

# Chinese Global Connectivity: A Decade of Rapid Change

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## Abstract

The world is rapidly getting integrated and China is at the epicenter of this globalization drive. This paper focuses on the rapidly changing trade relationships of the Chinese economy in the past few decades. We do this by looking at China's top thirty trading partners from 1980 to 2013 and metrics such as the change in import and export shares of china with respect to its trading partners and vice versa. This paper also looks at revenue growth performance of some prominent U.S. multinationals who have substantial operations in China.

JEL codes: F02, F14, F61

Keywords: China, Imports, Exports, U.S. multinationals, trade share, commodities

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## 2. Introduction

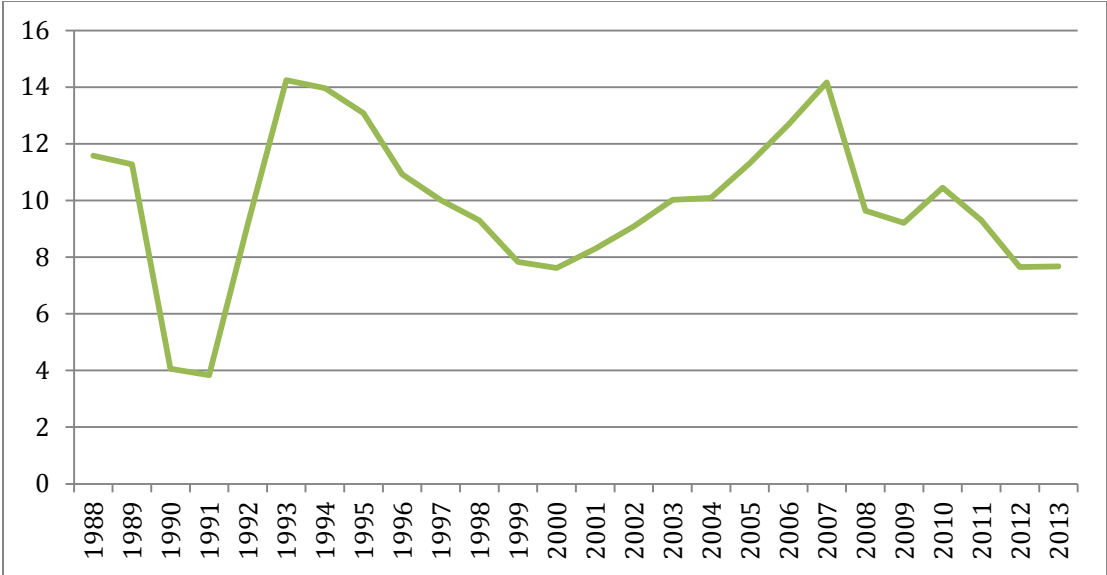
China is in the news everyday for one reason or another. For example, the May 2013 issue of *National Geographic* magazine profiled the 1,400-year-old Grand Canal system of China where it talked in detail about how the owner of this barge had to watch the world economy's health as he hauled coal, thus making him a speculator (indirectly) about coal prices (their expectant rebound) as he had borrowed money at high interest rates to run his barge at razor thin profit margins. The article showed how globally interdependent the world has become nowadays with this barge operator in effect behaving like a Wall Street trader with a very long position on the world economy. Hence, this paper focuses on the integration of China in the world economy with specific emphasis on how China is now an important player in terms of demand for products and services from the rest of the world. Thus, this paper builds upon the pioneering work of Prasad et. al. (2004) who first detailed the magnificent rise of Chinese economic importance in the global economy. Their study ends just as China was joining the WTO. Thus, we analyze the rapidly changing nature of China's integration in the world economy that seems to have happened around 2003-05 time-period, a few years after China joined WTO.

This paper will specifically focus on the trade relationships China has with the rest of the world in terms of what it imports and exports, and to whom, and what type of products. The paper will then zoom into each countries share of imports and exports to and from China, and by product type. The paper then explores the emerging importance of Asia-Pacific and/or China for U.S. based multinationals revenue growth (subject to data availability) in the last decade. Thus, the goal of our research is to emphasize the rapid change of international trade that China has been experiencing in the past decade, thereby, effecting other countries competitive and comparative advantages as well as multinational companies dependence on China for their financial decision making. The paper is structured as following. Section 2 provides a macro overview of China, section 3 details the global linkages of China by commodity type and trading partners, and section 4 fleshes out the importance of China to its trading partners. Section 5 explores the role of China and Asia-Pacific in U.S. multinational revenue performance in the last decade. Section 6 concludes by summarizing results and directions for future research.

## 2. China: A Macro Overview

International trade and globalization are shaping the face a new global economy and redirecting the stream of cash flow to low cost production countries. In the past decades China become the heart of international trade, importing and exporting from and to the world a large range of products. Chinese competitive input prices and fiscal policies attracted a numerous amount of FDI, increasing the outsourcing phenomenon in developed countries and competition among the developing ones. China’s economy has experienced major institutional changes that affected the countercyclical monetary and fiscal policies. Several studies have found that market-oriented reforms, like changes in interest rates or reserve requirements, have a little impact on China’s economy compared to more direct guidelines, such as commercial bank lending levels (Geiger, 2006). Figure1 below shows the rapid rate of growth that China has experienced in recent decades. Currently China is the second world largest economy by nominal GDP and it is the fastest growing major economy (average growth rate of 10% in the past thirty years).

**Figure 1. Annual Chinese GDP Growth from 1988 to 2013**



Source: World Bank

According to Bell et al. (1993) China’s institutional and structural reforms can be summarized in three phases: first, farming was decentralized to the household level, rising agricultural prices and most important some state-owned enterprises were allowed to retain

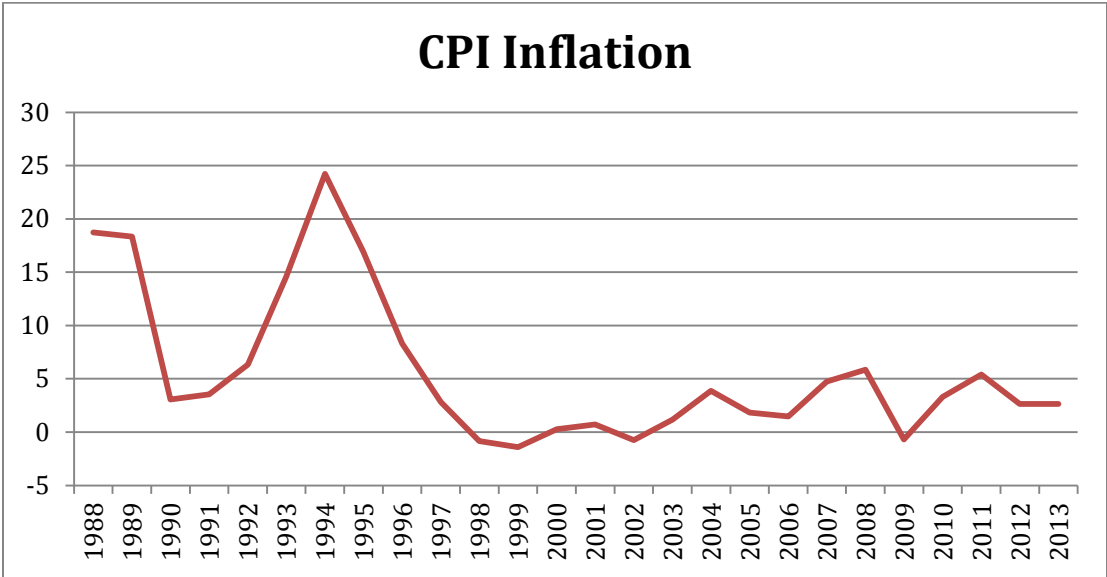
profits (1978–84); second, liberalization of enterprise pricing and wage setting, introduction of corporate taxation, and fourteen major cities in the coastal areas became the first open trade area (1984–88); third, as a consequence of these reforms inflation increased leading macroeconomic destabilization (1988–97). To dictate the rules of the “China as we know today” was Deng Xiaoping who reformed the incompetent market system and set the stage for a more fundamental “globalization” reform (1998 to present). At the end of the 1990s, the impact financial guidelines diminished the financial sector development, in favor of more standard institutional regime, which push the economy far away from fiscal liberalization.

International trade and FDI are strongly affected by the movements of interest rates and government control. In 2013, China was the largest exporter and second largest importer of goods in the world. China became part of the World Trade Organization in December 2001 and member of the Association of Southeast Asians (Brunei, Cambodia, Indonesia, Laos, Malaysia, Burma, Philippines, Singapore, Thailand and Vietnam) in 2010. The country took fifteen years to adjust to these trade reforms, that included substantial tariff reductions and the demolition of most trade barriers. China’s free trade agreements and international integration with the rest of world strongly impacted the international trade. China transition into a dynamic private sector economy and its liberal connection with the global economy has permanently shaped the international trade map in the past decades (Yang, 2006).

China’s trade expansion occurred thanks to its increasing specialization in production within its neighbor regions, serving today as the final processing and assembly platform for the other Asian and Western countries (Prasad, 2004). “Both its exports and imports have grown faster than the world trade for more than twenty years” (Blancher & Rumbaugh, 2004). The degree of quality differentiation of imports products and the relative quality level of Chinese exports had a direct bearing on production and labor market outcomes throughout imports competition. In mid-2000 the marginal cost of non-Chinese exporters rose 50 percent, which suggest that competition of non-Chinese economies shift to higher quality varieties (Mandel, 2013). From the 1970 to 2000, China’s export basket composition has changed significantly: agricultural and mineral exports declined substantially while the share of manufactures rose to over 87 percent (Martin, Dimaranan, Hertel, & Ianchovichina, 2000). China is now the world’s

largest importer of copper and steel, and among the largest importers of other raw materials, strengthening the world commodity prices. The numerous institutional changes shifted China’s bilateral trade balances, increasing trade surpluses with Western developed countries and rising trade deficits with many more price competitive Asian partners. Chinese labor- intensive production and trade expansion rose regional income disparities, while foreign competition and FDI pressured up wages and unemployment at the national level (Prasad, 2004).

**Figure 2. Chinese Inflation Experience from 1988 to 2013**



Source: World Bank

The Chinese inflation history is represented in figure 2. The first deflationary period was characterized by large reductions in tariff rates, high productivity growth and demand contraction (Feyzioğlu, Porter, & Takáts, 2009). Commodity prices and tariff cuts pushed down inflation in the country that reached 2.7% in 2013 and 2012, which is a good improvement after 2009 deflation numbers (negative 0.7% inflation). Price of nontradable goods increased over time due to faster productivity growth in the tradable goods sector relative to the nontradable goods sector compared to partner countries, leading the appreciation of the real exchange rate as predicted by Balassa (Balassa, 1964).

Chinese rapid export growth, accumulations of international reserves and FDI inflow have affected considerably the exchange rate. At the beginning of the 90s, China had a dual

exchange rate system where the official fixed exchange rate coexisted with the market-determined rate (established in 1988). Between mid-1997 and mid-1998, China's real effective exchange rate appreciated to account for the depreciation against the U.S. dollar of the Japanese yen affected by the Asian crisis (Wang, 2004; Zhang, 2001). China has now a fixed exchange rate regime which gives the government the power to control the balance of trade and FDI. However, the short-term movements of the exchange rate are effaced by the degree of liberalization of capital.

Clearly, this fiscal policy regime has an important role in international trade, but the stability of the exchange rate is not an imminent issue considering that its debt to GDP ratio is only 26.5% in 2013 and given fast paced GDP growth rate (7.7% in 2013). From the fiscal prospective, tax administration played a crucial role, transforming a centrally planned economy to a socialist market economy with a decentralized fiscal structure (Young, 2000). Moreover corporate taxes are protagonist of the "race the bottom" phenomenon that pushed down tax rates of several countries in order to attract more investments and stimulate outsourcing activities in developed countries (Fedelino & Singh, 2004).

The labor market has dramatically changed since the opening of the economy in the late 1970s. It was originally characterized by direct allocation of jobs and administrative control of wages, which slowly moved towards a marketization of the labor market, particularly in the private sector, which includes greater flexibility in hiring and firing. According to The World Bank 2012 reports, poor's access to education increased over the decades, but illiteracy rates are still high among rural population, with relatively few rural residents having completed secondary school or college (World Bank, 2001). Skill levels are also low in the northeastern provinces of Heilongjiang, Jilin, and Liaoning (where there is a higher-than-average concentration of unemployed) and Xiagang (where less than one in five people have education beyond junior-middle school)(Brooks & Tao, 2003).

Education plays a crucial role in the development of the country, but providing access to primary and higher education opportunities for urban and rural citizens is a challenge for a population of over 1.3 billion people. China's literacy rate rose from 66% in 1964 to 96% in

2012, but the majority of the population attending only elementary or middle schools. The education system has an impact on the quality of the labor force (skilled and unskilled workers) that directly effect demand of goods and services as well as production prices and quantity supplied. Increasing education will eventually pushed down wages of high skilled workers due to an increase in supply of skilled labor, and decrease poverty in favor of a higher income growth which will increase the demand of more expensive luxury goods. In other word, on one side china has become the engine of production of several multinational corporations, but it's also offering a great opportunity of revenue shift to international companies by increasing its demand of foreigner goods. In fact, China demand of beverages, automobile, textile and tobacco has increased along with GDP (Martin et al., 2000). The last big piece of the international trade' s mosaic is corruption and local protectionism which are still severe problems that China has to overcome at the local and national level (Cai, 1999). In 2013 China was raked eightieth out of one hundred and seventy seven countries for corruption by "Transparency International" on their 2013 Corruption Perceptions Index, which ranks countries and territories based on how corrupt their administrative and political institutions are perceived to be on a scale where zero represents low corruption.

### 3. Global Linkages of China

#### 3.1 Commodity Trade

The Chinese economy has achieved tremendous changes over the past decades, due to a continuous inflow of FDI and government control over the economy such as exchange rates, wages and regulations. China's world trade diversification in terms of commodities has tremendously changed over the past few decades<sup>3</sup>. Table 1 illustrates China's changing share of its commodity exports from 1980 to 2013.

**Table 1. China Exports by Commodity Type  
(As a % of Total Exports)**

	1980	1992	1997	2003	2008	2013
1. Agricultural products	15.8%	7.4%	4.4%	2.2%	1.3%	1.4%
Food	11.3%	6.1%	3.7%	1.9%	1.1%	1.2%
2. Fuels & mining products	17.9%	3.9%	3.0%	1.8%	1.6%	1.2%
Fuels		3.0%	2.0%	1.1%	0.9%	0.7%
3. Manufactures	31.5%	42.5%	43.7%	39.0%	39.3%	40.3%
Iron and steel	0.9%	0.8%	1.3%	0.5%	2.1%	1.1%
Chemicals	4.1%	2.8%	2.9%	1.9%	2.3%	2.3%
Pharmaceuticals		0.6%	0.4%	0.3%	0.2%	0.2%
Machinery	3.0%	8.4%	12.2%	18.5%	19.9%	20.2%
Office equipment	0.3%	3.4%	6.0%	11.6%	11.3%	11.5%
Electronic data equip.		0.7%	2.6%	6.1%	5.2%	4.3%
Telecom equip.		2.5%	2.9%	4.4%	4.8%	4.9%
Integrated circuits		0.2%	0.6%	1.0%	1.3%	2.3%
Transport equip.		1.4%	1.5%	1.6%	2.3%	2.2%
Automotive products	0.2%	0.2%	0.2%	0.4%	0.9%	0.9%
Textiles	9.2%	5.5%	3.9%	2.6%	1.9%	2.1%
Clothing	5.9%	10.6%	8.9%	5.1%	3.6%	3.4%

Source: World Trade Organization

<sup>3</sup> The commodities analyzed were Agricultural products, Food, Fuels and mining products, Manufactures, Iron and steel, Chemicals, Pharmaceuticals, Machinery and transport equipment, Office and telecom equipment, Electronic data processing and office equipment, Telecommunications equipment, Integrated circuits and electronic components, Transport equipment, Automotive products, Textiles and Clothing as defined in the world trade organization database.



Manufactures are the main exports, controlling approximately 40% of Chinese exports in 2013. Their share rose sharply from 31.5% in 1980 to almost 44% in 1997 before settling in the 40% range. Agriculture, fuels and mining products which were collectively almost one-third of the exports in 1980 are now barely 3% of China's exports. In their place machinery and office equipment have grown to be about 32% of Chinese exports. Textiles and clothing that accounted for 15% of exports until 1992 now account for only 6% of exports by 2013. Thus, the changing face of industrialization of China is now clearly evident in its diversified export profile. And this is very noticeable by 2003, just a few years after China joined the WTO.

**Table 2. China Imports by Commodity Type  
(As a % of Total Imports)**

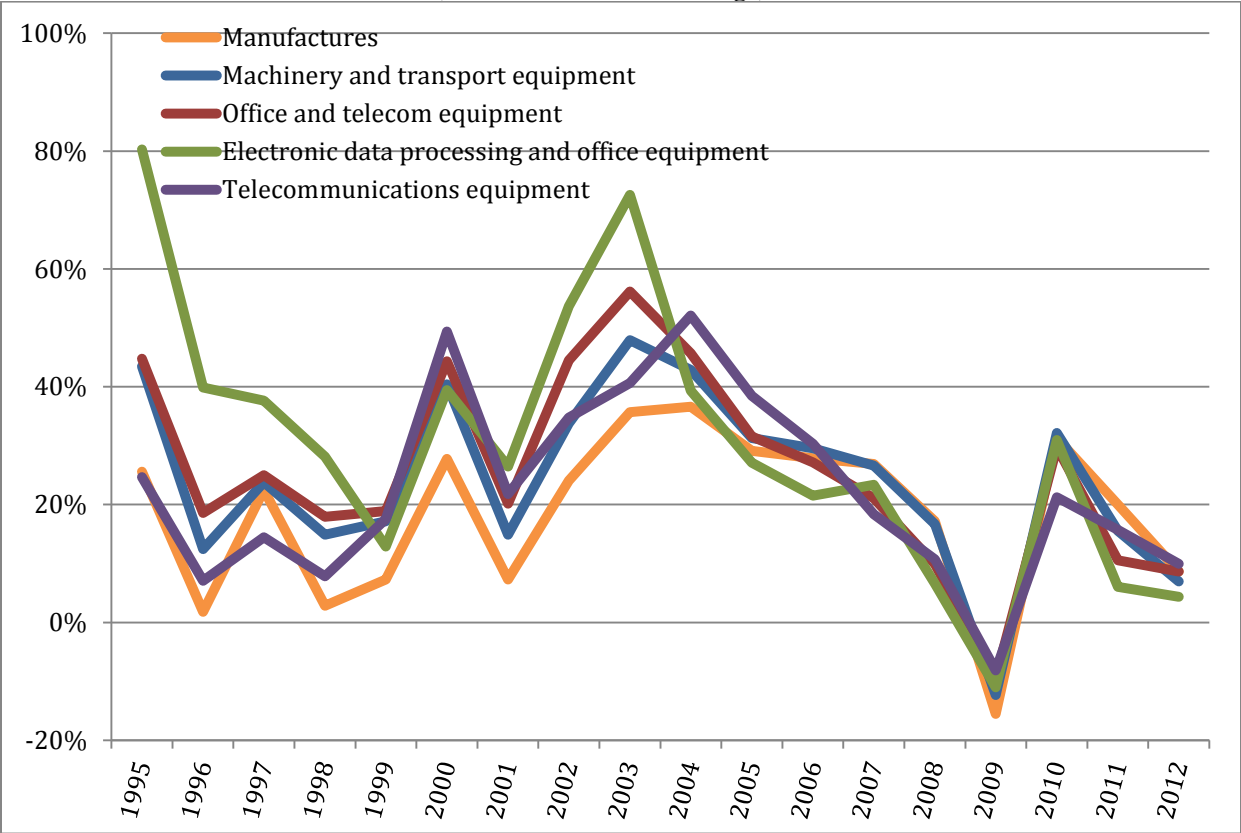
	1980	1992	1997	2003	2008	2013
1. Agricultural products	18.2%	4.8%	5.0%	3.2%	3.5%	3.9%
Food	9.0%	2.4%	2.5%	1.6%	2.0%	2.4%
2. Fuels & mining products	2.9%	4.5%	5.9%	5.4%	12.3%	13.0%
Fuels		2.2%	3.5%	3.0%	6.8%	7.5%
3. Manufactures	34.2%	39.1%	37.4%	34.1%	29.3%	27.0%
Iron and steel	6.2%	2.7%	2.3%	2.3%	1.1%	0.5%
Chemicals	8.0%	6.8%	6.6%	5.1%	4.8%	4.5%
Pharmaceuticals		0.3%	0.1%	0.2%	0.2%	0.4%
Machinery	14.7%	18.6%	18.0%	20.0%	17.7%	16.9%
Office equipment	1.5%	3.9%	5.7%	10.0%	9.3%	9.4%
Electronic data equip.		0.8%	1.5%	2.5%	1.9%	1.4%
Telecom equip.		2.1%	2.0%	2.0%	1.5%	1.8%
Integrated circuits		1.1%	2.1%	5.5%	5.9%	6.2%
Transport equip.		4.1%	2.1%	2.2%	2.0%	2.7%
Automotive products	2.1%	2.2%	0.7%	1.3%	1.2%	1.9%
Textiles	3.1%	4.6%	4.2%	1.5%	0.7%	0.5%
Clothing	0.1%	0.3%	0.4%	0.2%	0.1%	0.1%

Source: World Trade Organization

Table 2 reproduces China's changing nature of imports to sustain the rise of manufacturing and machinery related exports. Its fuel and mining product imports rose from a paltry 4.5% in 1992 to 13% in 2013 to sustain its manufacturing base. But as China is also an intermediary in

production of manufactured goods its share of machinery and office equipment rose from 22.5% in 1992 to 30% in 2003 and then slightly down to 26.3 % by 2013. Overall, its import share of manufactures of 39.1% in 1992 dropped slowly to 27% by 2013. Graphs 3a and 3b depict the growth rates of the top 5 commodities in exports and imports from 1995 until recently.

**Graph 3a. Selective Chinese Exports by Type: 1995 to 2012**  
(Year-Over-Year % Change)

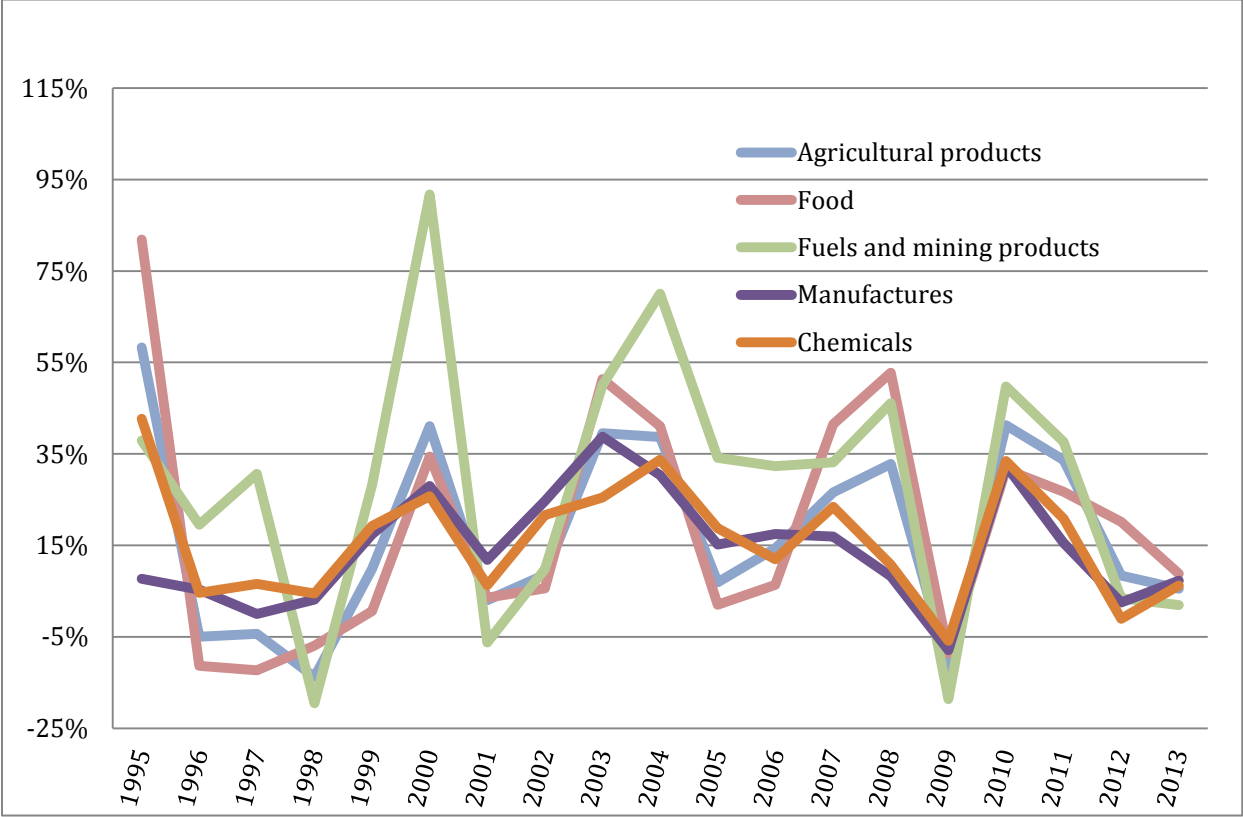


Source: World Trade Organization

As visible in these graphs, Chinese trade was only partially affected by the 1997-98 Asian crises, while the 2008 global crisis had a bigger impact on the production and trade of commodities. Indonesia and South Korea were the countries most effected by the crisis, while China, Taiwan, Singapore, Brunei and Vietnam were indirectly effected by the loss of demand and consumers confidence. Considering the interaction between the Asian economies, the 1997 crisis effected several exports: agricultural products, food, fuels and mining products, iron and steel, textiles, clothing. The affect of the crisis is visible for only two years, followed by a regular economic trend until the 2008 global financial crisis dramatically pushed down all commodities

(expect Pharmaceuticals). The 2008 crisis spread for only one year and the economy downturn is clearly visible in 2009. Furthermore, the Asian crisis decreased imports of agriculture (already in a decreasing trend), food, fuel and mining products, but the effect of the economic instability is visible in 1997 and 1998 returning to its regular economic race in 1999, as visible in Graph 3b. China accession to the WTO slightly decreased the exports of integrated circuit and the imports of fuel, while the 2008 financial crises strongly decreased all commodities (except transportation and equipment and automobile product). The accession to the WTO required period of adjustment and that did not affect all commodities at the same time. This economic downturn of the latest financial crisis is again visible in 2009, but it disappears in 2010 (two digits growth rate for all commodities in 2010)<sup>4</sup>.

**Graph 3b. Selective Chinese Imports by Type: 1995 to 2012**  
(Year-Over-Year % Change)



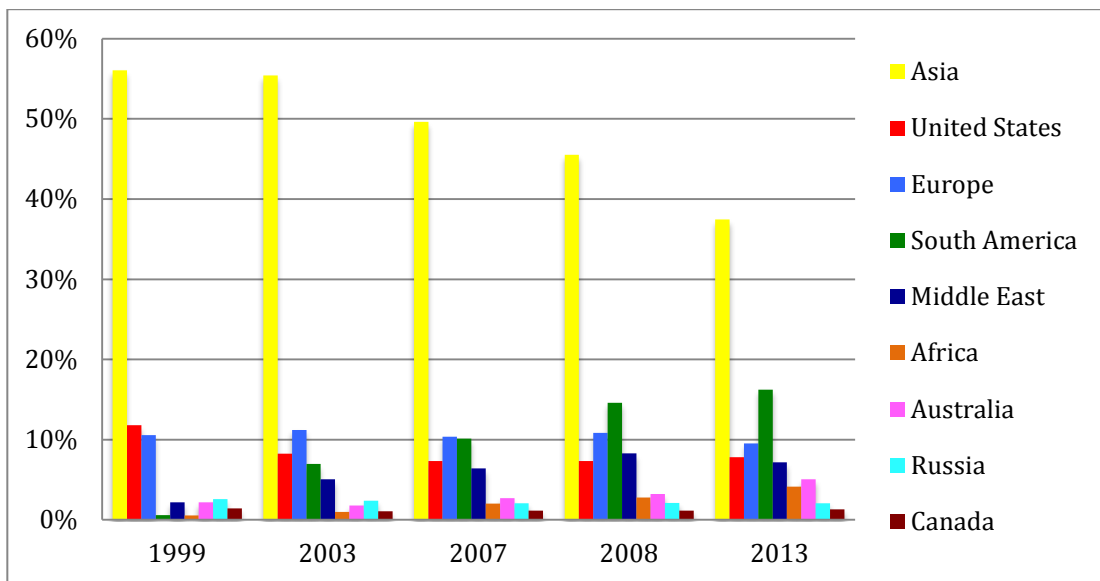
Source: World Trade Organization

<sup>4</sup> The Chinese production bust effected wages and salary in the domestic and foreigner market as U.S. manufacturing employment decreased from 2002 to 2007(Berger, 2013).

### 3.2 Trading Partners

Next we analyze China’s trade with its main trading partners. We chose the top trading partners in each geographic area for imports and exports. In our paper we classify the Asian countries as Korea, Japan, Thailand, Malaysia, Indonesia, Singapore, Philippines, Vietnam, Taiwan, India and Hong Kong. The European countries that trade with china are: Germany, France, Italy, Spain, Belgium, Turkey, United Kingdom, and Netherlands). South America countries (Brazil, Chile, Venezuela, Mexico), Middle East countries (Saudi Arabia, Iran, Iraq, Kazakhstan, United Emirate, Arab, Oman) and African countries (South Africa, Angola) are also contributing in large amount to the international trade of China.

**Graph 4a. China Share of Total Imports by Geographic Area**

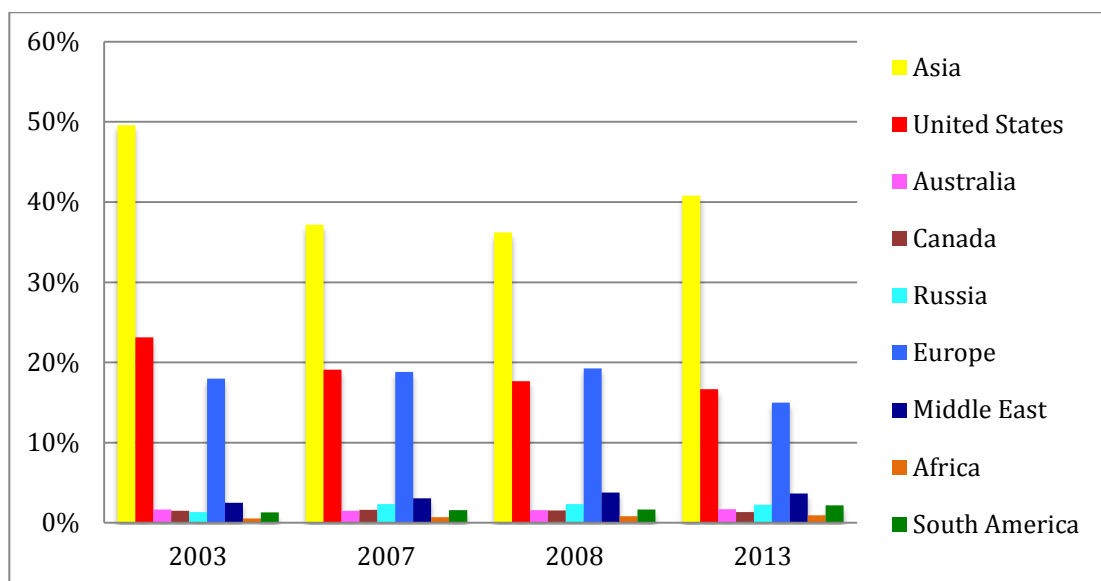


Source: Bloomberg

Graph 4a shows the import shares (as a percentage of Chinese total imports) for the geographic areas, while graph 4b does that for the exports. A more detailed illustration of this data is available on table A1 and table A2, in the appendix. Defining trade share as sum of export plus import share, over time has decreased with Asia, Europe, and United States while it increased with South America, Middle East and Africa. Even if the Asian countries are importing and exporting less in proportion to other developing countries, Asia is still the major trade partner of China: almost 40% of Chinese imports are coming and exports are going to the Asian countries in 2013. However, this share has declined steadily for imports from a peak of 56% in

1999. In exports the share was almost 50% in 2003, dropped sharply to 36% by 2008 but has rebounded to 41% by 2013. China's major neighboring trade partners are Korea, Japan and Taiwan, from the import side, and Hong Kong, Japan and Korea, from the export side.

**Graph 4b. China Share of Total Exports by Geographic Area**



Source: Bloomberg

In 2013, China imported 7.8% of its imports from the United States but exported 16.7% of its exports to the U.S. The corresponding numbers for 1999 were 11.8% and 23.1% in 1999. Thus, U.S.'s importance in Chinese trade shares is falling, and that is true for Europe too. However, countries like Australia and the South American region has grown in importance for China. The South American region accounted for only 0.6% of Chinese imports in 1999 but is now a whopping 16.2% in 2013, equal to Europe and the U.S.'s combined share. The country that has propelled this rise in share is Chile. Imports from Chile were only 4.7% in 2003, lower than Germany's share of 5.9%. In 2013, imports from Chile amounted 11.5% of total imports while that of Germany was about 5.0%<sup>5</sup>. Similarly, Australia which is another resource rich country has seen its share of imports rise from 2.2% in 1999 to 5.1% in 2013.

<sup>5</sup> Chile exports to China mainly copper, ores, slag and ash, pulp of wood or of other fibrous cellulosic material, edible fruit and beverages. On the other side, Chile contribution to China's exports shares is very low (0.6% from which the majority are equipment and machineries).

China imports just above 2.5% from both Saudi Arabia and South Africa, primarily to satisfy its need of oil, used to produce the manufactured goods. However these two countries play a small role in China's exports contributing together for only 1.5% of total exports. Even if developing countries are increasing their presence into China's international trade, developed countries are still the major players for China's exports. Net-net China is importing more from developing countries than developed countries, but it exports more to the Western developed world than the rest of the world.

As we discussed above, China's neighboring countries have a trade advantage due to their geographic location and earlier trade agreements (Rauch, 1991). Understanding the commodity that China is importing and exporting from its trade partners is extremely relevant. The degree and quality of commodities traded is a reflection of wages and price differences that along with demand and supply regulate the development of the economy and influence government policies. Thus, we used the U.N. database to look at commodity trade with China by country in 1999 and 2013. Appendix B has those tables for selected important countries. The first ones we examined were Korea and Japan. The ten major commodities imported and exported between China and Korea (tables B1a and B1b) as well as China and Japan (tables B2a and B2b) are very similar. The data don't show too much variation on the type of commodities imported and exports by countries over the time. Electrical machineries, equipment, engines and pumps are the main traded commodities. In 2013, China imported \$162 billion in goods from Japan of which 25% were electrical equipment and 18% were machines, engine and pumps. At the same time, China exported \$150 billion worth of goods to Japan of which 23% were electrical equipment and 17% machines and engines. Similarly, China's imports from Korea (which is the largest Asian trading partner in 2013 compared to Japan in 1999) mainly electronics (42%) and technical equipment (13%), which are also among the main sources of exports (61% and 5% respectively). Medical and technical equipment wasn't part of the Korea-China traded commodities in 1999.

Germany is the main importer and exporter of China from Europe, 4.8% of total imports and 3.5% of total exports. China's main imports from Germany haven't changed since 1999: machines and engines (26.1%), vehicles (24.0%) and electricals and equipment (13.2%). Electrical machineries and engines are the main Chinese exports to Germany, and article of apparel is

positioned third in both 1999 and 2013 according to our shares calculated using the United Nation Database. In 2013, China imported from Australia, Brazil and India mainly ores, slag and ash but it exported machines and electrical machinery back to them. On the other side, the primarily imports of China from Saudi Arabia and Russia are mineral fuel and oil, while the main exports are machines and electrical equipment<sup>6</sup>. Finally, China's trade with United States is concentrated mainly to machines and electrical equipment. Vehicles, footwear, apparel, furniture and medical expenditures play an important role in the Italian and American bilateral trades with China, with the only difference that China imports a significant amount of oil from United States (\$13 billion in 2013).

#### **4. Importance of China to its Trading Partners**

So far we have analyzed the trade statistics from the perspective of China by looking at the Chinese imports and exports divided by geographic areas and commodities. However to fully capture the international trade impact of China, we zoomed into each country's share of their trade with China. We collected data on each country's total imports and exports and its destination from the International Monetary Fund database (via Bloomberg). Our results are available in Tables 3 and 4.

The share of imports of a country from China has tremendously increased for each country in our sample. This shows that China manufactures products to sell as final goods to the rest of the world. Similarly, the share of total exports of each country to China has also risen dramatically (except for Russia, whose export share to China hasn't significantly changed since 1980's). Once again the Asian countries, South America, Middle East and Africa are importing and exporting a large percentage of their total trade with China (more than twenty percent for most of these countries). European countries percentage change of total exports to China, on average, increased three percentage points, while imports went from an average of 0.4% in 1980 to an average of 8.0% by 2013. The dramatic rise in both European imports to China and exports from it is evident in graphs 5a and 5b. The Netherlands, France and Turkey are importing approximately 11.1%, 12.1% and 9.8% of their imports from China in 2013. Germany,

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<sup>6</sup> Imports and exports of commodities tables of Brazil, Australia, United States and Saudi Arabia are also available in the appendix B.

Switzerland and France are exporting more than 4.0% of their total exports to China (6.0% of total imports are from China for these three countries).

The Asian economies, however, dramatically increased their Chinese share in total imports and exports (the percentage changes from 1980 to 2013 are available in graphs 6a and 6b). Hong Kong trades 54.8% of its total exports with China and 47.8% of its total imports. United States imports from China 19.5% of its total imports, but it exports only 7.7% of its total exports. Russia also imports a large percentage of its products from China (16.9%) and only 6.7% of its exports go to China. Canada, on the other side, is less dependent on China than United States and Russia by importing only 2.4% and exporting 4.1% of its commodities (graphs 7a and 7b). In 2013, 12.9% of Saudi Arabia imports were coming from China and 13.9% of Saudi Arabia exports were going to China (these numbers were close to zero in 1980). Iraq and Kazakhstan trades are also highly dependent on China, as we illustrated in graph 8a and 8b. As we discussed earlier China imported 11.5% of their total imports from China, and Chile is exporting 24.9% of their total exports to China. This impressive trade dependence is mainly due to the China-Chile Free Trade Agreement signed in 2005. The Agreement entered into force in October 2006 and it offers zero duty treatment phase in order to cover 97% of products within a ten-year time frame. China also signed, during the same period of time, several other free trade agreements with: ASEAN, Pakistan, New Zealand, Peru, Hong Kong, Macau, Costa Rica, Iceland and Switzerland (other free trade agreements are now being negotiating with Australia, Korea, Norway and Sri Lanka).

## **5. China and Multinational Companies**

This section looks into some selected multinational company's revenue divided by geographical area. Most of the 30 companies in the Dow Jones index do not report their revenue stream by detailed geographic regions, and those who do, may report only for Asia as a whole and not identify China separately. Hence, we took into consideration only the multinational companies that reported the revenue obtained in Asia as a whole and then China if applicable.



Thus, we collected annual revenue data by geographic regions for about 17 of the 30 companies in the Dow Jones index as shown in table 5.<sup>7</sup>

One thing that is very clear is that the share of company revenues derived from Asia is rising for all the firms in the table.<sup>8</sup> For companies like 3M, Caterpillar, DuPont, IBM and Intel the share of their revenues originating in Asia is over 20% in 2013. In fact, Intel is deriving almost 45% of its revenue from Asia in 2013! Looking at revenue share originating from China, in 2013 it was approximately 15% of Apple's revenues. Boeings share of revenue from China has grown impressively, from only 2% in 2000 to 5.9% in 2005 and then sharply to 12.2% in 2013. Intel's revenue coming from China has been constantly increasing since 2000 reaching 18.8% of the total company's revenue in 2013, which is one percentage point higher than the revenue coming from the Americas (United States and Canada).<sup>9</sup> By looking at Dupont, in 2013 China's percentage of total revenue was five percentage points higher than the 2001 value. We found it interesting to report the percentage change of revenue growth by geographic areas of the companies described in table 6.

Barring Nike, all the companies are showing positive growth rates in the Asia-Pacific region from 2005 to 2013. And they are usually higher than their U.S. operations. For Boeing, whose U.S. operations show no growth in revenues between this time period, its Asian operations grew at a 10.3% compounded rate, and its Chinese revenue growth was an even higher 16.3%! Nike is the only company in the sample whose Chinese operations growth of 10.6% was lower than its U.S. operations.

## 6. Conclusions

Our results clearly show the importance of China in the world economy. First we looked at the commodities traded by China since 1980. Manufactured goods are the main exports, and their share rose sharply from 31.5% in 1980 to almost 44% in 1997 before settling in the 40% range.

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<sup>7</sup> The initial year for each company depends on the availability of the data divided by geographic areas. Several companies do not report their geographic division before 2010.

<sup>8</sup> The time frame reported depends on the availability of the data on China revenue reported by the company in their individual balance sheets. The Apple, Boeing, Intel and Du Point shares of total revenue are available in the appendix A.

<sup>9</sup> Intel 2012 and 2013 European revenue numbers are not reported.

Agriculture, fuels and mining products which were collectively almost one-third of the exports in 1980 are now barely 3% of China's exports. In their place, machinery and office equipment have grown to be about 32% of China's exports. Textiles and clothing that accounted for 15% of exports until 1992 now account for only 6% of exports by 2013. Thus, the changing face of industrialization of China is now clearly evident in its diversified export profile. This is very noticeable in 2003, just a few years after China joined the WTO.

Second, we look at the trade share (sum of export and import shares) of China with its main trading partners. Over time China's trade share has decreased with Asia, Europe, and United States while it has increased with South America, Middle East and Africa. Even if the Asian countries are importing and exporting less to China in proportion to other developing countries, Asia is still the major trading partner of China: almost 40% of Chinese imports are coming from and going to the Asian countries in 2013.

Third we looked at the type of products imported and exported by several selected countries and their percentage of trade between the observed countries in that specific year. Most of the developing and Middle Eastern countries export raw materials, oil and food to China, while developed countries export machineries, equipment and technological products including vehicles. China's main bilateral-exports are machineries, equipment and organic chemicals.

Fourth, we looked at the importance of China to its trading partners defined as the Chinese share of imports (and exports) as a percentage of each country's total trade. The share of imports of a country from China has tremendously increased for each country in our sample. This shows that China manufactures products to sell as final goods to the rest of the world. Similarly, the share of total exports of each country to China has also risen dramatically (except for Russia). Once again the Asian countries, South America, Middle East and Africa are importing and exporting a large percentage of their total trade with China (more than twenty percent for most of these countries). European countries percentage change of total exports to China, on average, increased three percentage points, while imports went from an average of 0.4% in 1980 to an average of 8.0% by 2013. Asian, South America and the Middle East countries trade the majority of their commodities with China. For example in 2013, 12.9% of Saudi Arabia imports were

coming from China and 13.9% of Saudi Arabia exports were going to China (these numbers were close to zero in 1980). Europe and United States have more diversified exports, but they import a high percentage of their products from China.

Finally, we focused on the revenue stream of selected multinational corporations based in the U.S. that report their revenue stream by geographical regions. One thing is very clear, that the share of company revenues derived from Asia is rising for all the firms in the sample. For companies like 3M, Caterpillar, DuPont, IBM and Intel the share of their revenues originating in Asia is over 20% in 2013. In fact, Intel is deriving almost 45% of its revenue from Asia in 2013! Looking at revenue share originating from China, in 2013 it was approximately 15% of Apple's revenues. Boeing's share of revenue from China has grown impressively, from only 2% in 2000 to 5.9% in 2005 and then sharply to 12.2% in 2013. Intel's revenue coming from China has been constantly increasing since 2000 reaching 18.8% of the total companies' revenue in 2013, which is one percentage point higher than the revenue coming from the Americas (United States and Canada). Also, barring Nike, all the companies in the sample are showing positive revenue growth rates in Asia-Pacific region from 2005 to 2013. And they are usually higher than their U.S. operations. For Boeing, whose U.S. operations show no growth in revenues between this time period, its Asian operations grew at a 10.3% compounded rate, and its Chinese revenue growth was an even higher 16.3%!

To conclude, our research shows that the world is now highly dependent on China and we believe that this is just the beginning of an era of changes that will affect prices, wages and comparative advantages at the firm level. For future work we would like to see the impact of China on a firm's profitability and investment decisions back in the mainland U.S. and European based multinational firms.

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**Table 3. Exports of Selected Countries to China**  
(In percentage of their total exports)

	1980	1992	1997	2003	2008	2013
<b>Asia</b>						
Korea		3.4%	9.4%	18.1%	21.7%	26.1%
Japan	3.9%	3.5%	5.2%	12.2%	16.0%	18.1%
Malaysia	1.7%	1.9%	2.4%	6.5%	9.6%	13.5%
Thailand	1.9%	1.2%	3.0%	7.1%	9.1%	11.9%
Indonesia		4.1%	4.2%	6.2%	8.5%	12.4%
Singapore	1.6%	1.8%	3.2%	6.3%	9.2%	11.8%
Vietnam		1.1%	3.4%	12.4%	19.8%	28.7%
Hong Kong	6.3%	29.6%	34.9%	42.6%	48.5%	54.8%
India	0.3%	0.5%	2.0%	4.4%	5.4%	4.6%
Philippines	0.8%	1.2%	1.0%	5.9%	11.1%	12.2%
<b>USA</b>	1.7%	1.7%	1.9%	3.9%	5.5%	7.7%
<b>Australia</b>	3.6%	3.2%	4.6%	8.4%	14.6%	36.1%
<b>Europe</b>						
Germany	0.6%	0.9%	1.2%	2.8%	3.5%	5.4%
Switzerland	0.5%	0.7%	0.9%	1.8%	2.8%	4.1%
France	1.1%	1.4%	0.7%	1.2%	2.2%	4.4%
Italy	0.3%	0.8%	1.1%	1.5%	1.8%	2.5%
U.K.	0.4%	0.4%	0.5%	1.0%	1.9%	2.0%
Spain	0.3%	0.5%	0.5%	0.8%	1.1%	1.7%
Netherlands	0.2%	0.3%	0.5%	0.6%	0.9%	1.6%
Turkey	0.1%	1.0%	0.2%	1.1%	1.1%	2.4%
Belgium			0.5%	1.0%	1.1%	1.6%
<b>S. America</b>						
Brazil	0.4%	1.2%	2.0%	6.2%	8.3%	19.0%
Venezuela				0.6%	3.7%	14.0%
Chile	2.3%	2.2%	2.4%	8.8%	13.2%	24.9%
Mexico	0.6%	0.0%	0.0%	0.6%	0.7%	1.7%
<b>Middle East</b>						
Saudi Arabia	0.0%	0.1%	0.7%	5.5%	9.3%	13.9%
Kazakhstan			6.8%	13.4%	10.8%	23.4%
UAEs	0.0%	0.3%	0.3%	1.4%	2.2%	4.4%
Oman	0.3%	0.6%	1.2%	1.4%	2.1%	3.4%
Iraq		0.1%	1.1%	0.0%	2.2%	19.8%
<b>Russia</b>		6.9%	4.7%	6.2%	4.6%	6.8%
<b>Africa</b>						
Angola		0.8%	12.7%	23.6%	32.8%	45.3%
South Africa				2.4%	6.0%	32.0%
<b>Canada</b>		0.1%	0.2%	0.8%	2.9%	4.1%

Source: Bloomberg, International Monetary Found

**Table 4. Imports of Selected Countries from China  
(In percentage of their total imports)**

	1980	1992	1997	2003	2008	2013
<b>Asia</b>						
Korea		4.5%	6.9%	12.3%	17.7%	16.1%
Japan	3.1%	7.3%	12.4%	19.7%	18.8%	21.7%
Thailand	6.4%	3.8%	3.9%	7.6%	11.5%	16.7%
Malaysia	2.3%	2.4%	2.8%	8.8%	12.8%	16.4%
India	1.8%	2.8%	3.6%	9.1%	11.8%	16.0%
Philippines	2.7%	1.3%	2.5%	4.8%	7.6%	13.0%
Singapore	2.6%	3.1%	4.3%	8.1%	10.5%	11.7%
India	0.6%	0.4%	2.5%	5.1%	10.8%	11.0%
Vietnam		1.1%	3.4%	12.4%	19.8%	28.7%
Hong honk	19.6%	37.1%	37.7%	43.5%	46.6%	47.8%
<b>Us</b>	0.5%	5.0%	7.3%	12.5%	16.5%	19.4%
<b>Australia</b>	1.2%	4.2%	5.7%	11.0%	15.4%	19.5%
<b>Europe</b>						
Germany	0.4%	1.9%	2.8%	4.7%	6.3%	6.4%
France	0.2%	1.6%	2.3%	5.6%	9.8%	11.1%
Italy	0.4%	1.5%	2.1%	3.6%	6.2%	6.7%
Switzerland	0.2%	1.0%	1.4%	1.8%	2.5%	6.1%
Netherlands	0.4%	0.7%	1.9%	6.3%	10.1%	12.1%
Turkey	0.0%	0.7%	1.6%	3.8%	7.8%	9.8%
Spain	0.4%	1.6%	2.4%	3.1%	6.0%	5.7%
U.K.	0.3%	0.8%	1.4%	3.7%	7.2%	8.5%
Belgium			1.6%	2.6%	4.2%	3.8%
<b>S. America</b>						
Brazil	1.1%	0.2%	1.9%	4.4%	11.6%	15.6%
Chile	0.4%	1.5%	3.1%	8.5%	13.2%	19.7%
Venezuela	0.4%	0.1%	0.0%	1.9%	7.1%	12.9%
Mexico	0.3%	0.0%	1.1%	5.5%	11.2%	16.1%
<b>Middle East</b>						
Saudi Arabia	0.8%	2.1%	3.2%	5.9%	10.4%	12.9%
Oman	0.4%	1.5%	2.4%	2.7%	3.9%	4.9%
Iraq		0.1%	5.7%	1.4%	6.0%	14.7%
Kazakhstan		53.3%	1.1%	6.2%	12.0%	25.3%
UAEs	1.6%	6.2%	8.2%	9.8%	12.7%	14.6%
<b>Africa</b>						
South Africa			6.4%	6.4%	11.1%	16.2%
Angola		0.4%	1.3%	3.6%	15.0%	19.1%
<b>Russia</b>		4.8%	2.4%	5.8%	13.0%	16.9%
<b>Canada</b>	0.0%	0.1%	0.1%	0.4%	0.7%	2.4%

Source: Bloomberg

**Table 5. Selected Company Revenues by Geographic Areas (In millions)  
(As a percentage of total revenue, by year)**

<b>Company</b>	<b>Year</b>	<b>Revenue</b>	<b>United States</b>	<b>Europe &amp; MidEast</b>	<b>Asia Pacific</b>	<b>Latin America</b>	<b>China</b>
Apple	2011	108249	35.4%	25.7%	9.1%		11.7%
	2013	170910	36.7%	22.2%	6.5%		14.9%
3M	2001	16054	46.9%	24.7%	19.0%	9.3%	
	2005	21167	39.1%	24.7%	27.1%	8.9%	
	2013	30871	36.1%	23.0%	29.3%	11.7%	
American Express	2004	21897	66.2%	0.0%	9.8%		
	2005	22425	69.1%	0.0%	7.9%		
	2013	32974	72.0%	11.2%	9.0%	8.8%	
Boeing	2000	51321	65.7%	18.7%	10.8%		2.0%
	2005	53621	70.8%	8.0%	10.4%		5.9%
	2013	86623	43.4%	23.6%	14.1%		12.2%
Caterpillar	2009	32396	38.1%	27.5%	22.3%	12.0%	
	2013	55656	39.1%	24.5%	22.4%	14.0%	
Cisco	2001	22293	67.9%	28.2%	10.7%		
	2005	24801	53.6%	23.0%	10.0%		
	2014	47142	58.9%	25.5%	15.6%		
Coca-Cola	2004	21838	29.4%	36.1%	3.2%	8.1%	
	2005	23234	28.7%	35.8%	3.1%	8.9%	
	2013	46854	46.1%	5.9%	12.5%	10.5%	
Disney Co.	2001	25172	83.0%	10.3%	4.9%	1.8%	
	2005	31944	77.7%	16.3%	4.5%	1.5%	
	2014	48813	75.3%	13.3%	8.1%	3.3%	
Du Pont	2001	24726	48.8%	26.0%	14.8%	10.5%	2.5%
	2005	26639	41.8%	28.9%	16.9%	12.4%	4.5%
	2013	35734	38.5%	23.4%	21.8%	16.3%	8.4%
Goldman Sachs	2001	15811	64.4%	26.5%	9.1%		
	2005	25238	56.7%	29.9%	13.4%		
	2013	34206	58.1%	25.8%	16.1%		
IBM	2004	96293	37.0%	33.3%	22.1%		
	2005	91134	38.4%	33.4%	20.4%		
	2013	99751	34.9%	31.7%	23.0%		
Intel	2001	26539	35.4%	24.5%	31.4%		8.8%
	2005	47496	15.9%	17.3%	37.3%		11.3%
	2013	52708	17.2%		44.8%		18.8%
JPMorgan Chase	2001	29050	67.7%	23.1%	6.7%		
	2005	53748	78.6%	14.0%	5.2%		
	2013	96606	75.2%	16.1%	6.4%		
Merck &Co	2004	22938.6	58.7%	23.7%	7.3%		
	2005	22011.9	58.0%	23.6%	7.4%		
	2013	44033	41.4%	29.8%	9.2%		
Nike	2010	19014.7	35.2%	26.5%	4.6%		9.2%
	2014	27799	44.2%	22.9%	2.8%		9.4%
Proctor & Gamble	2001	39244	55.0%	27.0%	10.0%	8.0%	
	2005	56741	48.0%	24.0%	5.0%		
	2014	83062	39.0%	18.0%	18.0%	10.0%	
United Technologies Corp	2001	27897	61.3%	16.9%	12.3%		
	2005	42725	48.0%	26.3%	15.3%		
	2013	62626	57.5%	20.2%	13.9%		

Source: Bloomberg

**Table 6. Selected Companies Revenue Growth by Geographic Areas  
(compound growth rate between reported years)**

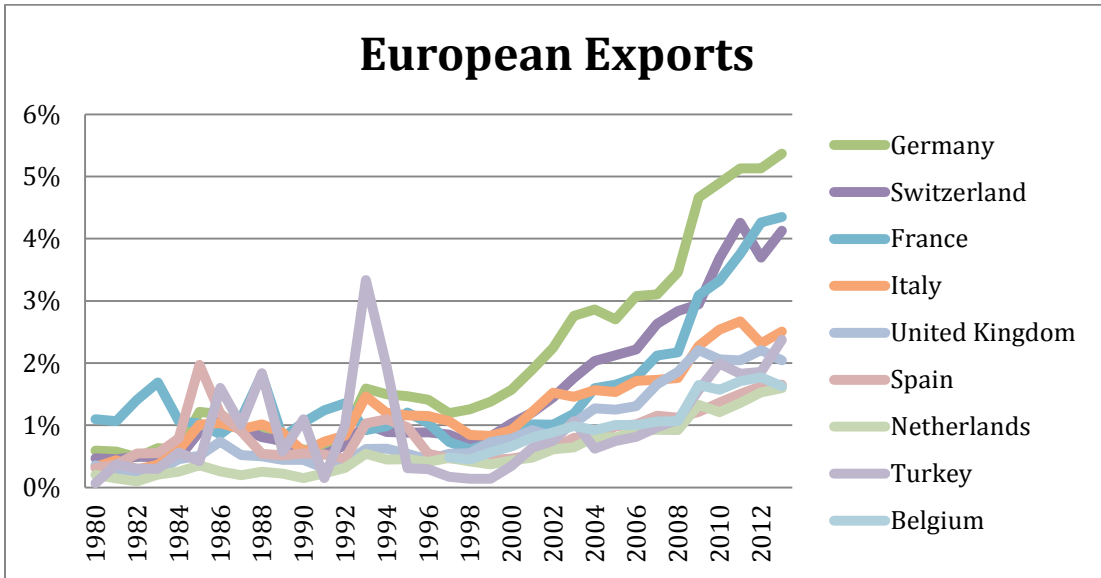
	Year	Americas	Europe& Mideast	Asia (not China)	Latin America	China
3M	2005- 2013	3.8%	3.9%	5.8%	8.5%	
American Express	2005- 2013	5.5%		6.6%		
Boeing *	2005- 2013	-0.1%	21.6%	10.3%		16.3%
Caterpillar	2009- 2013	15.2%	11.2%	14.6%	18.9%	
Cisco	2005- 2014	8.5%	8.6%	12.8%		
Coca-Cola	2005- 2013	15.8%	-12.9%	30.0%	11.5%	
Disney Co.	2005- 2014	4.5%	2.5%	11.7%	14.4%	
Du Pont	2005- 2013	2.7%	1.1%	7.0%	7.3%	12.1%
Goldman Sacks	2005- 2013	4.2%	2.0%	6.3%		
IBM	2005- 2013	-0.1%	0.5%	2.6%		
Intel *	2005- 2013	2.3%		3.7%		8.0%
JPMorgan Chase	2005- 2013	7.0%	9.5%	10.3%		
Merck	2005- 2013	4.6%	12.3%	12.0%		
Nike*	2010- 2014	16.4%	6.0%	-3.3%		10.6%
Proctor & Gamble	2005- 2014	1.9%	1.0%	20.3%		
United Tech.	2005- 2013	7.3%	1.5%	3.7%		
Apple *	2012- 2013	9.1%	4.3%	4.1%		12.8%

Source: Companies Balance Sheet from Bloomberg

\*Asia and Pacific do not include China

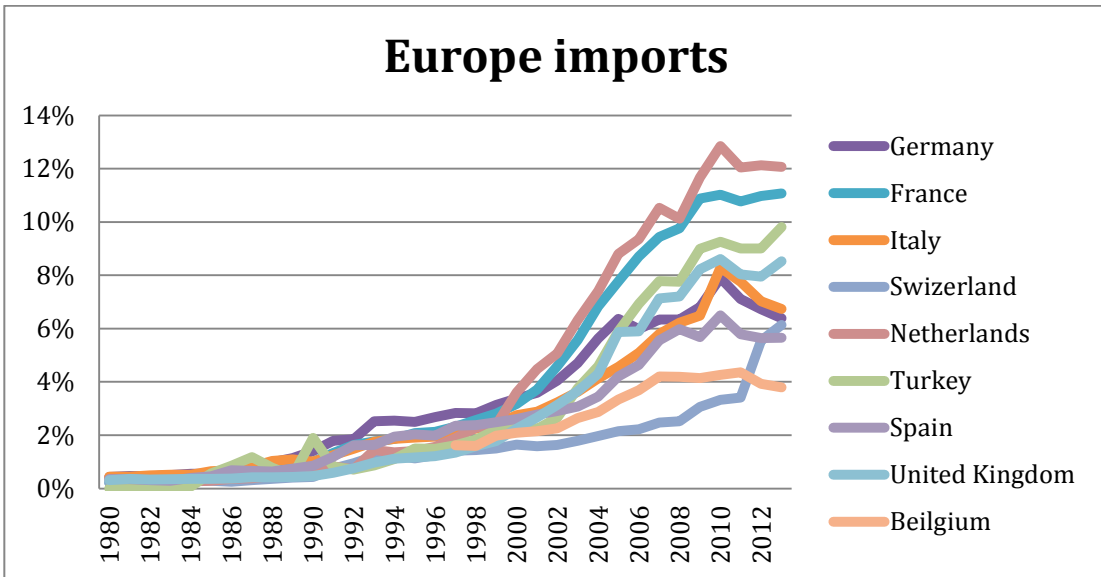


**Graph 5a. Country Export Share to China: EUROPE**



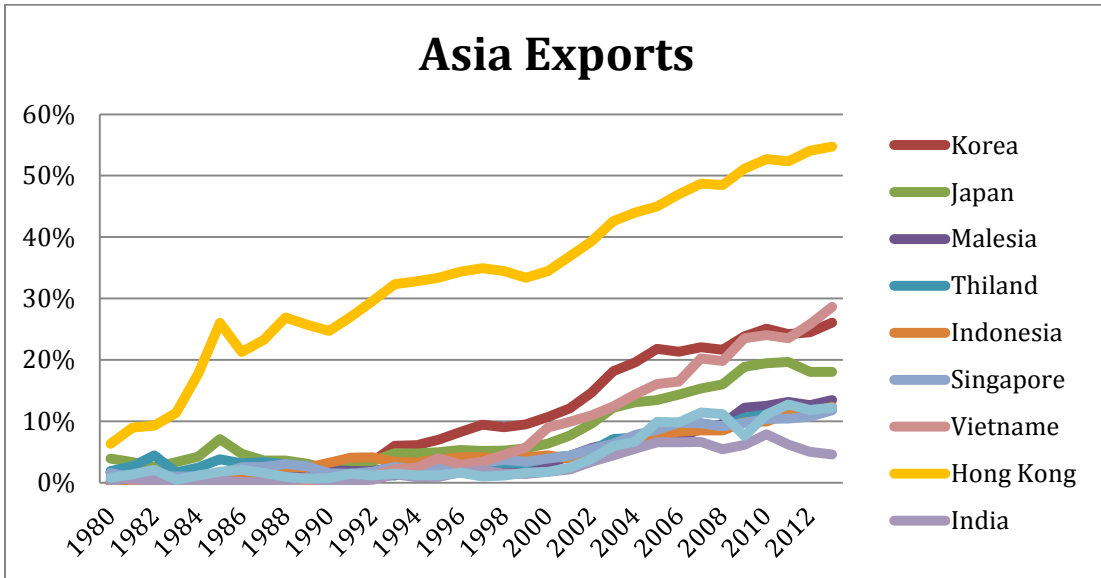
Source: Bloomberg

**Graph 5b. Country Import Share to China: EUROPE**



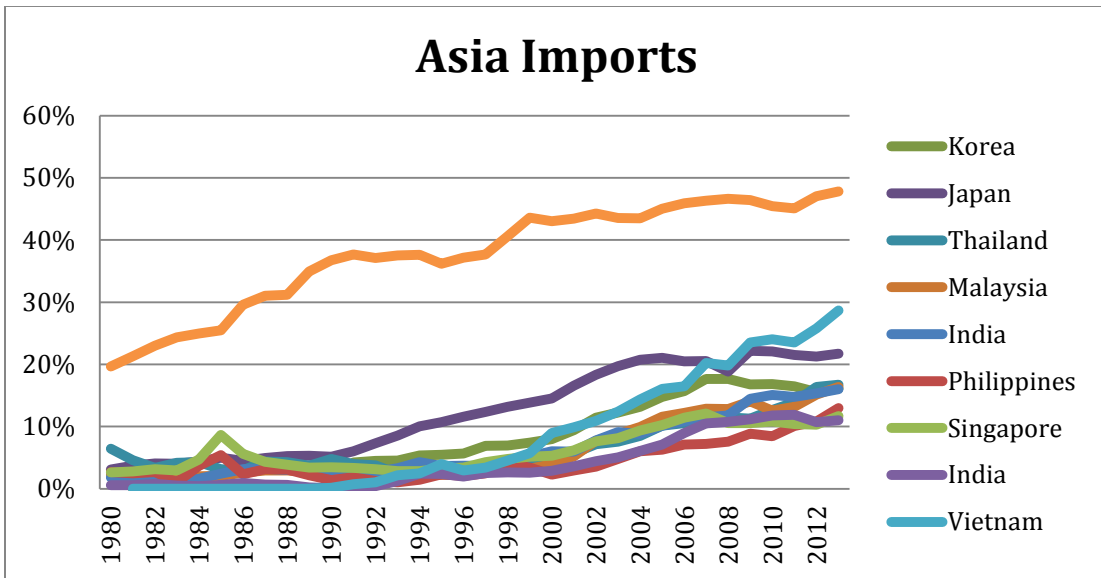
Source: Bloomberg

**Graph 6a. Country Export Share to China: ASIA**



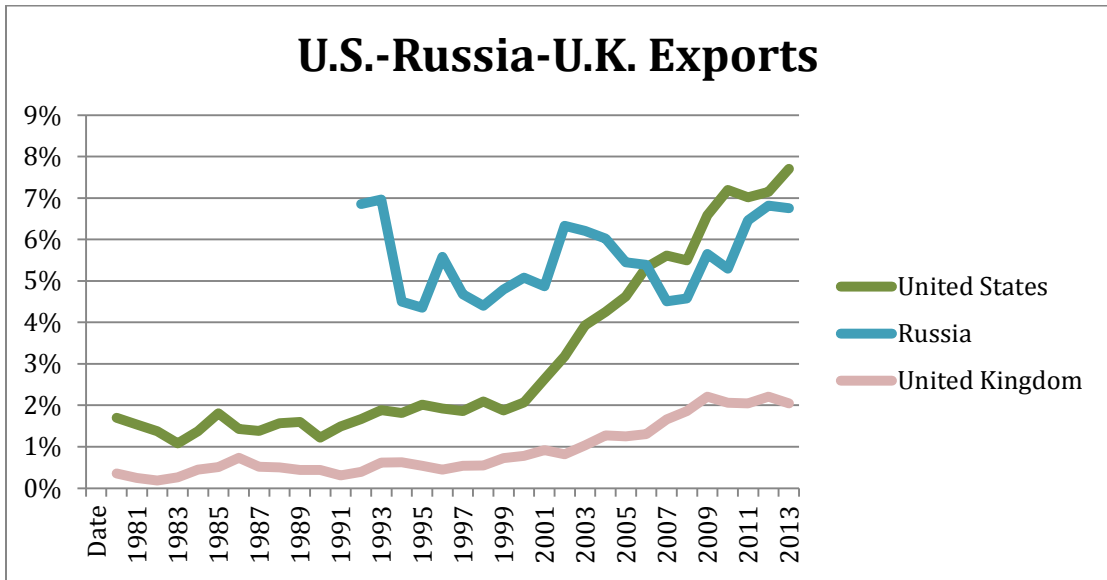
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**Graph 6b. Country Import Share to China: ASIA**



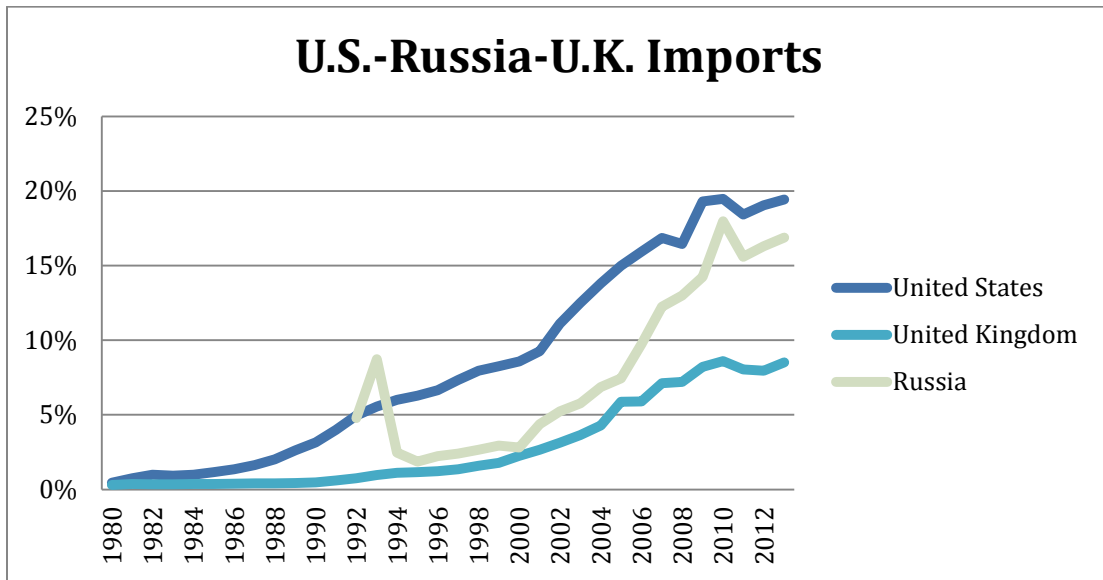
Source: Bloomberg

**Graph7a. Country Export Share to China: U.S., U.K. & RUSSIA**



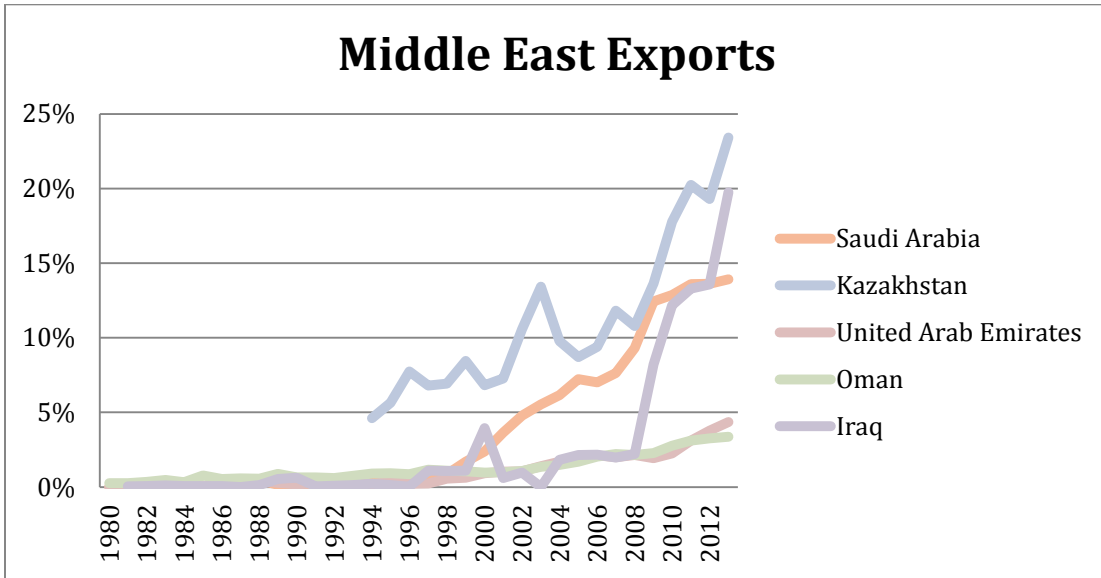
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**Graph7b. Country Import Share to China: U.S., U.K. & RUSSIA**



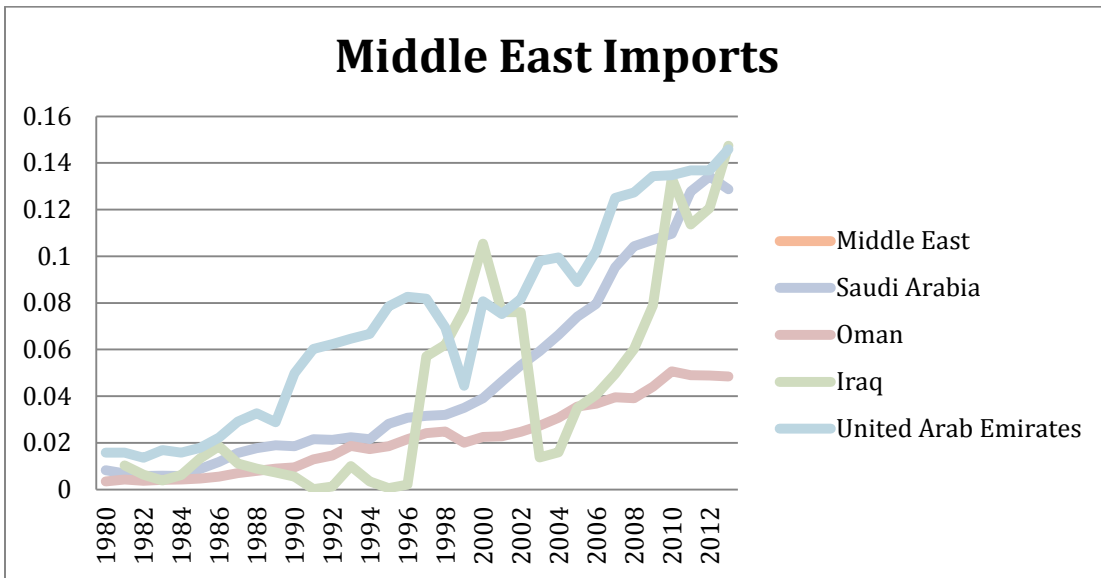
Source: Bloomberg

**Graph8a. Country Export Share to China: Middle East**



Source: Bloomberg

**Graph8a. Country Import Share to China: Middle East**



Source: Bloomberg

## Appendix A

**Table A1. China Share of Total Imports by Country**  
(Imports from each country divided by total Chinese imports)

	1999	2003	2007	2008	2013
<b>Asia</b>	56.0%	55.4%	49.6%	45.5%	37.4%
Korea	10.4%	10.4%	10.9%	9.9%	9.4%
Japan	20.3%	18.0%	14.0%	13.4%	8.3%
Thailand	1.7%	2.1%	2.4%	2.3%	2.0%
Malaysia	2.2%	3.4%	3.0%	2.8%	3.1%
Indonesia	1.9%	1.4%	1.3%	1.3%	1.6%
Singapore	2.5%	2.5%	1.9%	1.8%	1.5%
Philippines	0.5%	1.5%	2.4%	1.7%	0.9%
Vietnam		0.4%	0.3%	0.4%	0.9%
Taiwan	11.8%	11.9%	10.5%	9.1%	8.0%
India	0.5%	1.0%	1.5%	1.8%	0.9%
Hong Kong	4.2%	2.7%	1.3%	1.1%	0.8%
<b>United States</b>	11.8%	8.2%	7.3%	7.3%	7.8%
<b>Europe</b>	10.5%	11.2%	10.3%	10.8%	9.5%
Germany	5.0%	5.9%	4.7%	5.0%	4.8%
France	2.3%	1.5%	1.4%	1.4%	1.2%
Italy	0.5%	1.0%	1.5%	1.8%	0.9%
Spain	0.3%	0.3%	0.5%	0.5%	0.3%
Belgium	0.6%	0.7%	0.5%	0.5%	0.5%
Turkey		0.1%	0.1%	0.2%	0.2%
U.K.	1.8%	0.9%	0.8%	0.9%	1.0%
Netherlands		0.8%	0.7%	0.7%	0.6%
<b>S. America</b>	0.6%	6.9%	10.1%	14.6%	16.2%
Brazil	0.6%	1.4%	1.9%	2.6%	2.8%
Chile		4.7%	6.8%	9.9%	11.5%
Venezuela		0.1%	0.9%	1.5%	1.2%
Mexico		0.8%	0.6%	0.6%	0.7%
<b>Middle East</b>	2.2%	5.0%	6.4%	8.3%	7.2%
Saudi Arabia	0.6%	1.3%	1.8%	2.7%	2.8%
Iran		1.4%	2.0%	2.5%	1.5%
Iraq	1.6%	1.2%	1.1%	1.0%	0.9%
Kazakhstan		0.0%	0.0%	0.0%	0.0%
UAE		0.3%	0.5%	0.6%	0.8%
Oman		0.8%	1.0%	1.4%	1.2%
<b>Africa</b>	0.5%	1.0%	2.0%	2.8%	4.1%
South Africa	0.5%	0.5%	0.7%	0.8%	2.5%
Angola		0.5%	1.3%	2.0%	1.6%
<b>Australia</b>	2.2%	1.8%	2.7%	3.2%	5.1%
<b>Russia</b>	2.6%	2.4%	2.1%	2.1%	2.1%
<b>Canada</b>	1.4%	1.1%	1.2%	1.1%	1.3%

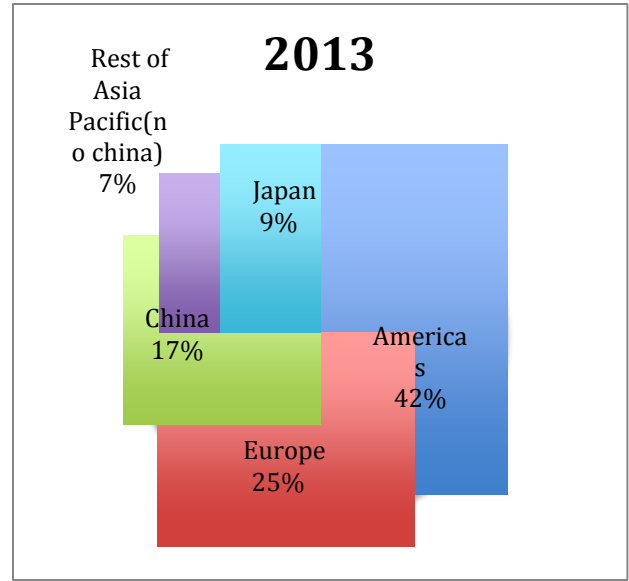
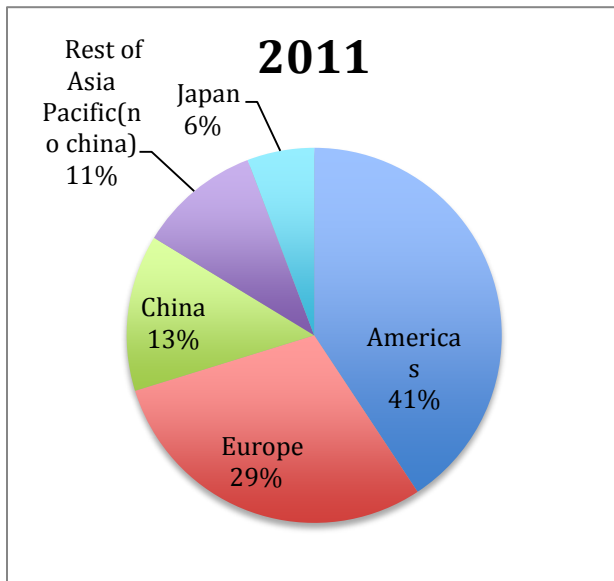
Source: IMF data via Bloomberg

**Table 2. China Share of total exports by country**  
(Chinese exports of each country divided by total Chinese exports, in percentage)

	2003	2007	2008	2013
<b>Asia</b>	49.6%	37.2%	36.2%	40.8%
Korea	5.1%	4.6%	5.2%	4.1%
Japan	16.3%	8.4%	8.1%	6.8%
Malaysia	1.6%	1.5%	1.5%	2.1%
Indonesia	1.2%	1.0%	1.2%	1.7%
Singapore	0.0%	0.1%	0.1%	0.1%
Thailand	1.0%	1.0%	1.1%	1.5%
India	1.0%	2.0%	2.2%	2.2%
Vietnam	0.8%	1.0%	1.1%	2.2%
Hong Kong	19.4%	15.1%	13.4%	17.4%
Taiwan	2.4%	1.9%	1.8%	1.8%
Philippines	0.7%	0.6%	0.6%	0.9%
<b>United States</b>	23.1%	19.1%	17.7%	16.7%
<b>Australia</b>	1.7%	1.5%	1.6%	1.7%
<b>Canada</b>	1.5%	1.6%	1.5%	1.3%
<b>Russia</b>	1.3%	2.3%	2.3%	2.2%
<b>Europe</b>	18.0%	18.8%	19.3%	15.0%
Germany	4.6%	4.0%	4.1%	3.1%
Switzerland	0.2%	0.3%	0.3%	0.2%
France	1.6%	1.7%	1.6%	1.2%
Brazil	0.5%	0.9%	1.3%	1.6%
Italy	1.9%	1.7%	1.9%	1.2%
Spain	1.0%	1.4%	1.5%	0.9%
Belgium	1.1%	1.0%	1.0%	0.7%
Netherlands	1.1%	1.0%	1.0%	0.7%
U.K.	2.6%	2.6%	2.5%	2.3%
Turkey	0.5%	0.9%	0.7%	0.8%
<b>Middle East</b>	2.5%	3.0%	3.8%	3.6%
Saudi Arabia	0.5%	0.6%	0.8%	0.9%
Iran	0.7%	0.6%	0.6%	0.6%
Kazakhstan	0.0%	0.3%	0.6%	0.2%
Iraq	0.0%	0.1%	0.1%	0.3%
UAE	1.2%	1.4%	1.7%	1.5%
Oman	0.0%	0.0%	0.1%	0.1%
<b>Africa</b>	0.5%	0.7%	0.8%	0.9%
South Africa	0.5%	0.6%	0.6%	0.8%
Angola	0.0%	0.1%	0.2%	0.2%
<b>South America</b>	1.3%	1.6%	1.6%	2.2%
Chile	0.4%	0.4%	0.4%	0.6%
Venezuela	0.0%	0.2%	0.2%	0.3%
Mexico	0.9%	1.0%	1.0%	1.3%

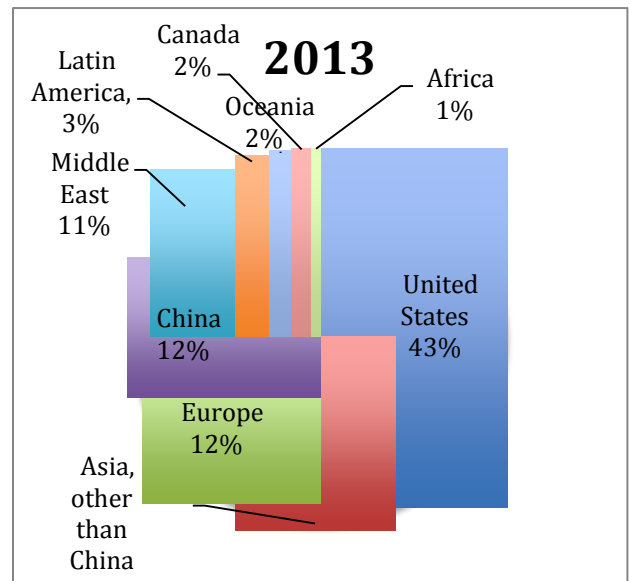
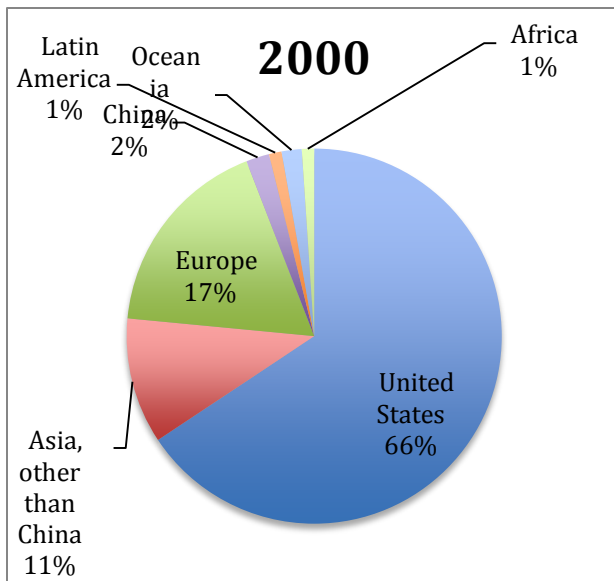
Source: IMF data via Bloomberg

**Graph A1. Apple's Revenue Shares by Geographic Areas: Q1-2011 vs Q1-2013**  
(as % of total revenue)



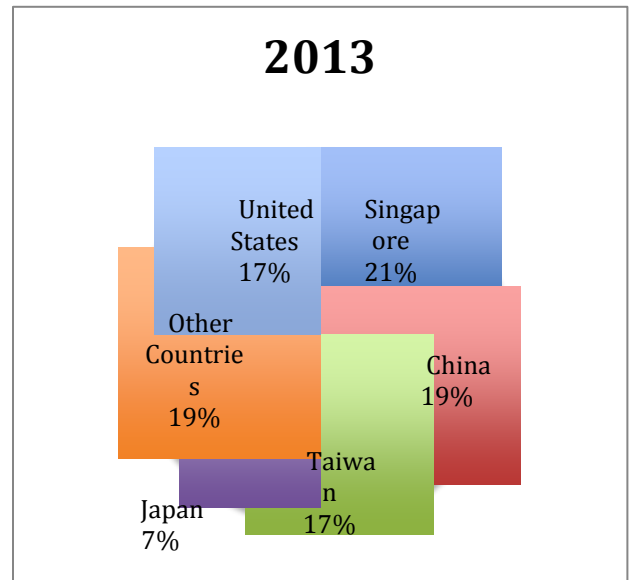
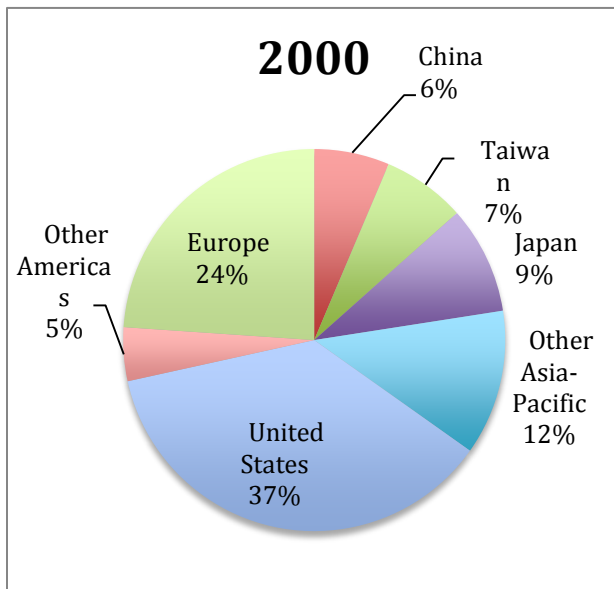
Source: Bloomberg

**Graph A2. Boeing's Revenue Shares by Geographic Areas: 2000 vs 2013**  
(as % of total revenue)



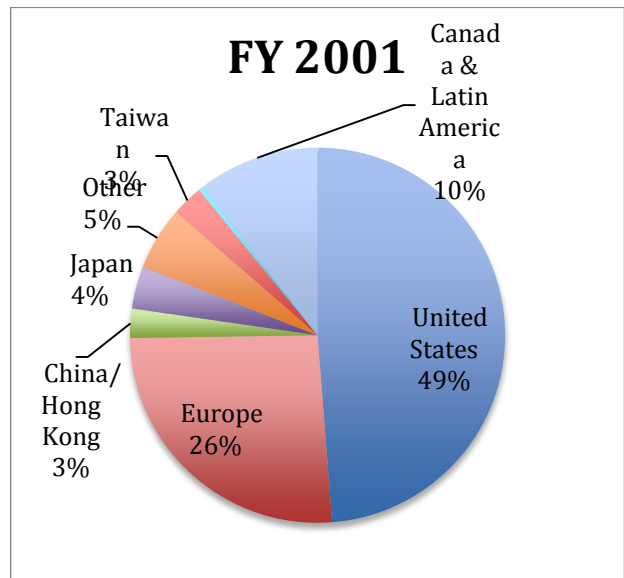
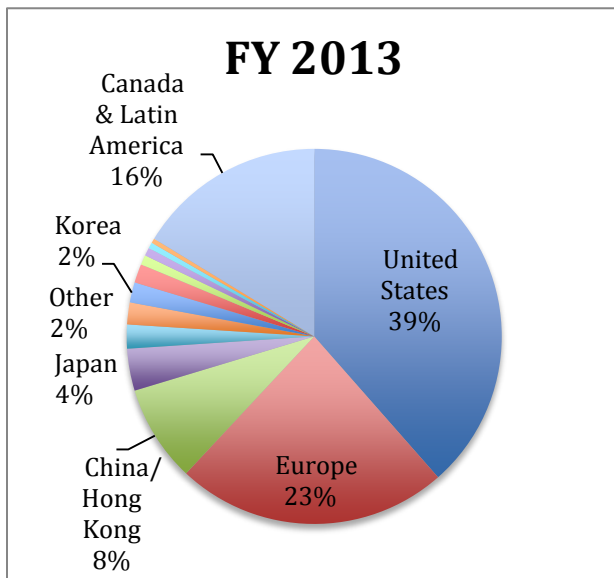
Source: Bloomberg

**Graph A3. Intel's revenue shares divided by geographic areas in 2000 and 2013  
(In percentage of total revenue)**



Source: Bloomberg

**Graph A4. Du Pont's revenue shares divided by geographic areas in Q1-2011 and Q1-2014  
(In percentage of total revenue)**



Source: Bloomberg



## APPENDIX B

**Table B1a. China imports from Korea in 1999 and 2013**  
(Top ten commodities and their percentage of total imports of China from Korea)

1999	2013
Electrical equipment (19.7%)	Electrical equipment (42.0%)
Plastics (13.0%)	Medical, technical equipment (12.9%)
Iron and steel (8.4%)	Machines, engines, pumps (8.6%)
Fuels (8.1%)	Organic chemicals (8.4%)
Organic chemicals (7.3%)	Plastics (6.9%)
Machines, engines, pumps (6.6%)	Fuels (5.6%)
Manmade filaments (4.9%)	Vehicles other than railway (2.8%)
Paper & pulp (4.4%)	Iron and steel (2.2%)
Raw hides and leather (4.1%)	Copper (1.3%)
Manmade staple fibers (3.6%)	Gems and stones (1.1%)

Source: United Nations Database

**Table B1b. China exports to Korea in 1999 and 2013**  
(Top ten commodities and their percentage of total exports of China to Korea)

1999	2013
Electrical equipment (17.3%)	Electrical machinery and (37.5%)
Fuels (8.1%)	Machines, engines, pumps (9.8%)
Iron and steel (5.4%)	Iron and steel (7.2%)
Apparel (not knit or crochet) (5.2%)	Medical, technical equipment (4.6%)
Manmade filaments (4.8%)	Articles of iron or steel (3.1%)
Fish (4.6%)	Organic chemicals (2.8%)
Machines, engines, pumps (4.5%)	Apparel (not knit or crochet) (2.2%)
Cotton (4.1%)	Fuels (2.2%)
Railway equipment (3.4%)	Apparel (knit or crochet) (1.9%)
Apparel (knit or crochet) (3.1%)	Inorganic chemicals (1.8%)

Source: United Nations Database

**Table B2a. China imports from Japan in 1999 and 2013**  
(Top ten commodities and their percentage of total imports of China from Japan)

1999	2013
Electrical equipment (28.6%)	Electrical equipment (25.0%)
Machines, engines, pumps (20.3%)	Machines, engines, pumps (18.1%)
Plastics (7.0%)	Medical, technical equipment (10.1%)
Iron and steel (6.7%)	Vehicles (9.0%)
Optical (4.9%)	Plastics (6.3%)
Organic chemicals (4.4%)	Organic chemicals (6.2%)
Vehicles (2.5%)	Iron and steel (5.0%)
Manmade filaments (2.2%)	Copper (2.4%)
Copper (2.0%)	Chemical products (1.8%)
Manmade staple fibers (1.9%)	Articles of iron or steel (1.5%)

Source: United Nations Database

**Table B2b. China exports to Japan in 1999 and 2013**  
(Top ten commodities and their percentage of total exports of China to Japan)

1999	2013
Electrical equipment (16.3%)	Electrical equipment (23.3%)
Machines, engines, pumps (15.5%)	Machines, engines, pumps (16.9%)
Plastics (10.2%)	Medical, technical equipment (7.5%)
Iron and steel (5.1%)	Vehicles (6.7%)
Optical, photo, technical, medical, etc. apparatus (3.5%)	Plastics (3.3%)
Organic chemicals (3.3%)	Organic chemicals (3.3%)
Vehicles other than railway, tramway (2.9%)	Iron and steel (2.8%)
Manmade filaments (2.7%)	Copper and articles thereof (2.6%)
Copper (2.6%)	Miscellaneous chemical products (2.1%)
Manmade staple fibers (2.6%)	Articles of iron or steel (2.1%)

Source: United Nations Database

**Table B3a. China imports from Germany in 1999 and 2013**  
**(Top ten commodities and their percentage of total imports of China from Germany)**

1999	2013
Machines, engines, pumps (42.6%)	Machines, engines, pumps (26.1%)
Electrical equipment (18.2%)	Vehicles (24.0%)
Vehicles (7.2%)	Electrical equipment (13.2%)
Optical (5.0%)	Medical, technical equipment (8.5%)
Wood (3.1%)	Plastics (3.3%)
Organic chemicals (2.8%)	Pharmaceutical products (3.2%)
Plastics (2.5%)	Aircraft equipment (3.1%)
Miscellaneous chemical products (1.7%)	Copper and articles thereof (2.1%)
Railway equipment (1.4%)	Article of iron or steel (2.1%)
Iron and steel (1.3%)	Organic chemicals (1.5%)

Source: United Nations Database

**Table B3b. China exports to Germany in 1999 and 2013**  
**(Top ten commodities and their percentage of total exports of China to Germany)**

1999	2013
Electrical equipment (20.2%)	Machines, engines, pumps (30.2%)
Machines, engines, pumps (10.3%)	Electrical equipment (23.0%)
Apparel (not knit or crochet) (5.9%)	Apparel (not knit or crochet) (19.4%)
Games, sports equipment (5.0%)	Furniture, prefabricated buildings (5.8%)
Optical (4.9%)	Apparel (knit or crochet) (5.7%)
Leather (4.6%)	Medical, technical equipment (5.7%)
Organic chemicals (4.2%)	Footwear (3.6%)
Ships and boats (4.0%)	Organic chemicals (3.2%)
Articles of iron or steel (4.0%)	Vehicles (2.6%)
Furniture, prefabricated buildings (3.4%)	Games and sports equipment (2.5%)
Apparel (knit or crochet) (2.9%)	Plastics (2.3%)

Source: United Nations Database

**Table B4a. China imports from Australia in 1999 and 2013**  
**(Top ten commodities and their percentage of total imports of China from Australia)**

1999	2013
Ores, slag and ash (21.5%)	Ores, slag and ash (61.6%)
Others <sup>1</sup> (14.0%)	Fuels s (13.7)
Wool (11.7%)	Others (7.0%)
Precious metal (8.5%)	Copper (2.9%)
Fuels (7.0%)	Wool (1.9%)
Cereals (5.9%)	Cotton (1.8%)
Aluminum and articles thereof (5.2%)	Precious metal (1.5%)
Seeds (3.7%)	Meat (1.1%)
Electrical equipment (2.5%)	Cereals (1.1%)
Machines, engines, pumps (2.4%)	Raw hides and skins (0.9%)

Source: United Nations Database

**Table B4b. China exports to Australia in 1999 and 2013**  
**(Top ten commodities and their percentage of total exports of China to Australia)**

1999	2013
Apparel (knit or crochet) (14.3%)	Machines, engines, pumps(19.4%)
Apparel (not knit or crochet) (12.35%)	Electrical equipment (14.7%)
Electrical equipment (11.00%)	Furniture; prefabricated buildings (7.7%)
Machines, engines, pumps (8.5%)	Articles of iron or steel (6.0%)
Textile articles (4.2%)	Apparel (knit or crochet) (5.45%)
Footwear (4.1%)	Apparel (not knit or crochet) (4.3%)
Articles of iron or steel (3.3%)	Plastics (3.9%)
Plastics (3.1%)	Railway equipment (2.7%)
Furniture, prefabricated buildings (2.9%)	Vehicles (2.6%)
Games and sports equipment (2.5%)	Games and sports equipment (2.3%)

Source: United Nations Database

<sup>1</sup> Commodities not elsewhere specified

**Table B5a. China imports from Brazil in 1999 and 2013**  
**(Top ten commodities and their percentage of total imports of China from Brazil)**

1999	2013
Ores, slag and ash (33.3%)	Ores, slag and ash (40.9%)
Seeds (17.8%)	Seeds; (35.3%)
Wood (7.4%)	Fuels (7.0%)
Meat (7.1%)	Wood (3.3%)
Animal, vegetable fats and oils (6.3%)	Sugars and sugar confectionery (2.6%)
Raw hides and skins (4.2%)	Raw hides and skins (1.3%)
Machines, engines, pumps (3.6%)	Iron and steel (1.1%)
Iron and steel (3.5%)	Animal, vegetable fats and oils (1.1%)
Cinematographic products (2.9%)	Meat and edible meat official (0.9%)
Plastics (1.9%)	Copper (0.8%)

Source: United Nations Database

**Table B5b. China exports from Brazil in 1999 and 2013**  
**(Top ten commodities and their percentage of total exports of China to Brazil)**

1999	2013
Electrical equipment (19.2%)	Electrical equipment (23.3%)
Machines, engines, pumps (12.5%)	Machines, engines, pumps (18.2%)
Aircraft (7.6%)	Medical, technical equipment (5.6%)
Organic chemicals (6.8%)	Organic chemicals (5.3%)
Apparel (not knit or crochet) (6.2%)	Vehicles (3.2%)
Games, sports equipment (3.4%)	Iron and steel (3.0%)
Fuels (3.4%)	Articles of iron or steel (2.9%)
Optical (3.4%)	Plastics (2.9%)
Apparel (knit or crochet) (2.8%)	Furniture, prefabricated buildings (2.5%)
Furniture, prefabricated buildings (2.5%)	Apparel (not knit or crochet) (2.4%)

Source: United Nations Database

**Table B6a. China imports from Saudi Arabia in 1999 and 2013**  
**(Top ten commodities and their percentage of total imports of China from Saudi Arabia)**

1999	2013
Fuels (67.8%)	Fuels (81.0%)
Plastics (19.1%)	Organic chemicals (10.8%)
Organic chemicals (12.2%)	Plastics (7.0%)
Iron and steel (0.2%)	Plastering materials, cement (0.5%)
Tanning (0.1%)	Ores, slag and ash (0.2%)
Articles of iron or steel	Copper and articles thereof (0.2%)
Fish (0.1%)	Aluminum (0.1%)
Aluminum (0.1%)	Fertilizers (0.1%)
Electrical equipment (0.1%)	Inorganic chemicals (0.1%)
Furniture (0.1%)	Wadding, ropes and cables (0.1%)

Source: United Nations Database

**Table B6b. China exports to Saudi Arabia in 1999 and 2013**  
**(Top ten commodities and their percentage of total exports of China to Saudi Arabia)**

1999	2013
Apparel (knit or crochet) (17.8%)	Machines, engines, pumps (13.5%)
Apparel (not knit or crochet) (16.2%)	Electrical equipment (12.2%)
Electrical equipment (7.6%)	Furniture; prefabricated buildings (9.2%)
Footwear (6.5%)	Apparel (knit or crochet) (7.4%)
Leather (6.0%)	Articles of iron or steel (5.6%)
Machines, engines, pumps(3.8%)	Vehicles (4.2%)
Rubber (3.5%)	Ceramic products (4.0%)
Articles of iron or steel (3.3%)	Plastics (3.9%)
Games and sport equipment (2.3%)	Apparel (not knit or crochet) (3.5%)
Ceramic products (2.2%)	Iron and steel (3.3%)

Source: United Nations Database

**Table B7a. China imports from United States in 1999 and 2013**  
**(Top ten commodities and their percentage of total imports of China from United States)**

1999	2013
Machines, engines, pumps (22.9%)	Electrical equipment (14.9%)
Electrical equipment (18.3%)	Machines, engines, pumps (10.1%)
Aircraft, spacecraft (7.5%)	Seeds (8.9%)
Medical equipment (6.2%)	Aircraft, spacecraft (8.9%)
Fertilizers (5.6%)	Fuels (7.2%)
Plastics and articles (4.9%)	Vehicles (7.0%)
Paper & pulp (3.2%)	Others (4.3%)
Organic chemicals (3.1%)	Plastics and articles (4.1%)
Miscellaneous chemical products (3.0%)	Wood (2.8%)
Seeds (2.9%)	Organic chemicals (2.6%)

Source: United Nations Database

**Table B7b. China exports to United States in 1999 and 2013**  
**(Top ten commodities and their percentage of total exports of China to United States)**

1999	2013
Electrical equipment (17.1%)	Machines, engines, pumps (23.5%)
Machines, engines, pumps (12.4%)	Electrical equipment (22.5%)
Footwear, gaiters and the like (10.4%)	Furniture, prefabricated buildings (6.3%)
Games, sports equipment (9.3%)	Apparel (knit or crochet) (4.0%)
Furniture, prefabricated buildings (6.1%)	Apparel (not knit or crochet) (3.6%)
Apparel (not knit or crochet) (4.4%)	Footwear (3.6%)
Plastics and articles (4.1%)	Games, sports equipment (3.5%)
Leather (3.2%)	Plastics (3.3%)
Optical (3.1%)	Vehicles (2.8%)
Articles of iron or steel (2.8%)	Medical equipment (2.3%)

Source: United Nations Database