world. It makes all kinds of sense if you have the staying power."<sup>174</sup>

A recent Department of Energy study concluded that, if the United States innovates, cuts costs and nurtures newer technologies, it could emerge as the world's second largest solar panel manufacturer by 2020.<sup>175</sup> But that will require innovation and nurturing of new technologies – in other words an industrial policy. It also requires an awareness that not all new technologies play out, and that the failure of one should not be used as a political tool to thwart continued investment in new technology and support for critical industries.

### 6.3. FINALLY, MARCO RUBIO AND AN AMERICAN RESPONSE TO MADE IN CHINA 2025

In a surprising twist, Marco Rubio, as chairman of the Senate Small Business and Entrepreneurship Committee, published a recent report that "turn[ed] heads in the conservative policy world" because, although it did not use the phrase industrial policy,

<sup>172</sup> John Fialka, *Why China Is Dominating the Solar Industry*, SCI. AM. (Dec. 19, 2016), <https://www.scientificamerican.com/article/why-china-is-dominating-the-solar-industry/>.

<sup>173</sup> See, e.g., U.S.-CHINA ECON. AND SEC. REVIEW COMM'N, *supra* note 167. U.S.-China Economic and Security Review Commission, 115TH CONG., REPORT TO CONGRESS 511 (2017).

<sup>174</sup> Fialka, *supra* note 172.

<sup>175</sup> See Donald Chung Kelsey Horowitz & Parthiv Kurup, *On the Path to SunShot: Emerging Opportunities and Challenges in U.S. Solar Manufacturing*, Department Of Energy, (May 2016) available at Department of Energy, opportunities and challenges in solar energy.

it asserted the need for a national innovation strategy.<sup>176</sup> The Made in China Report recognized that markets cannot function without rules and that, therefore, the government should ensure that the rules that are in place provide for “strong families and decent wages for average people.”<sup>177</sup>

The Report asserted that the logic of the market and the drive to maximize shareholder value (at least in the short run) can lead to results that are inconsistent with a policy to provide for “strong families and decent wages for average people”:

For example, increasing profit margins by developing new products to outcompete others takes risk, but saving on labor costs by off-shoring employment is more often safe. Highly-leveraged investments in technological discovery offer unknown outcomes, but distributions to shareholders are quantifiable. The existence of non-productive alternatives to capital investment, as a result, makes the product of the firm’s American workers less valuable while at the same time increasing profits, making possible a world of higher asset prices, lower investment in the economy, and lower worker pay.<sup>178</sup>

The decision at the turn-of-the-century to expand trade with China was predicated upon the expectation that this would open up additional markets in China for American companies. The Made in China 2025 Report recognized that this has not happened. Instead, the advanced manufacturing products where America supposedly had not just a comparative advantage but a competitive advantage are increasingly being captured by Chinese enterprises.<sup>179</sup> Our focus has been oriented in the wrong direction:

In a globalized economy, high wages for American workers are not the natural outcome of expanding trade, especially when some trading partners do not abide by the rules that they’ve agreed to. Free markets can be an unparalleled force for the creation of prosperity and wealth, but they produce in response to the terms they’ve been given. Lately, success by these terms has been defined by the growth of financial services instead of applied research or advanced manufacturing. The conclusion we should

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<sup>176</sup> See Samuel Hammond, *Marco Rubio Wants a National Innovation Strategy*, NAT’L REV. (Feb. 15, 2019), <https://www.nationalreview.com/2019/02/marco-rubio-industrial-policy-report-counter-china-innovation-strategy/>.

<sup>177</sup> *Id.*

<sup>178</sup> See U.S. SENATE COMMITTEE ON SMALL BUSINESS AND ENTREPRENEURSHIP, *MADE IN CHINA 2025 AND THE FUTURE OF AMERICAN INDUSTRY 72* (Comm. Print. Feb. 12, 2009) (hereinafter “Made in China 2025 Report”), [https://www.rubio.senate.gov/public/\\_cache/files/d1c6db46-1a68-481a-b96e-356c8100f1b7/3EDECA923DB439A8E884C6229A4C6003.02.12.19-final-sbc-project-mic2025-report.pdf](https://www.rubio.senate.gov/public/_cache/files/d1c6db46-1a68-481a-b96e-356c8100f1b7/3EDECA923DB439A8E884C6229A4C6003.02.12.19-final-sbc-project-mic2025-report.pdf).

<sup>179</sup> *Id.* at 4.

draw from this evidence is that we have too often failed to make the well-being of working Americans the terms for market success.

In arguing in favor of a focus upon manufacturing, as opposed to financial services, the Report stated:

To that end, recent history delivers a few general lessons to help provide these implications. Manufacturing provides better and more stable employment for American workers than financial services. Physical capital development makes for more prosperous towns and communities than does digital capital. Knowing how to make a specialized product is a less replicable skill than marketing the product for sale. Research and development expenditures deliver greater benefits to the public than private cost alone justifies. Offshoring jobs to save on labor costs doesn't often create equivalent jobs for the workers displaced by it. Worker skills are not easily transferable across industries. Geographic proximity to productive assets like factories increases the prosperity of supplying and [sic] local small businesses. In sum, production matters.<sup>180</sup>

The "industrial policy" suggested by the report was summarized as follows:

U.S. policy should respond to the practical and political economy challenges of the "Made in China 2025" plan. This includes enacting strategic U.S.-China capital flow restrictions and corresponding defensive measures for domestic industries targeted by the plan. It also means prioritizing new economic development, including encouraging physical investment and discouraging un-productive arbitrage through the tax code, and utilizing development assistance like the Small Business Investment Company and Small Business Investment Research programs. Finally, it means considering labor market stabilization policies to support Americans' attachment to the labor force and accumulation of valuable skills.<sup>181</sup>

This is a basis upon which to begin a discussion as to what a meaningful industrial policy for the United States would look like when it is focused upon benefiting the ordinary worker rather than the one percenters.

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<sup>180</sup> *Id.* at 13.

<sup>181</sup> *Id.* at 6.

## CONCLUSION

When Paul Samuelson argued that the principle of comparative advantage was the most beautiful idea in economics, he was dealing with the 20th century situation in which the trade between developed and undeveloped nations was often that in which the underdeveloped nations provided natural resources and the developed nations provided finished products. The trade between developed countries was essentially between countries with similar standards of living. It was also a time when the United States was dominant in trade. When a principle is working for you, there is less incentive to examine its underlying basis. That may account for why the notion of comparative advantage has been accepted without critical examination.

But once Ricardo's theorem is examined in its entirety, two under-identified factors stand out: that Ricardo assumed that capital would be loyal to the country of origin and that adjustments in the value of currencies would eventually even out imbalances in trade. Even here, he recognized that, when one country consistently runs a trade deficit, there is a transfer of wealth from that country. Ricardo's example of cloth and wine also did not involve dual-use technologies that have not just industrial uses but military uses as well.

Once capital is free to move around the world in search of higher returns, and where the conventional wisdom is that the purpose of a corporation is to maximize shareholder value, not worker well-being, international trade turns into labor arbitrage and jobs are shipped from the importing nation to the exporting nation. As a consequence, United States has lost much of its manufacturing base. From 2000 to 2009, the United States lost over 5 million manufacturing jobs, almost one-third of the total.

Supposedly this job loss occurred as a result of automation. But we suffered these job losses at a time of increasing gross national product. If manufacturing had grown along with gross national product, then the effect of automation might well have been merely to level the manufacturing job base rather than reduce it. When entire industries, such as the wood furniture industry examined in this article, move offshore to a nation with low labor standards, it is labor arbitrage and not automation that is the culprit. And when Boeing contracts out portions of its planes to countries and companies that arguably have no more technical superiority than Boeing, in order to obtain sales from such countries, this transfer of jobs is not caused by automation, but rather by the desire to enhance sales, corporate profitability, and shareholder wealth.

Neither American workers nor American businesses physically located in the United States can compete in a system in which a country, such as China, subsidizes its

industry and short-circuits the cost of technological development by coercing, directly or indirectly, the transfer of technology developed in the United States and often funded by the U.S. taxpayer. The situation is all the more egregious when a country, such as China, engages in theft of intellectual property and industrial espionage.

Unfortunately, many so-called American companies today view themselves as global enterprises, with loyalty to neither the United States nor our workforce. If the goal is to maximize shareholder value, where the product is produced is irrelevant so long as it is produced at the lowest possible cost so as to maximize profits. From the standpoint of national loyalty, it is easy to rationalize financing industrial development in other countries and transferring technology to obtain sales, on the basis that this is the nature of global trade and global enterprise.

When an American company opens a plant in China, not only do American workers lose, but the spinoffs from manufacturing, including satellite suppliers and research and development, are also lost.

China's industrial policy, discussed at length, is to be the world leader in high-tech manufacturing and to establish a military capability, including the frontiers of space, second to none. In such a situation, the United States can not blindly turn aside to the realities of the situation and rely abstractly on the notion that the market solves all problems. As Sen. Rubio recognized in his report, *Made in China 2025 and the Future of American Industry*, in order for markets to work effectively, there must be rules.

It is important that the United States economy operates upon rules that provide for the benefit of all Americans, including workers, and not just investors.

If we are to stem the outflow of jobs from the manufacturing sector and their replacement, if in fact they are replaced, by lower paying service jobs, we need an industrial policy that values manufacturing and American workers, and not just financial engineering.

Equally important, from a national security perspective, we cannot rely upon either products that originate in, or supply chains that run through, a potential adversary.

Global trade needs to work to the advantage of the United States and our workers, not to our disadvantage. Sen. Rubio has opened a discussion of the need to have some sort of industrial policy that will focus United States on the maintenance and development of critical industries and the provision of a job base that will support the middle class. Just relying upon the mantra that free trade benefits all, and supporting such mantra on the

basis that it is “proved” by Ricardo’s theory of comparative advantage, is to put our head in the sand and ignore the evidence set forth in this article.

APPENDIX – TRADE DEFICITS WITH SEVEN COUNTRIES

China			
Year	Exports	Imports	Balance
1985	3,855.70	3,861.70	-6
1990	4,806.40	15,237.40	-10,431.00
1995	11,753.7	45,543.2	-33,789.5
1996	11,992.6	51,512.8	-39,520.2
1997	12,862.2	62,557.7	-49,695.5
1998	14,241.2	71,168.6	-56,927.4
1999	13,111.1	81,788.2	-68,677.1
2000	16,185.2	100,018.2	-83,833.0
2001	19,182.3	102,278.4	-83,096.1
2002	22,127.7	125,192.6	-103,064.9
2003	28,367.9	152,436.1	-124,068.2
2004	34,427.8	196,682.0	-162,254.3
2005	41,192.0	243,470.1	-202,278.1
2006	53,673.0	287,774.4	-234,101.3
2007	62,936.9	321,442.9	-258,506.0
2008	69,732.8	337,772.6	-268,039.8
2009	69,496.7	296,373.9	-226,877.2
2010	91,911.1	364,952.6	-273,041.6
2011	104,121.5	399,371.2	-295,249.7
2012	110,516.6	425,619.1	-315,102.5
2013	121,746.2	440,430.0	-318,683.8
2014	123,657.2	468,474.9	-344,817.7
2015	115,873.4	483,201.7	-367,328.3
2016	115,545.5	462,542.0	-346,996.5
2017	129,893.6	505,470.0	-375,576.4

Table 1: US Census Bureau (<https://www.census.gov/foreign-trade/balance/c5700.html>)

Japan			
Year	Exports	Imports	Balance
1985	22,630.90	68,782.90	-46,152.00
1990	48,579.50	89,684.00	-41,104.50
1995	64,342.7	123,479.3	-59,136.6
1996	67,606.6	115,187.1	-47,580.5
1997	65,548.6	121,663.3	-56,114.7
1998	57,831.0	121,845.1	-64,014.1
1999	57,466.0	130,863.8	-73,397.8
2000	64,924.4	146,479.4	-81,555.0
2001	57,451.5	126,473.1	-69,021.6
2002	51,449.2	51,449.2	-69,979.4
2003	52,004.3	118,036.6	-66,032.4
2004	53,568.7	129,805.2	-76,236.5
2005	54,680.6	138,003.7	-83,323.1
2006	58,459.0	148,180.8	-89,721.8
2007	61,159.6	145,463.3	-84,303.8
2008	65,141.8	139,262.2	-74,120.4
2009	51,134.2	95,803.7	-44,669.5
2010	60,471.9	120,552.1	-60,080.3
2011	65,799.7	128,927.9	-63,128.2
2012	69,975.8	146,431.7	-76,455.9
2013	65,237.4	138,575.3	-73,337.9
2014	66,891.8	134,504.5	-67,612.7
2015	62,387.8	131,445.5	-69,057.7
2016	63,226.1	132,030.3	-68,804.3
2017	67,605.1	136,480.8	-68,875.7

Table 2: US Census Bureau (<https://www.census.gov/foreign-trade/balance/c5880.html>)

India			
Year	Exports	Imports	Balance
1985	1,641.90	2,294.70	-652.8
1990	2,486.20	3,196.80	-710.6
1995	3,295.80	5,726.30	-2,430.50
1996	3,328.20	6,169.50	-2,841.30
1997	3,607.50	7,322.50	-3,715.00
1998	3,564.50	8,237.20	-4,672.70
1999	3,687.80	9,070.80	-5,383.00
2000	3,667.30	10,686.60	-7,019.30
2001	3,757.00	9,737.30	-5,980.30
2002	4,101.00	11,818.40	-7,717.40
2003	4,979.70	13,055.30	-8,075.60
2004	6,109.40	15,572.00	-9,462.70
2005	7,918.60	18,804.20	-10,885.60
2006	9,673.60	21,830.80	-12,157.30
2007	14,968.80	24,073.30	-9,104.40
2008	17,682.10	25,704.40	-8,022.30
2009	16,441.40	21,166.00	-4,724.60
2010	19,248.90	29,532.90	-10,284.10
2011	21,542.20	36,154.50	-14,612.30
2012	22,105.70	40,512.60	-18,406.90
2013	21,810.40	41,810.00	-19,999.50
2014	21,499.10	45,358.00	-23,858.90
2015	21,452.90	44,782.70	-23,329.70
2016	21,635.70	46,027.80	-24,392.10
2017	25,688.90	48,602.90	-22,914.10

Table 3: US Census Bureau (<https://www.census.gov/foreign-trade/balance/c5330.html>)

Germany			
Year	Exports	Imports	Balance
1985	9,050.20	20,239.20	-11,189.00
1990	18,759.90	28,162.00	-9,402.10
1995	22,394.30	36,843.90	-14,449.60
1996	23,494.90	38,944.90	-15,450.00
1997	24,458.30	43,121.40	-18,663.10
1998	26,657.20	49,841.90	-23,184.70
1999	26,800.30	55,228.30	-28,428.00
2000	29,448.40	58,512.90	-29,064.50
2001	29,995.40	59,076.60	-29,081.20
2002	26,629.60	62,505.70	-35,876.10
2003	28,831.90	68,112.70	-39,280.80
2004	31,415.90	77,265.60	-45,849.70
2005	34,183.70	84,750.90	-50,567.20
2006	41,159.10	89,082.00	-47,922.90
2007	49,419.70	94,164.10	-44,744.40
2008	54,505.30	97,496.60	-42,991.30
2009	43,306.30	71,498.20	-28,191.90
2010	48,155.30	82,450.40	-34,295.10
2011	49,294.20	98,684.30	-49,390.10
2012	48,803.00	109,225.80	-60,422.80
2013	47,363.50	114,341.90	-66,978.40
2014	49,418.80	124,182.00	-74,763.10
2015	49,978.80	124,887.80	-74,909.00
2016	49,432.10	114,107.10	-64,675.00
2017	53,896.80	117,575.20	-63,678.50

Table 4: US Census Bureau (<https://www.census.gov/foreign-trade/balance/c4280.html>)

United Kingdom			
Year	Exports	Imports	Balance
1985	11,272.80	14,937.20	-3,664.40
1990	23,490.50	20,188.30	3,302.20
1995	28,856.50	26,929.70	1,926.80
1996	30,962.30	28,978.70	1,983.60
1997	36,425.30	32,659.20	3,766.10
1998	39,058.10	34,838.30	4,219.80
1999	38,407.20	39,237.30	-830.1
2000	41,570.60	43,345.10	-1,774.50
2001	40,714.20	41,368.70	-654.5
2002	33,204.70	40,744.90	-7,540.20
2003	33,827.90	42,795.00	-8,967.00
2004	35,901.70	46,273.80	-10,372.20
2005	38,568.10	51,032.60	-12,464.50
2006	45,410.10	53,513.00	-8,102.90
2007	49,981.50	56,857.50	-6,876.10
2008	53,599.10	58,587.40	-4,988.30
2009	45,703.60	47,479.90	-1,776.30
2010	48,410.30	49,805.40	-1,395.10
2011	56,033.10	51,262.50	4,770.60
2012	54,860.50	55,005.80	-145.3
2013	47,361.20	52,741.20	-5,380.00
2014	53,913.20	54,689.50	-776.3
2015	56,094.70	58,057.10	-1,962.40
2016	55,169.30	54,270.90	898.5
2017	56,257.90	53,060.30	3,197.60

Table 5: US Census Bureau (<http://www.census.gov/foreign-trade/balance/c4120.html>)

Canada			
Year	Exports	Imports	Balance
1985	47,251.00	69,006.40	-21,755.40
1990	83,673.80	91,380.10	-7,706.30
1995	127,226.00	144,369.90	-17,143.90
1996	134,210.20	155,892.60	-21,682.40
1997	151,766.70	167,234.10	-15,467.40
1998	156,603.50	173,256.00	-16,652.50
1999	166,600.00	198,711.10	-32,111.10
2000	178,940.90	230,838.30	-51,897.40
2001	163,424.10	216,267.90	-52,843.80
2002	160,922.70	209,087.70	-48,165.00
2003	169,923.70	221,594.70	-51,671.00
2004	189,879.90	256,359.80	-66,480.00
2005	211,898.70	290,384.30	-78,485.60
2006	230,656.00	302,437.90	-71,781.80
2007	248,888.10	317,056.80	-68,168.60
2008	261,149.80	339,491.40	-78,341.60
2009	204,658.00	226,248.40	-21,590.50
2010	249,256.50	277,636.70	-28,380.30
2011	281,291.50	315,324.80	-34,033.20
2012	292,650.50	324,263.00	-31,612.50
2013	300,754.90	332,503.60	-31,748.80
2014	312,817.00	349,286.10	-36,469.20
2015	280,855.20	296,305.10	-15,449.90
2016	266,734.50	277,782.30	-11,047.80
2017	282,265.10	299,319.40	-17,054.30

Table 6: US Census Bureau (<https://www.census.gov/foreign-trade/balance/c1220.html>)

Mexico			
Year	Exports	Imports	Balance
1985	13,634.70	19,131.70	-5,497.00
1990	28,279.00	30,156.80	-1,877.80
1995	46,292.10	62,100.40	-15,808.30
1996	56,791.60	74,297.20	-17,505.60
1997	71,388.50	85,937.60	-14,549.10
1998	78,772.60	94,629.00	-15,856.40
1999	86,908.90	109,720.50	-22,811.60
2000	111,349.00	135,926.30	-24,577.30
2001	101,296.50	131,337.90	-30,041.40
2002	97,470.10	134,616.00	-37,145.90
2003	97,411.80	138,060.00	-40,648.20
2004	110,731.30	155,901.50	-45,170.20
2005	120,247.60	170,108.60	-49,861.00
2006	133,721.70	198,253.20	-64,531.40
2007	135,918.10	210,714.00	-74,795.80
2008	151,220.10	215,941.60	-64,721.60
2009	128,892.10	176,654.40	-47,762.20
2010	163,664.60	229,985.60	-66,321.00
2011	198,288.70	262,873.60	-64,584.90
2012	215,875.10	277,593.60	-61,718.50
2013	225,954.40	280,556.00	-54,601.70
2014	241,007.20	295,730.00	-54,722.80
2015	236,460.10	296,433.30	-59,973.20
2016	230,051.20	293,923.90	-63,872.80
2017	243,314.40	314,267.30	-70,952.90

Table 7: US Census Bureau (<https://www.census.gov/foreign-trade/balance/c2010.html>)