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Global Value Chains and the Missing Exports of the United States

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Abstract

Many American multinational corporations (MNCs) have turned into factory-less. They outsource the production of their products to foreign companies and derive the largest share of their revenue from the intellectual property of core technologies and brand names. When factory-less American MNCs sell their products assembled by foreign contract manufacturers in overseas markets, they actually "export" the value added attributed to their intellectual property embedded in those physical goods. However, conventional trade statistics are compiled based on the value of goods crossing national borders, as declared to customs. The value added of the intellectual property is generally not recorded as part of US exports. We use Apple, a typical factory-less American company that employs exclusively foreign contact manufacturers to assembly its products, as a case to illustrate why and how conventional trade statistics underestimate actual US exports in the age of global value chains. According to our analysis of this case, if the value added of Apple intellectual property sold to foreign consumers was counted as part of US exports, total US exports in 2015 would increase by 3.4%, and its trade deficit would decrease by 7.0%. In terms of bilateral trade, the value added under examination here would raise the US exports to China and Japan by 16.6% and 8.6% respectively, and lower its trade deficit with the two countries by 5.2% and 7.8% accordingly.

Key words: US, Exports, Apple

JEL: F1

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1. Introduction

The US has run its largest world trade deficit ever in the last several decades. In 2015, it recorded a US$745 billion trade deficit in goods. Many economists and American policy makers have been concerned with the sustainability of the US trade deficit and its potential negative impact on the US economy (Elwell 2007). Most studies on the US trade deficit are based on gross domestic product (GDP) accounting and interpret “deficit” as an imbalance between saving and investment. Deteriorating domestic savings are widely accepted as the main reason for the US trade deficit’s continuing rise (Frankel 2009). Former Fed Chairman Bernanke (2005) argued that the persistent and massive US trade deficit is a natural consequence of a “savings glut,” i.e. excess savings accumulated by trading partners of the US. Valderrama (2007) suggested that relatively high productivity growth in the US encouraged greater flows of foreign investment into the US and thus accelerated the trade deficit growth.

This paper argues that to a certain extent trade statistics are inconsistent representations of trade dominated by global value chains (GVCs), and that they underestimate the actual value of US exports and thus overestimate its trade deficit. Conventional trade statistics are calculated based on the value of goods crossing national borders. If goods are shipped across a country’s border and declared to its customs, the shipment is recorded as an export from that country, i.e. the physical crossing of a national border is the criterion for including the value of goods in trade statistics. With the unprecedented globalization of the last several decades, GVCs have transformed how and where goods are manufactured and traded in the world market. Firms from a number of countries are involved in the manufacturing of many products traded in the global market. Each firm specializes in one or several production tasks and contributes a fraction of the whole value added to a given product. In addition, lead firms of GVCs are only in charge of pre-production tasks, such as research and development, as well as post-production activities, such as distribution and retails (Gereffi, 2016). Many American multinational corporations (MNCs), such as Apple and Nike, have developed GVCs for their products and optimally allocate tasks (ranging from product design to research and development to manufacturing and marketing) to companies in different countries. These lead firms of GVCs concentrate primarily on brand marketing, product design and technological innovation, and generally outsourcing manufacturing and assembling tasks to foreign companies.

This new international division of labor along GVCs has transformed many American MNCs into factory-less centers of product design and technology innovation. Factory-less manufacturers have no production facilities and outsource the production of their products to contract manufacturers, but retain the ownership of their products assembled or manufactured by contract manufacturers. Bayard and Byrne (2015) found that, 21 of companies listed in the Standard and Poor's 500 index, including Advanced Micro Device, Qualcomm Inc., Cisco System, Apple and Nike, were exclusively factory-less manufacturing in 2012. These factory-less MNCs no longer manufacture any physical goods, but sell consumers the value added of their intellectual property, which is embedded in products assembled or manufactured by contract manufacturers. For example, athletic footwear companies such as Nike and Reebok and fashion oriented clothing companies such as The Limited and Gap do not own any production facilities. They are "merchandisers" who design and market branded products in the global market (Gereffi 1994). Apple too has phased out all of its production facilities in the US, concentrated on product design, software development and marketing, and outsourced the production of its products to foreign contract manufacturers.

When factory-less American MNCs employ contract manufacturers located outside of the US to produce or assemble their products, such as Nike shoes, Gap clothes and iPads, and then sell those products in international markets, those "American goods" are not counted as part of "US export", because they are not exported from the US but from foreign countries, typically China, Indonesia, Viet Nam and other developing countries, where these products are manufactured and/or assembled. From the transaction, factory-less American MNCs obtain the value added attributed to their brands and technologies, which generally accounts for a very large share of the value added of the products. For instance, the gross profit margin of the iPhone exceeds 60% (Xing and Detert 2010) and that of Nike products is 46%. Foreign consumers purchasing those products pay not only for production costs but also for the value added due to the brands and technologies. In other words, factory-less American MNCs receive the payment from foreign consumers for the value added of their intellectual property. That payment is generally recorded in the current account of the US as part of income earned abroad by American companies. However, it does not show up in the statistics of US exports, despite the fact that factory-less American MNCs actually "export" that value added to foreign consumers.

In terms of income generating, the export of the value added of intellectual property has the same function as the exports of physical goods, such as grains and cars. Therefore, current trade statistics, which only measure the value of goods crossing national borders, are inconsistent with the present situation of trade dominated by GVCs. A substantial portion of US exports is not included in current trade statistics. Actual exports of American companies are underestimated, and at the same time, the US trade deficit is exaggerated. To correctly assess the export capacity of the US economy and the sustainability of US trade deficit, it is imperative to make necessary adjustments to current trade statistics.

In this paper, we use overseas sales data of Apple, the largest American consumer products company, to illustrate how and to what extent conventional trade statistics have underestimated the actual value of US exports. Our analysis shows that if the value added of Apple intellectual property sold to foreign consumers is counted as a US export, US total exports in 2015 would increase by 3.4% and its trade deficit would decrease by 7.0%. In terms of bilateral trade, counting the value added of Apple embedded in its products sold to foreign consumers could lower the US trade deficit with China by 5.2% and that with Japan by 7.8%. These possible changes are due to just one American company, namely, Apple. If the value added, earned from international markets by all of the American MNCs which are factory-less and utilize foreign contract manufacturers for production, is counted as part of US exports, the change would be too big to be ignored.

It is important to emphasize that value added as discussed in this paper differs from license fees and royalties, which are generally included in the statistics of service trade. Value added here is not the lump sum payment that a domestic company charges a foreign company for leasing its intellectual property; rather, it can only be realized after factory-less MNCs sell physical products to foreign buyers. It has been a popular research topic to identify foreign value added in gross exports and to correct the distortion of current trade statistics on bilateral trade balances. Xing and Detert (2010) pointed out that conventional trade statistics tend to exaggerate the exports of countries that import many intermediate inputs for the creation of exports and inflate significantly the bilateral trade imbalance between China and the US. They used 3G iPhone as a case and showed that, the $1.9 billion trade surplus China gained in 2009 from the iPhone trade with the US could drop to $73 million, if value added by China not gross exports were used in the calculation. They argued that, in the age of GVCs, value added, not gross value of exports, should be used in assessing bilateral trade balances. John and Noguera (2012) employed input-output table and bilateral trade data to estimate the value added content of bilateral trade. They showed that the US-China trade imbalance in 2004 would be 30-40% smaller when measured in value added. The OECD and WTO has constructed a database of trade in value added (OECD and WTO 2013) for evaluating value added in gross exports of more than 60 countries. Koopman, Wang, and Wei (2014) showed theoretically how the value added of gross exports of individual countries could be traced with input-output tables.

All those studies argue that gross exports of individual nations contain foreign value added and it is imperative to exclude foreign value added in gross exports of a country so as to properly evaluate bilateral trade balances. They attempt to decompose gross exports into domestic value added and foreign value added. Therefore, the value added as analyzed in the existing literature is part of gross exports and recorded in current trade statistics. It represents part of manufacturing costs of goods, but does not include the value added of intellectual property embedded in the products assembled by foreign contract manufacturers and owned by factory-less MNEs. For instance, current trade statistics can only capture the value of parts, components and assembly for manufacturing iPhones. The value added attributed to Apple's brand and technology can only be realized after iPhones are sold to final users. In the process of shipping the parts and components as well as assembled iPhones across national borders, the value added of Apple's intellectual property is not declared by any parties, thus not recorded by trade statistics of any countries. This paper focuses on the value added of intellectual property, which is exported by factory-less American MNCs via the sales of products, such as Apple, to foreign consumers, but not included in current trade statistics. Taking advantage of GVCs, some American MNCs have turned into factory-less. The GVCs considered in this paper is broader than the vertical specialization analyzed by Hummels, Shii and Yi (2001). It includes not only production activities, but also pre- and post-production activities, such as research and development, product distribution and retails, as defined in Gereffi (2016).

2. Apple's Overseas Sales and Trade Flows

Since Apple deleted the word "computer" from its original name, "Apple Computer," it has become the largest consumer products company in the world. In 2015, the overseas sales of Apple amounted to US$152.0 billion, equivalent to 10.1% of US exports. Since all Apple products, iPhones, iPads, iPods and iMacs, are assembled in China, Apple's overseas sales contribute nothing to US exports figures. On the contrary, trade statistics show that Apple overseas sales generate huge exports and trade surpluses for foreign countries, such as China.

Xing and Detert (2010) illustrated how the iPhone sales contribute to the trade flow of non-US countries and why the volume of US exports is enhanced very little by such sales. We use Figure 1 to show the trade flows associated with the sale of a 3G iPhone. When Apple sells a US$500 3G iPhone to a foreign consumer, first it sends the sale order to Foxconn, the exclusive assembler of iPhones in China. To assemble the iPhone, Foxconn imports US$172.46 worth of parts and components, of which US$10.75 comes from the US. When the ready-to-use iPhone leaves China, China's customs records a US$178.96 export for the country[1]. As a result, the sale of the US$500 iPhone gives rise to a total US$351.42 export, the sum of the US$172.46 in parts imported and the US$178.96 iPhone exported by China. It is important to emphasize that, of the total export, only US$10.75 in parts (about 2% of the US$500 sale value) is shipped directly from the US to China and recorded as a US export to China.

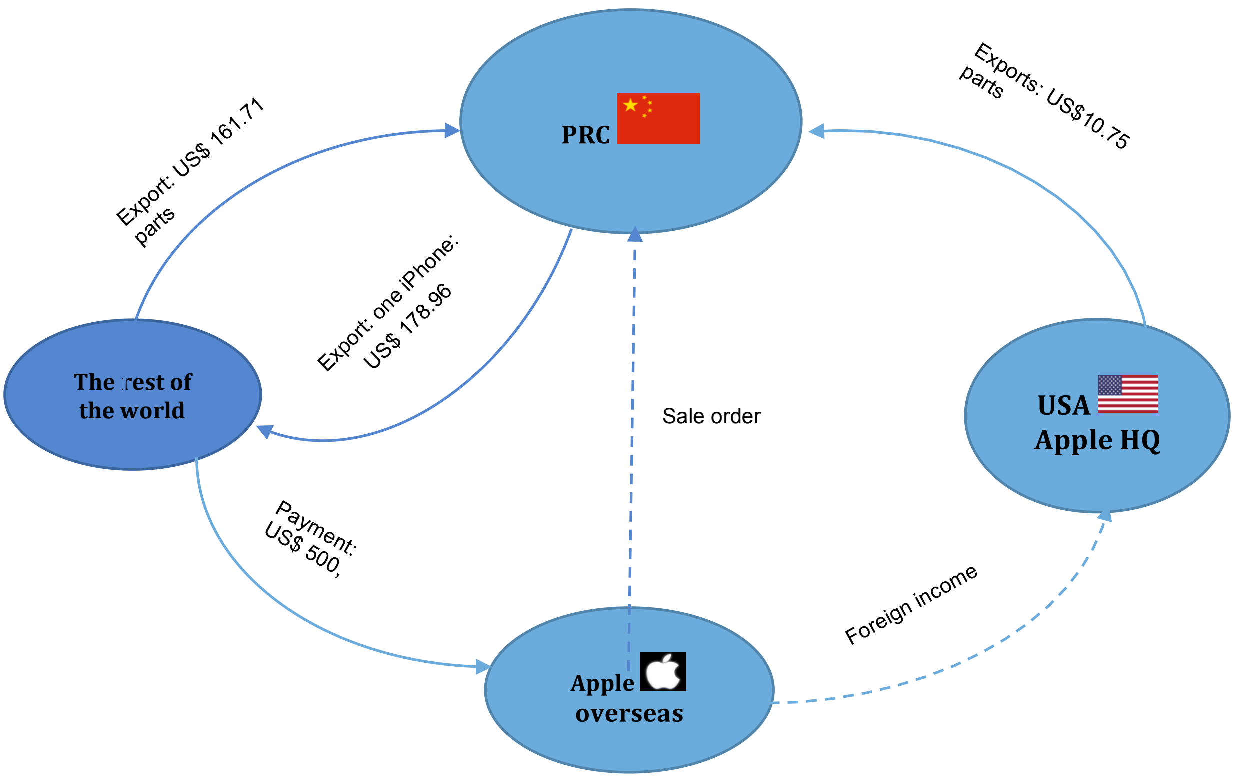
From the above transaction, Apple earns US$321.04, paid by the foreign consumer for the value added of Apple's brand and technology. However, US$321.04 is recorded neither in US export in goods nor in services. It is actually not recognized as either an export or import in trade statistics of any country. This constitutes a missing export of Apple intellectual property associated with selling one iPhone abroad! To summarize, then, the iPhone trade example yields three critical observations: first, the sale of one iPhone abroad creates significant trade flows for foreign countries; second, it increases US exports very little; and finally, the US$321.04 value added, sold by Apple to foreign consumers contributes nothing to US export figures. Figure 1 is created with the 3G iPhone (the first generation iPhone), but replications of the analysis for the most recent models of iPhones would yield identical conclusions.

The iPhone trade unambiguously demonstrates that conventional trade statistics only capture the value of physical goods crossing borders and cannot trace the export of value added associated with intellectual property. It fails to reflect the "exports" of factory-less American

[1] Foxcoon is just an assembler of iPhones. It does not own the intellectual property of iPhones. Hence, it only declares the manufacture cost of the iPhone to the customs of PRC. Otherwise, it would have the liability of paying the taxes related with the value added of the intellectual property.

MNCs' intangible intellectual property embedded in products manufactured and/or assembled in foreign countries. As more and more American MNCs turn into factory-less and derive most of their earnings from intellectual property, it is biased to use existing trade statistics to evaluate US export capacity and trade deficit. Exports are relevant and important for national economies because they generate income. In terms of income flows between countries, the value added of factory-less American MNC intellectual property sold to foreign consumers through products manufactured abroad should be considered as part of US exports, and its trade deficit should be adjusted accordingly.

Figure 1 Sale of an iPhone abroad and corresponding Trade Flow



Source: Xing and Detert (2010)

3. Apple Overseas Sales and Missing US Exports

Generally, the total value added of Apple products assembled in China can be written as

$$TV = V_1 + V_2 + V_3 + V_4 + V_5 \qquad (1)$$

where V_1 is the value added of parts manufactured in foreign countries; V_2 is the value added of parts produced in the US; V_3 is assembly cost; V_4 is the value added of sale services; and V_5 is the value added by Apple intellectual property, brand name, and technology. As illustrated above, when these parts and ready-to-use iPhones are shipped between countries, V_1, V_2 and V_3 are automatically documented as trade flows. The value added V_4 and V_5 can only be realized after Apple sells its products to foreign buyers. Conventional trade statistics, however, cannot capture that transaction. Therefore, V_5 is a missing US export.

With regard to Apple overseas sales, we can estimate V_5 with the formula below:

$$V_5 = \beta S - V_4 \qquad (2)$$

where β is the average gross margin of Apple's products and S is net overseas sales. Gross margin is a company's total sales revenue minus the costs of goods sold, divided by total sales revenue. Apple purchases V_1, V_2 and V_3 from other companies, and they are the costs of Apple products. The value of sale services V_4 is a necessary component of the total value added. Therefore, equation 2 precisely estimates the value added of Apple Intellectual property. According to Apple's Form 10-K of 2015, its average gross margin in 2015, 2014, and 2013 were 40.1%, 38.6%, and 37.6% respectively. We use the expenses of selling, general and administrative reported in the 10-K form to proxy V_4. These figures are used in the following analysis.

The popularity of Apple products has driven the impressive growth of Apple overseas sales. According to Apple's Form 10-K, its net sales in foreign markets totaled US$104.7 billion in 2013 and surged to US$152.0 billion in 2015, i.e. 45.2% growth over two years. Applying Equation (2), we found that, of 2013 foreign sales, US$33.1 billion was attributed to the value added of Apple intellectual property. In 2015, the value added of the Apple brand and technology accounted for US$51.8 billion of overseas sales, implying a 56.5% increase compared with 2013, much higher than the increase in sales. This was due to the increase in sales of iPhones, which have the highest gross margin among Apple products (Table 1). Despite the high growth of Apple overseas sales, the US export volume benefited very little, because all Apple products are assembled in China and shipped from the assembling country to destination markets. Whether Apple repatriates its overseas earning back to the US or not, that earning is a payment by foreign consumers and thus part of the leakage of those countries' expenditures. Additionally, that overseas earning supports Apple operations such as research and development in the US, and also supports Apple's stock price, so it constitutes a financial asset of Apple shareholders, most of whom are American families and pension funds. Hence, Apple's value added should be considered as an integral part of US exports.

Compared with current trade statistics, in 2015 the estimated value added by Apple brand and technology in its overseas sales was about 3.4% of US exports and 7.0% of US trade deficit. In other words, if the value added by Apple were included, US exports would rise by 3.4% and its trade deficit would fall by 7.0% (Table 1). Table 1 also lists the estimates for 2013 and 2014. It shows that the value added of Apple rose substantially from 2013 to 2015 while the reported exports of the US decreased and its trade deficit widened. Adding the value added by Apple would change all the numbers considerably. In general, trade statistics are compiled using gross values, not value added of goods. In the case of Apple, none of the foreign parts and components of its products are imported to the US, and ready-to-use products are not assembled in the US either. We should only consider the value added by Apple for adjusting the trade figures.

Table 1. US Exports and Apple Overseas Sales (Billions of US Dollars)

	2015	**2014**	**2013**
US exports	1,503.1	1,621.9	1,578.5
US trade deficit	745.1	743.5	689.5
Apple foreign sales	152.0	113.9	104.7
Apple value added	51.8	36.0	33.1
Apple value added/US exports (%)	3.4	2.2	2.1
Apple value added/US trade deficit (%)	7.0	4.9	4.8

Source: the author's calculations based on the data of the United States Census Bureau and Apple's Form 10-K.

In the same fashion, the value added of Apple can greatly modify bilateral trade imbalances between the US and its trading partners. China has the largest trade surplus with the US, accounting for almost half of US trade deficit. Following the rapid economic growth of recent decades, China has emerged as the global center for the assembly of manufacturing products, so China's exports include a large portion of foreign value added, which exaggerates its exports as well as trade surplus with the US (Johnson and Noguera, 2012). Moreover, many American products sold in China, such as Nike shoes and iPhones, are exclusively assembled by local Chinese contract manufacturers and not directly imported from the US. The factory-less American MNCs, such as Apple and Nike, selling their products manufactured by local Chinese contract manufacturers are lead firms of the GVCs and generally pocket the largest share of the whole value added of their products sold in China, because of their intellectual property ownership. A critical issue is whether the value added derived from the intellectual property of factory-less American MNEs should be considered as a US export to China.

Table 2. US Trade with and Apple Sales in China (Billions of US Dollars)

	2015	2014	2013
US exports	115.9	123.7	121.7
US trade deficit	367.3	344.8	318.7
Apple sales	56.5	30.6	25.9
Apple value added	19.2	9.8	8.3
Apple value added/US exports (%)	16.6	7.9	6.8
Apple value added/US trade deficit (%)	5.2	2.8	2.6

Source: the author's calculations based on the data of the United States Census Bureau and Apple's Form 10-K.

Chinese consumers' passion for trendy Apple products has turned China into Apple's largest foreign market. Its sales in China grew drastically and surged from US$25.9 billion in 2013 to US$56.5 billion in 2015, more than 100% growth over two years. The statement on the back of Apple products "Designed by Apple in California Assembled in China" reveals that Apple has outsourced the assembling task of its products to firms located in China. Hence, all Apple products purchased by Chinese consumers look like "made in China" products, which are shipped from the factories in China not from the US. Hence, no matter how many billion dollars of products are sold there by Apple, the US customs simply cannot add even one dollar to US exports to China. In spite of Apple's huge success in the Chinese market, the US trade deficit with the country rose almost 15%, from US$318.7 billion to US$367.3 billion during the period 2013–2015. This is a very strange phenomenon, clearly challenging the credibility and accuracy of current trade statistics in measuring and interpreting trade flows and bilateral trade balances..

Applying equation (2), we derived that, from 2013 to 2015, Apple value added sold to the consumers of China jumped from US$8.2 billion to US$19.3 billion, approximately a 135% increase (Table 2). If the value added obtained by Apple from the sales of iPhones, iPads, and iMacs in China were included in the US exports to the country, in 2015 the US exports to China would rise by 16.6% and the corresponding deficit would decrease by 5.2%. Hence, recognizing the value added of Apple as part of US exports should narrow the trade gap between the US and China and mitigate remarkably the bilateral trade imbalance. It is noteworthy to mention that the possible change is attributed to just one factory-less American company, namely, Apple. Many factory-less American MNCs, such as Nike, ADM and CISCO, operate in the same fashion as Apple. If all the value added of their intellectual property were recorded as part of the US exports to China, the trade would be more balanced than it appears under current trade statistics.

Similarly, adding the value added of Apple derived from the Japanese market could also lower the trade imbalance between Japan and the US. In 2015, Japan's trade surplus with the US totaled US$69 billion, second only to that of China. The Japanese case is even more intriguing as all Apple products sold in Japan are exported directly from China, not US! None of them are regarded as a US export to Japan in current trade statistics. On the other hand, when Japanese automakers ship their cars from Japan to the US, all cars are declared to US customs and are automatically recorded as part of US imports from Japan, eventually becoming part of the US trade deficit. Japanese automobile exports account for most of the surplus. This asymmetric reporting unambiguously widens the trade imbalance between Japan and the US. Apple captures most of the value added of Apple products sold in Japan and it achieves the purpose by selling the products assembled in China. The value added gained by Apple should be consider as part of US export to Japan. It is an export of Apple's intellectual property embedded in individual Apple products.

Table 3 compares US exports to Japan and the value added of Apple derived from its sales in the Japanese market. US exports to Japan decreased slightly in 2015 to US$62.4 billion from US$65.2 billion in 2013, while in the same period Apple sales rose significantly to US$15.7 billion from US$13.9 billion. Using equation (2), we calculated that the total value added by

Apple accounted for US$5.4 billion, US$4.8 billion, and US$4.4 billion of Japanese sales in 2015, 2014, and 2013 respectively. In 2015, the value added of Apple was equivalent to 8.6% of US exports to and 7.8% of its trade deficit with Japan. Hence, including the value added of Apple would increase US exports to Japan by 8.6% and accordingly reduce the trade deficit by 7.8%.

Table 3. US Trade with and Apple Sales in Japan (Billions of US Dollars)

	2015	2014	2013
US exports	62.4	66.9	65.2
US trade deficit	69.0	67.6	73.3
Apple sales	15.7	15.3	13.9
Apple value added	5.4	4.8	4.4
Apple value added/US exports (%)	8.6	7.3	6.7
Apple value added/US trade deficit (%)	7.8	7.2	6.0

Source: United States Census Bureau, Apple's Form 10-K, and the author's calculations.

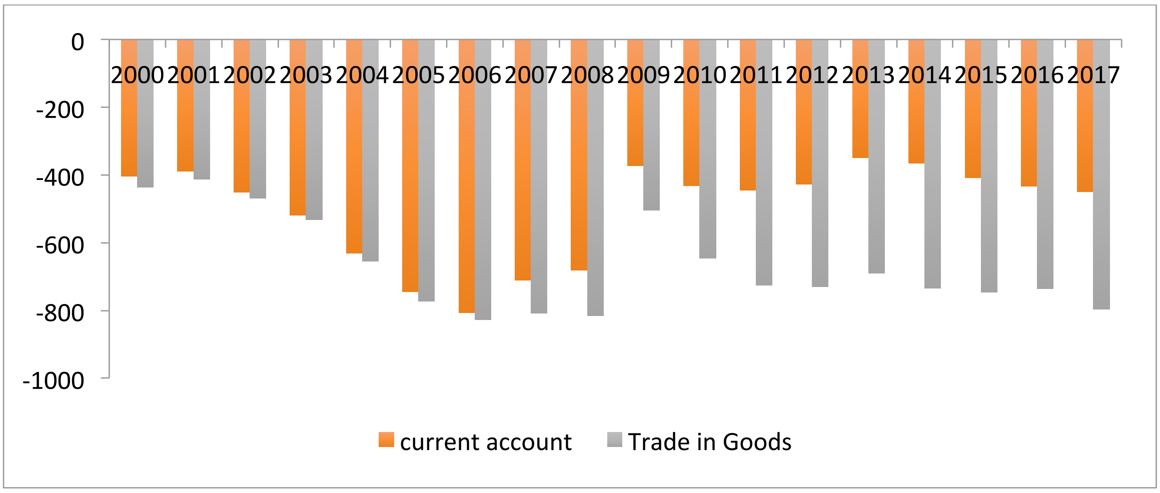
4. Missing Exports and the US Current Account

The current account of a country can be defined as

$$CA = NX + NS + NI \qquad (3),$$

where NX is the net exports in goods, NS the net exports in services, and NI net income transfers, which comprise the earnings of domestically owned firms operating abroad. The current account is more comprehensive than the trade balance in goods, which is often cited by economists and policy makers for evaluating the balance of trade. If factory-less American MNCs report all their foreign earnings to the US government, the net income transfer NI of the US current account should include the value added of their intellectual property embedded in products sold to foreign consumers. Therefore, to assess the trade balance of the US, the current account should be a better indicator than net exports in goods. There is no need to adjust the current account of the US with foreign earnings of factory-less American MNCs. On the other hand, if we examine the performance of US exports and attempt to investigate to what extent American companies have benefited from free trade agreements and unprecedented trade liberalization, conventional export data is not reliable, thus should be adjusted by including the value added of factory-less American MNCs' intellectual property. With regards to bilateral trade relations, the adjustment is needed because there exist no bilateral current accounts. To accurately assess trade balances of the US with its trading partners, it is imperative to incorporate the value added of factory-less American MNCs' intellectual property sold to foreign consumers. Focusing merely on trade in goods is biased and tends to underestimate what the US actually exports, thus exaggerating the bilateral trade imbalance.

Figure 2. Balances of Current Account and Trade in Goods for the US (Billion $)



Source: US Census Bureau.

Figure 2 depicts the balances of US current account and trade in goods from 2000 to 2017. It is worthy to emphasize that the trends of the two balances diverged substantially in the last decade. Before 2007, the trade balance moved in the same direction as the current account balance and the two differed slightly. While the trade deficit expanded from \$436 billion to \$808 billion from 2000 to 2007, the deficit of current account also rose to \$711 billion from \$404 billion. Because of the global financial crisis, the trade deficit fell to \$645 billion in 2009, and then steadily rose to \$796 billion in 2017, almost the same level as in 2007. The deficit of current account, however, shrank significantly and fell to \$499 billion by 2017, about 37% lower than in 2007. The drastic fall in the current account deficit may suggest that, the huge trade deficit was partially offset by the overseas earnings of Apple and other factory-less American MNEs.

The case of Apple is not unique. Nike, an American company with about one-third share of the global sports shoe market, "concentrates on the 'D' (develop) and 'S' (sell) rather than on the 'M' (make) and 'B' (buy)" (Kaplinsky 2000). It has no manufacturing facilities and outsourced the production of all Nike shoes to contract manufacturers in China, Viet Nam and other developing countries. The company mainly derives earnings from the intellectual property of the "Nike" brand, which is labeled on every pair of shoes sold in the global market. According to Nike's Form 10-K, in 2015 its foreign sales amounted to US$16.4 billion with 46% gross margin. Using equation 2, we estimated that Nike gained $2.3 billion value added from its overseas sales in 2015, roughly equivalent to 0.15% of the US exports and 0.30% of the trade deficit. Similar to the case of Apple, the value added by Nike derived from overseas markets does not contribute a cent to the US exports figure. If the value added derived by Apple and Nike from overseas markets were added to US exports, in 2015 US exports would rise 3.55% and its trade deficit would fall 7.30%. Incorporating the value added of factory-less American MNEs' intellectual property in trade statistics would make the global trade system more balanced than it seems to be according to current trade statistics

As mentioned by Bayard and Byrne (2015), 21 of companies listed in the Standard and Poor's 500 index were exclusively factory-less manufacturing in 2012, including large technology companies Advanced Micro Device, Qualcomm Inc. and Cisco System. Unlike Apple and Nike, which employ only foreign contract manufacturers, those companies use both US and foreign contract manufacturers. Their 10-K forms provide no information where their foreign sales are manufactured. To estimate the value added earned by all factory-less American MNCs from overseas markets, we need more detailed information. In addition, this study only focuses on factory-less American MNCs. For MNCs with manufacturing facilities abroad, such as GM and Ford, it is very difficult to separate their investment income from the value added of intellectual property. It would be very controversial to treat their foreign earnings as "exports".

5. **Concluding Remarks**

Conventional trade statistics only measure the value of physical goods crossing national borders. With the proliferation of GVCs, more and more American MNCs have become factory-less, specialized in brand marketing and technological innovations, and outsourced product manufacturing and assembling to foreign companies. They sell foreign consumers the value added of their intellectual property, which is embedded in products assembled and/or manufactured in foreign countries. Despite factory-less American MNCs making vast profits in overseas markets, neither their overseas sales nor value added is counted as US exports. Therefore, current trade statistics greatly underestimate US exports and overestimate its trade deficit. The failure of trade statistics in capturing exported value added of intellectual property has widened the US trade imbalances with China and Japan. Current trade statistics are incompatible with trade dominated by GVCs. Reforming trade statistics by incorporating the value added of intellectual property attached with goods in the global market is an essential step towards a better understanding of how trade benefits all countries involved, in particular, countries specializing in brand marketing and technological innovations.

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