

The Recent Evolution of the Chinese Consumption Import Basket

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## 1.Introduction

The rapid economic development in China has accelerated the improvement of people's living standards. Great changes can be seen across the whole market through both an influx of Chinese products in the international market, as well as a dramatic increase in demand for foreign goods by Chinese consumers. With the steady increase of urban and rural residents' consumption ability, the Chinese goods market continues to maintain its steady and rapid growth.

In particular, after China's accession to the World Trade Organization (WTO) in 2001, China has gradually implemented freer trade, and its foreign trade policy is relatively looser than before. China has reduced the level of tariffs, abolished a large number of import controls, and also allowed the allocation of quotas to become more transparent to the public. At the same time, the Chinese consumer goods market structure has continued to evolve, resulting in the creation of many new consumer patterns. People have begun to focus on the quality of consumption, and shifted their interests to more personalized products and services. Additionally, because of the continuous development of China's international business models, online and offline markets have become integrated and further promoted the increase of international trade in consumption goods.

The purpose of this paper is to examine the evolution of Chinese imports of consumption goods in recent years. I first examine the total volume of consumption goods imports and especially the main categories of imported consumption goods. Moreover, the development of some emerging consumption imports such as vehicles, wine, and luxury goods are also traced over the last 20 years. On the other hand, this paper also explores whether China's consumption goods imports have become more sophisticated after China joined WTO. Specifically, I will compare China's consumption goods imports to those of the Organisation for Economic Co-operation and Development (OECD) and non-OECD regions. In comparison to other countries and regions, I will examine China's import share of consumption goods and its consumption goods import similarity index to the aggregate OECD. Finally, I make the latter comparison in a regression framework in which I also control for income effects and the overall size of the Chinese economy.

I first find that the import share of vehicles increased steeply after 2001 so that China's import share of consumption goods grew after accession to the WTO. Vehicles, meat, pharmaceuticals, and electrical equipment were the top categories of consumption goods as of 2015. In addition, as China has developed rapidly, many western consumption goods have become more popular such as wine, cheese, avocados, coffee and luxury bags. Imports of all of these consistently grew from 1992 to 2015, and their growth rate has been higher than the growth rate of total consumption goods imports. Especially avocados' import increased extremely quickly from 2010 to 2015, at a growth rate of over 450000%.

On the other hand, compared to both OECD and non-OECD regions, China's import share of consumption goods is quite small. Most developed countries' import share of consumption goods such as USA are 122% to 233% higher than China's. Calculating the consumption goods import similarity index (CISI) with the aggregate OECD, China's index is below 0.5 over time, and its ranking is near the bottom among my sample of 19 non-OECD regions. So, China's import patterns of consumption goods are not particularly similar to the OECD. Finally, I do some regressions with CISI as the dependent variable. Without controlling for income effects, China's CISI with OECD is significantly lower than non-OECD regions'. By only controlling the GDP per capita, China is 14% lower than the average non-OECD region in my sample in CISI with OECD in the year 2011 to 2015. However, controlling for aggregate GDP, China's CISI with OECD is not special, and it is instead similar to the non-OECD regions'.

My paper relates to various other existing studies. Firstly, Schott's (2008) paper is about Chinese exports and is the flip side of my paper. He explored the characteristics of the Chinese export market, and he tried to investigate changes in its comparative advantage from 1972 to 2005. He used some methods that I also adapt to my paper. He defined a sample of non-OECD regions and calculated their export similarity with the OECD. He concluded that China's export bundles have become more and more similar to the OECD countries, and that the ranking in China's export similarity with the OECD among the non-OECD regions rose dramatically. He also did the same regression as my paper that controls for GDP per capita and GDP. He found that the difference between China's export similarity with the OECD and that of other non-OECD countries significantly increased over time even controlling for income and size effects. With the same methods on export side, its results are entirely different to the consumption goods import side as shown in my paper.

Secondly, Anderson and Wittwer (2015) reviewed the development of global wine markets on the basis of various economic growth, exchange rate, and policy assumptions, with special attention to China. This paper relates to one of the consumption goods highlighted in my paper, that is wine imports. The authors found that grape wine constitutes less than 4% of Chinese alcohol consumption and China's adult population is huge, so that China's wine imports have a lot of potential to grow. Since the signing of the bilateral trade agreement between China and Australia, the volume of red wine imports from Australia have increased significantly, especially recently. Although Chinese wine grape production is also growing at an accelerated pace, the growth of China's grape wine imports has not fallen recently. Thus, this paper provides evidence on why China wine imports have consistently increased.

Next, other papers have studied the relationship between trade patterns and income more generally. Markusen (2013) examined how gains from trade can influence the income distribution, and Fielser (2011) modelled trade flows across the world. Markusen (2013) found that if goods are more likely to be skill and capital intensive, the income elasticity of demand for these goods will be high, keeping aggregate income

constant. Also, in trade between a high and a low-income country, greater inequality in the high-income country will decrease trade, and higher inequality in the low-income country will increase trade. Fielor (2011) found that the trade share grows with income per capita and does not respond to total income after considering the importance of non-homotheticity. So, trade as a percentage of income among the richest countries is higher than among the poorest countries. Both of the papers study non-homothetic preferences and show that income effects will influence trade patterns including imports. Thus, those papers suggest that China's income per capita changes over the years will affect the composition of its consumption goods imports.

Finally, there is a classic book about trade patterns and the gains from trade, which focuses on income effects. Linder (1961) tries to explore the relationship between trade and income distribution. In his models, he shows that countries with similar demand structures are more likely to establish trade with each other. If income per capita is associated with preferences, he found trade will increase the income per capita gap between underdeveloped countries and growing countries. Also, when a country became a higher income per capita country, the overlapping demand for traded goods with the lower income per capita country will disappear. Therefore, income per capita will affect the international trade patterns, which is again related to my paper. I can use this evidence to predict, that income effects will influence the imports or exports of China.

The remaining sections of this paper are divided as follows: Section 2 describes the data I use and how consumption goods are distinguished. Section 3 displays some basic but important patterns in the data. Section 4 discusses the empirical results comparing China with other countries and regions after it joined the WTO. Finally, section 5 is the conclusion.

## **2. Data Introduction**

The data coming from United Nations International Trade Statistics Database (UN COMTRADE), is the main dataset used for the purposes of this paper. UN COMTRADE is the largest depository of international trade data of which more than 3 billion data records since the year 1962 are available to the public. The database comprises annual international trade statistics from over 170 participating countries who provide their statistics to the United Nations Statistics Division (UNSD) and list particular commodities or services categories traded with partner countries. The commodities are classified using one of three different systems: Standard International Trade Classification (SITC), Harmonized System (HS), and Broad Economic Categories (BEC). SITC is an alternative to HS but is no longer widely used. Therefore, in this paper, I will only use HS and BEC.

HS is an internationally standardized system of numbers to identify trade products. It came into effect in 1988, and there are over 200 countries or territories applying the Harmonized System worldwide.

HS classification is determined by a variety of factors including a product's composition, its form and its function. It is arranged by the degree of manufacture or its technological complexity. For example, natural commodities such as animals are always in the early stage, while semi-manufactured goods are described in later sections. The HS code has 6 digits, where the first 2 digits represents the HS chapter, the second 2 digits are regarded as the HS heading, and the third 2 digits designate the HS subheading. HS codes are widely used by customs authorities, statistical agencies, or other government institutions to monitor the import or export of products.

BEC is a three-digit classification, which groups goods based on their main end use. The top level categories include<sup>1</sup>: 1. Food and beverage; 2. Industrial supplies not elsewhere specified; 3. Fuels and lubricants; 4. Capital goods (except transport equipment), and parts and accessories thereof; 5. Transport equipment and parts and accessories thereof; 6. Consumer goods not elsewhere specified; and 7. Goods not elsewhere specified. Importantly, it was also designed to serve as the means of converting commodities into capital goods, intermediate goods, and consumption goods. Specifically, the subcategories of BEC can be aggregated to approximate the three basic classes, thus allowing external trade statistics to work with other sets of economic statistics. Some goods may be used as either capital or consumption goods, most importantly passenger vehicles, and I use both of these definitions in the analysis below.

In this paper, HS codes are used to analyze Chinese consumption goods imports from 1992 to 2015 and other countries', or regions', consumption goods imports from 2002 to 2015. All countries' imports are aggregate i.e. from all over the world. By concurring imports into the BEC classification<sup>2</sup>, the category of consumption goods can be accurately determined. The categories of consumption goods in BEC code<sup>3</sup> are 61. Durable consumer goods, 62. Semi-durable consumer goods, 63. Non-durable consumer goods, 112. Primary food and beverages for households, 122. Processed food and beverages for households, and 522. Non-industrial transport equipment. In addition, 51. Passenger motor cars can be either capital or consumption goods. Since Chinese consumption vehicles' market is extremely large, passenger motor cars will usually be treated as consumption goods in this paper as well. Over this span of years, the consumption of goods in Chinese import markets and its relationship to the situations of other countries will be highlighted in the next two sections. I also use GDP data downloaded from the World Bank valued in current US dollars.

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<sup>1</sup> From 'Classification by Broad Economic Categories' released by United Nations.

<sup>2</sup> Each HS code can be concurring to a BEC code. Conversion tables are released by UN TRADE STATISTICS.

<sup>3</sup> From 'Classification by Broad Economic Categories' released by United Nations.

### 3. Data Analysis

With China rapidly developing, the import market has expanded over time, and its consumption goods imports have become more and more varied. So, the goal for this section is to explore the Chinese import market and specifically its consumption goods imports from 1992 to 2015. I will analyze the Chinese imports and the consumption goods data that I download and calculate from UN COMTRADE. Especially, I will track the top four subcategories of consumption goods in 2015 and some specific consumption goods of interest. Table 1 presents the Chinese import market and its consumption goods imports from 1992 to 2015. I will introduce each column with a figure in the next subsections.

Table 1. Summary Statistics: Chinese imports and consumption goods imports in USD

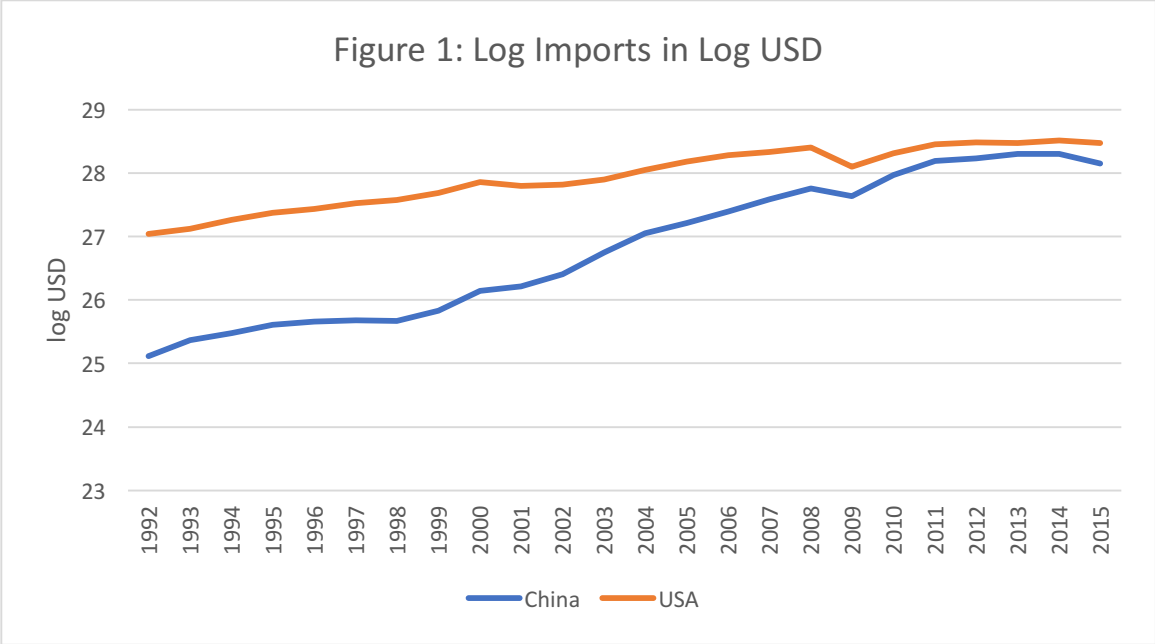
Year	Log import's in USD	Import per GDP in USD	Log total consumption goods imports in USD (without vehicle's)	Log total consumption goods imports in USD (with vehicle's)	Share of consumption goods imports (without vehicle's)	Share of consumption goods imports (with vehicle's)
1992	25.113	0.189	22.188	22.467	0.054	0.071
1993	25.367	0.234	22.373	22.716	0.050	0.071
1994	25.474	0.205	22.442	22.699	0.048	0.062
1995	25.607	0.180	22.612	22.744	0.050	0.057
1996	25.657	0.161	23.189	23.223	0.085	0.088
1997	25.682	0.148	23.019	23.051	0.070	0.072
1998	25.667	0.136	22.993	23.036	0.069	0.072
1999	25.833	0.151	23.164	23.203	0.069	0.072
2000	26.140	0.186	23.352	23.406	0.062	0.065
2001	26.219	0.182	23.415	23.497	0.061	0.066
2002	26.411	0.201	23.097	23.314	0.036	0.045
2003	26.746	0.249	23.376	23.648	0.034	0.045
2004	27.053	0.287	23.616	23.843	0.032	0.040
2005	27.215	0.289	23.801	23.997	0.033	0.040
2006	27.397	0.288	23.984	24.220	0.033	0.042
2007	27.586	0.269	24.239	24.495	0.035	0.045
2008	27.756	0.246	24.382	24.691	0.034	0.047
2009	27.637	0.197	24.367	24.686	0.038	0.052

2010	27.965	0.229	24.633	25.090	0.036	0.056
2011	28.187	0.230	24.931	25.407	0.039	0.062
2012	28.229	0.212	25.094	25.548	0.044	0.069
2013	28.299	0.203	25.225	25.648	0.046	0.071
2014	28.303	0.187	25.297	25.777	0.049	0.080
2015	28.151	0.152	25.361	25.717	0.061	0.088

*Source:* Author's calculations based on UN COMTRADE data. GDP data from the World Bank.

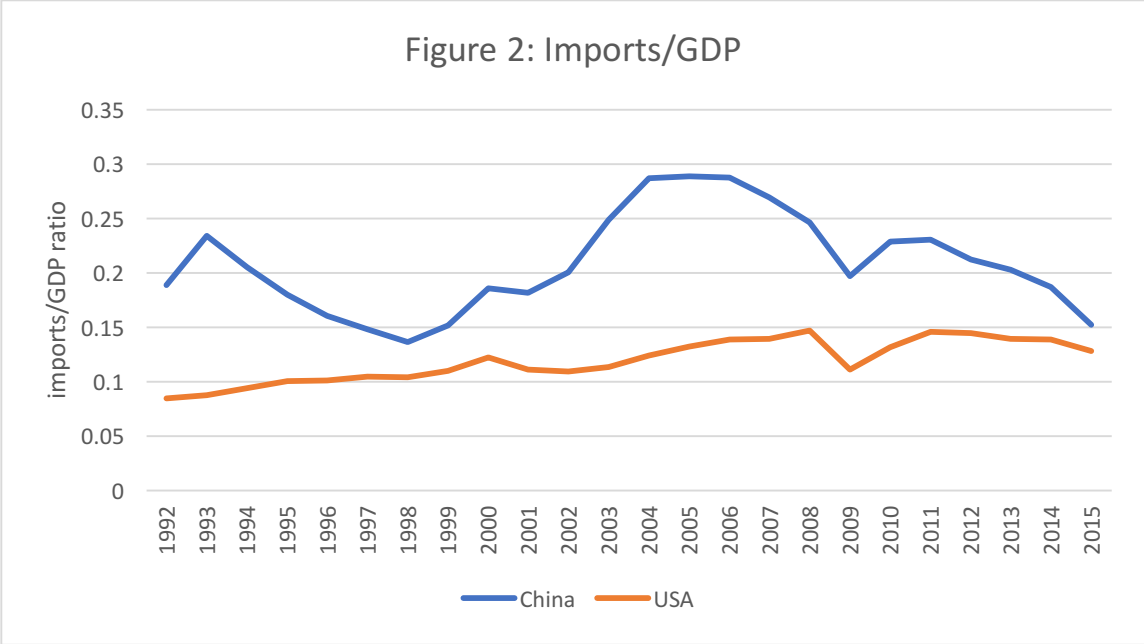
### **a. Total Log Imports and Import/GDP in China Export Market**

Imports in China have accelerated significantly over the last twenty years. The data shows that the total import value was \$80.5 billion current US dollars in 1992 and increased to \$1.68 trillion current US dollars in 2015, a rise of more than twenty times during this particular period. The first column of table 1 and figure 1 display these changes in the import market in China. The figure clearly shows that value of import growth has three major trends from the overall changes. Before 1998, its growth was steady at a rate of 74% from 1992 to 1998. However, from 1998 to 2008, the growth rate in value of imports increased much faster than before, by 708%. After 2008, imports kept growing slowly, at a rate of 67%. For the annual growth rate, the growth rate was 8.2% in 2001. After China joined the WTO, the growth rate in 2002 was 21.2% and in 2003, this rate reached its peak at 39.8%. This trend seemed to have slowed down since 2012, and import value actually decreased by 14.1% to \$1.68 trillion current US dollars from 2014 to 2015. In addition, compared to USA's imports, Chinese import value in US dollars was lower than USA's for all years. But, the growth rate of Chinese imports increased more quickly. There was a large gap between China and USA in 1992, and this gap became increasingly narrow.



Source: Author’s calculations based on UN COMTRADE data.

Imports of goods per dollar of GDP experienced considerable fluctuations from 1992 to 2015. The second column of table 1 and figure 2 illustrate that the import-to-GDP ratio rose from 0.189 in 1992 to 0.205 in 1994. However, the import-to-GDP ratio decreased from 0.180 in 1995 to 0.136 in 1998. After a slight adjustment in the next few years and accession to WTO in 2001, the share increased sharply to 0.288 in 2006. Importantly, the figure shows clearly that the economic crisis in 2008 had a significant influence on the imports of goods. The crisis coincided with a decrease in the import-to-GDP ratio, reaching approximately 0.197 in 2009. The trend continued even after the beginning of economic recovery, and the import-to-GDP ratio continued to suffer after 2011. It kept decreasing to 0.152 in 2015 because the GDP in China rose quickly, while imports grew more slowly from 2012 to 2015. Compared to the USA, China’s imports of goods per dollar of GDP was higher than USA’s for all years. The fluctuations of USA’s import-to-GDP ratio were also smaller than China’s.



Source: Author’s calculations based on UN COMTRADE data.

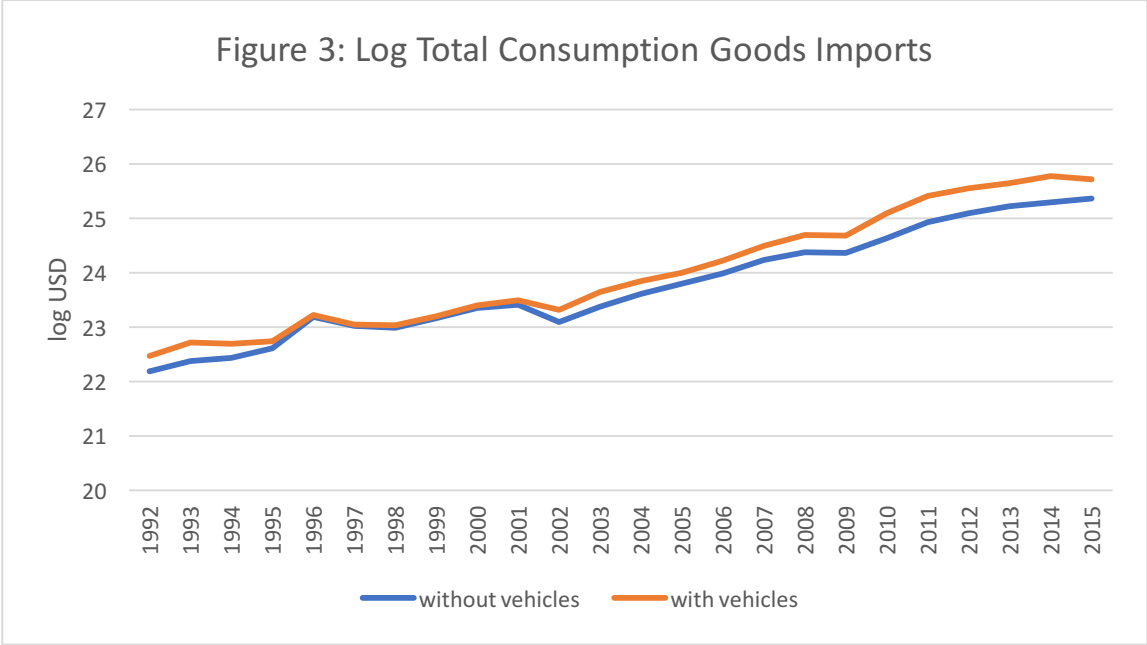
**b. Consumption Goods Imports (With/Without Vehicles)**

The third and fourth columns of table 1 show the total log imports of consumption goods over the period of 23 years. Because passenger vehicles may be used as capital or consumption goods, I will discuss figures with and without this category. Overall, figure 3 illustrates that log import consumption goods increased whether with or without vehicles. From 1992 to 1995, the volume of total consumption goods imported without vehicles raised by 53%, while the imports with vehicles increased slightly but stayed approximately constant up to 1995. The results indicate that the value of imported vehicles declined slightly during this period.

A significant leap occurred in 1996, as the annual growth rate of total import consumption goods without vehicles and with vehicles was 78% and 61% respectively in this year. Since then the volume of import goods without vehicles and with vehicles slightly declined, and the annual growth rates fell to 6% and 10% in 2001. It is interesting to see that from 1996 to 2001, the value of import goods with or without vehicles are almost overlapping, which means that the value of imported cars was small during this period.

A different trend emerged after 2002. The increase in total imports of consumption goods accelerated and the growth rate of consumption goods with vehicles were rising faster than those without vehicles. The gap between the value of consumption goods imports with vehicles and without vehicles continued to increase. For example, the total imports of consumption goods without vehicles was \$14.2 billion current US dollars, and the total imports of consumption goods with vehicles was \$18.6 billion current US dollars in 2003. In 2015, the total imports of consumption goods without vehicles was \$103.3

billion current US dollars, while the total imports of consumption goods with vehicles was \$147.4 billion current US dollars. Vehicle imports thus increased from \$4.4 billion current US dollars in 2003 to \$44.1 billion current US dollars in 2015. From 2003 to 2015, the growth rate of the total imports of consumption goods without vehicles was 628%, and with vehicles was 691%.



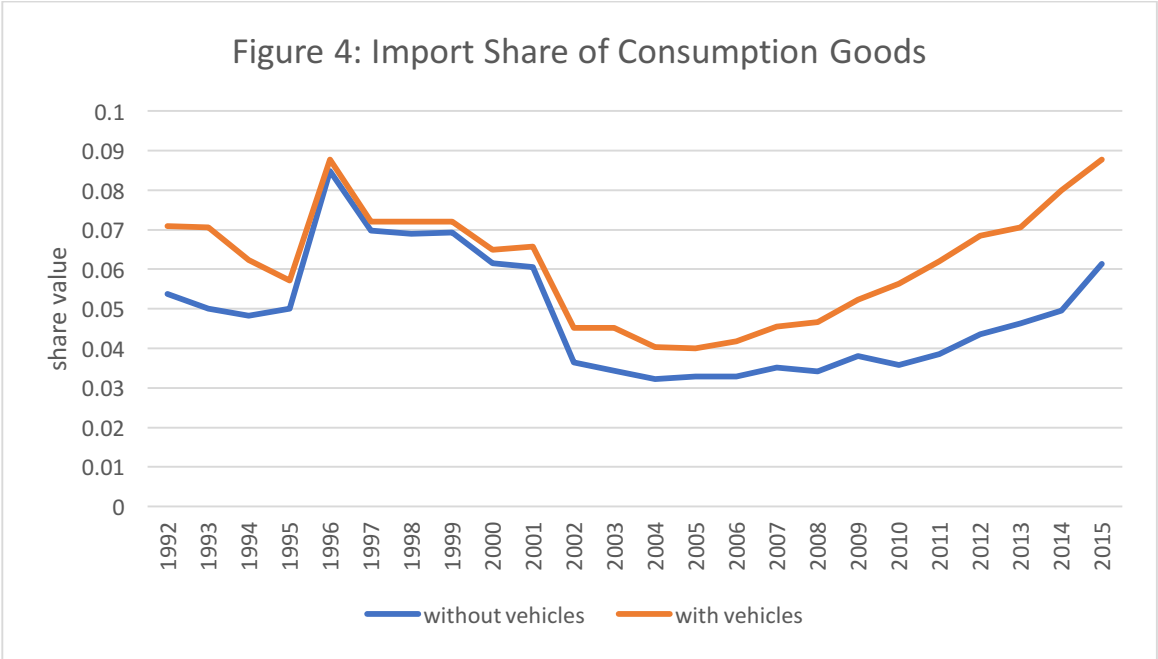
Source: Author’s calculations based on UN COMTRADE data.

Furthermore, I also calculate the import share of the consumption goods, which is presented in the last two columns of table 1. Figure 4 indicates the import share of consumption goods with or without vehicles from 1992 to 2015. For the first three years, the import share of consumption goods with vehicles declined from 7.1% to 6.2% while without vehicles decreased as well from 5.4% to 4.8%. Then, the share of import with vehicles trend is almost the same as the without vehicles trend that increased quickly from 1995 to 1996 and suddenly decreased from 1996 to 1997. At that time, Chinese import vehicles market was small because of the lack of imported vehicle demand and restrictive policies such as abolishing duty-free car imports for foreign companies<sup>4</sup>. In fact, the share of import vehicles remained small in the following three years, staying at around 0.3% until 2001.

Figure 4 illustrates significant shrinkage in the overall import share of consumption goods between 2001 and 2003. However, the share of vehicles has since been booming, while the share of other consumption goods increased again only after 2001. In 2002, the total share of vehicles in import goods

<sup>4</sup> From ‘China’s tariff system’ released by China Financial Press.

were 0.5%, but in 2015, the proportion reached 2.6%, which meant that the import share of vehicles is five times more than it was 13 years ago. The main reason for this great difference is likely that China joined WTO after 2001, which required a large cut in tariffs for import vehicles. According to the UNCTAD TRAINS tariff data, the tariff on import vehicles was around 80% to 100% before 2001. After 2001, the tariff of import vehicles was around 40% and continued to fall until 2007 when it reached 25%. The tariff of China imports vehicles was thus cut by more than half after joining WTO. Since 2009, China has been the world’s largest auto market.<sup>5</sup> The rapid development of the automotive market, and the people’s high demand for imported cars, likely directly affected the continuous increase in this portion of imports. However, it’s notable that other consumption goods have also risen as a share of imports since 2002. In the next subsection. I further investigate this trend by looking at several subcategories.



Source: Author’s calculations based on UN COMTRADE data.

**c. Top Four Subcategories and Other Interesting Fields**

On the basis of HS classification<sup>6</sup> by section, this part discusses the top four subcategories of consumption goods imports (including vehicles) as of 2015 in the Chinese import market, and their trends are explored during 1992 to 2015. The largest share of any category relative to all imports of consumption goods into China is vehicles, aircraft, vessels and associated transport equipment (VE). The second largest

<sup>5</sup> The rank comes from <https://www.statista.com/topics/1013/car-imports-and-exports-in-china/>  
<sup>6</sup> HS codes can be divided into 21 subcategories known as sections. Retrieved from <https://unstats.un.org/unsd/tradekb/Knowledgebase/50043/HS-2002-Classification-by-Section>

share is products of chemical or allied industries (PC). The third largest share is machinery and mechanical appliances, electrical equipment (ME). The fourth largest share is live animals and animal products (AP). Afterwards, I analyze some specific interesting consumption goods imports in China that changed over time, including wine, coffee, cheese, avocados and luxury bags. Table 2 presents the import share of the top four subcategories and log import value of five interesting goods for China from 1992 to 2015. I will draw figures for each column so that the change is shown clearly.

Table 2. Summary Statistics: Subcategories and Other Interesting Fields

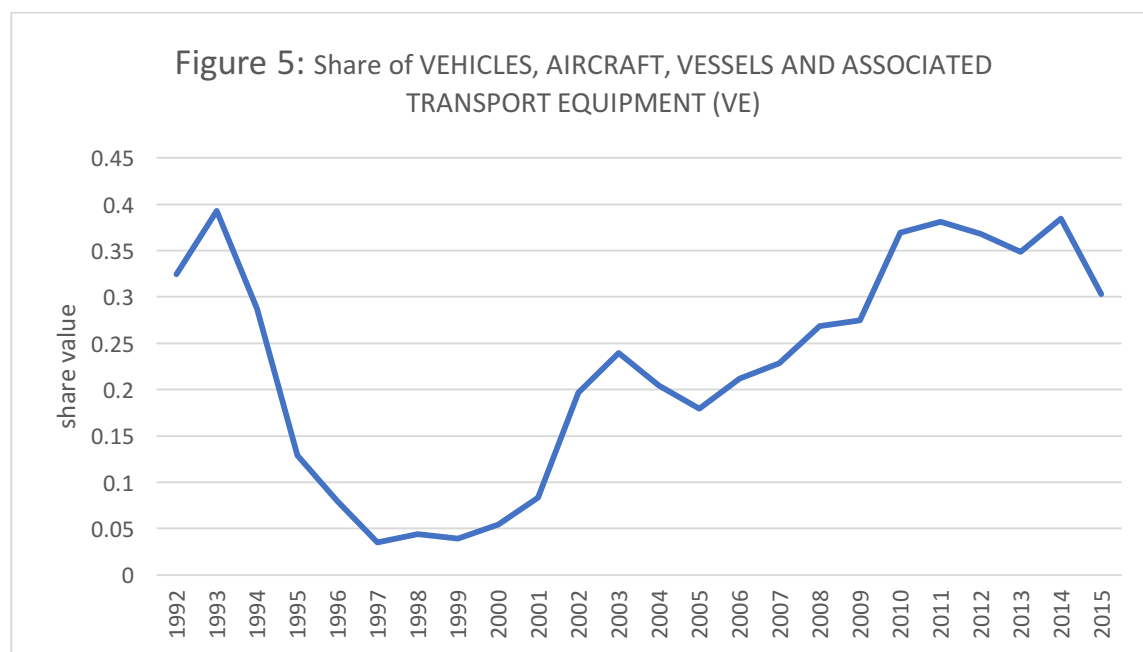
year	Share of VE	Share of PC	Share of ME	Share of AP	Log wine imports	Log coffee imports	Log cheese imports	Log avocados imports	Log luxury bag imports
1992	0.325	0.074	0.071	0.073	13.808	15.567	14.241	9.312	12.257
1993	0.393	0.052	0.093	0.063	14.322	14.776	14.125	9.324	13.463
1994	0.287	0.053	0.135	0.097	13.363	14.075	14.749	8.988	13.231
1995	0.129	0.055	0.138	0.096	14.650	15.584	14.534	6.799	13.929
1996	0.080	0.036	0.364	0.064	15.724	16.660	13.636	7.779	13.795
1997	0.035	0.046	0.304	0.070	17.442	14.792	13.333	9.352	13.913
1998	0.044	0.060	0.285	0.083	17.461	16.234	13.950	5.069	13.955
1999	0.039	0.076	0.276	0.122	17.360	15.913	14.938	8.261	14.561
2000	0.054	0.072	0.297	0.134	17.165	15.637	15.181	7.188	15.471
2001	0.083	0.076	0.298	0.126	16.987	15.786	15.196		15.756
2002	0.197	0.096	0.131	0.174	16.968	15.951	15.562		15.634
2003	0.240	0.088	0.171	0.150	17.328	16.507	16.093		16.680
2004	0.204	0.084	0.205	0.134	17.788	16.597	16.890		16.669
2005	0.180	0.088	0.235	0.139	18.135	16.939	17.088	10.797	17.000
2006	0.212	0.086	0.237	0.123	18.745	17.396	17.459	6.565	17.384
2007	0.228	0.090	0.236	0.121	19.366	17.693	17.802		18.006
2008	0.268	0.104	0.194	0.119	19.758	17.995	18.117	9.172	18.631
2009	0.275	0.120	0.176	0.112	19.941	17.746	18.059		18.622
2010	0.369	0.096	0.148	0.101	20.497	18.070	18.474	9.200	19.260
2011	0.381	0.098	0.139	0.098	21.086	18.682	18.751	11.580	19.923
2012	0.368	0.104	0.144	0.093	21.182	18.944	19.044	12.779	20.197
2013	0.349	0.103	0.145	0.111	21.166	18.776	19.258	15.037	20.295

2014	0.384	0.108	0.111	0.107	21.133	18.714	19.651	16.297	20.378
2015	0.303	0.127	0.116	0.104	21.437	19.249	19.668	17.624	20.395

Source: Author's calculations based on UN COMTRADE data.

### c. 1. Vehicles, Aircraft, Vessels and Associated Transport Equipment

Figure 5 shows the trend of the top subcategory in 2015 among all consumption goods imports from 1992 to 2015. This subcategory includes passenger vehicles, which accounted for 52% of total subcategory consumption value in 2015. In 1992, the passenger vehicles accounted for 97% out of the total. So, more than half of import value in this subcategory is passenger vehicles but this decreases over time. Referring back to Figure 4, the trend in Figure 5 is similar to the gap between consumption goods imports with and without vehicles. The biggest drop started in 1993 and continued until 1998. In 1997, the share of this subcategory was only about 3.5%. It started to recover since 1999, and after 2001, the share of this subcategory accelerated faster. In 2015, share was 30.33%, making this the largest category of imported consumption goods for China's import market.

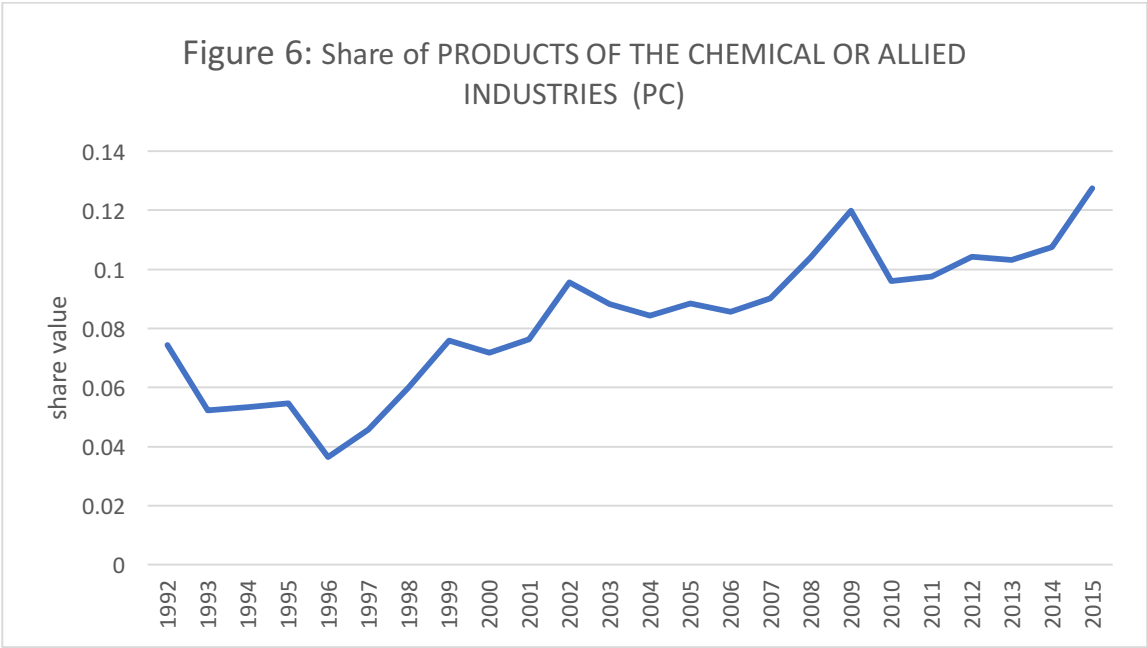


Source: Author's calculations based on UN COMTRADE data.

### c. 2. Products of Chemical or Allied Industries

Figure 6 explores the proportion of chemical and related products in consumption goods imports, which is also significant. This rose from 7.4% to 12.7% in the past twenty-five years. Similar to the auto

industry, the volume of this kind of goods reached the bottom at 3.64% in 1996, followed by a sharp rise to 9.56% in 2002. Then, it has experienced a steady increase, and the share of chemical goods reached its peak at 12.7% in 2015. Pharmaceutical products are included in this subcategory. Pharmaceuticals made up 49% of imports in this category in 1994 but 70% in 2015. So, pharmaceutical products' imports grew over time, and have been the main driver of growth in the total share of this subcategory.

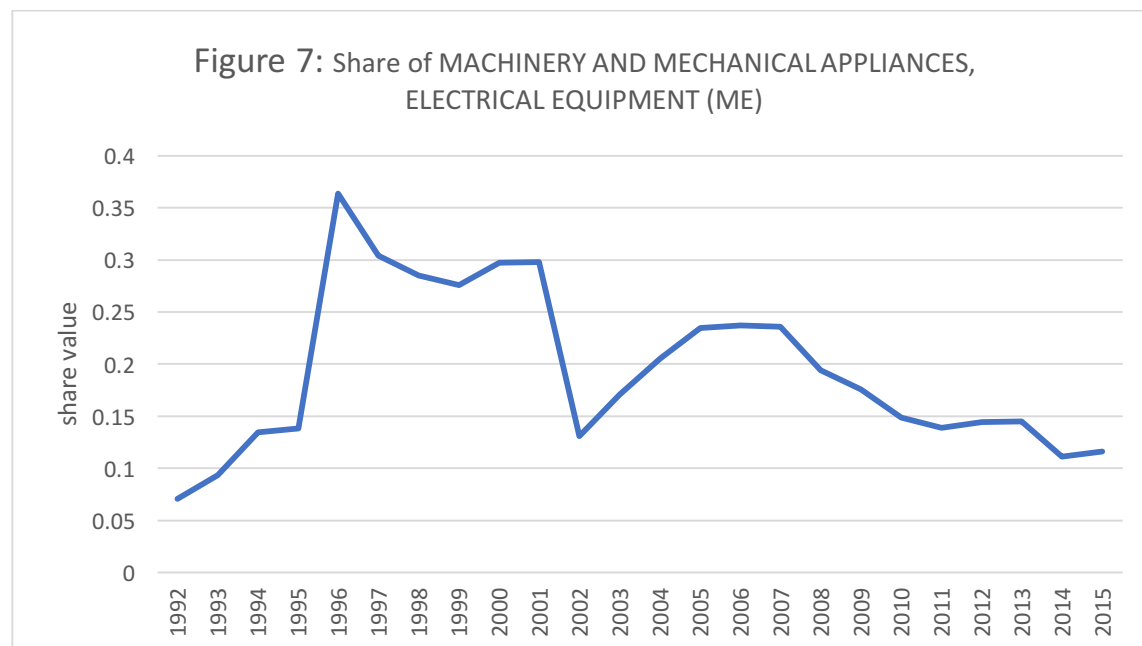


Source: Author's calculations based on UN COMTRADE data.

**c.3. Machinery and Mechanical Appliances, Electrical Equipment**

In contrast from the previous two subcategories, machinery and mechanical appliances and electrical equipment, which was the third largest consumption goods import subcategory in 2015, followed the opposite trend. Figure 7 shows that the share of products in this subcategory in consumption goods imports rose steadily from 1992 to 1995, then increased sharply. In 1995, the proportion of this subcategory was 13.8% in 1995, but it grew to 36.4% in 1996, which was almost three times higher than 1994. It was the largest subcategory of consumption goods imports from 1992 to 1996. Then the figure plunged to a low of 13.1% in 2002, followed by growth of 23.5% in 2005. After 2007, the proportion steadily declined and reached a low of 11.6% in 2015. The highest proportion of imports in 2015 in this subcategory were television cameras, digital cameras and video cameras at 57% of the category's value. Some home appliances are also included in this subcategory such as washing machine and microwave ovens, but their share was only 0.2% and 0.04% respectively in this subcategory in 2015. One of the reasons for their diminished importance is likely that China's local brands of appliances and electrical equipment have

greatly improved, especially in recent years. On the other hand, this subcategory’s data may have some bias in the sense that the import consumption value may include some electrical parts that are only assembled in China and re-exported to other countries as complete goods.

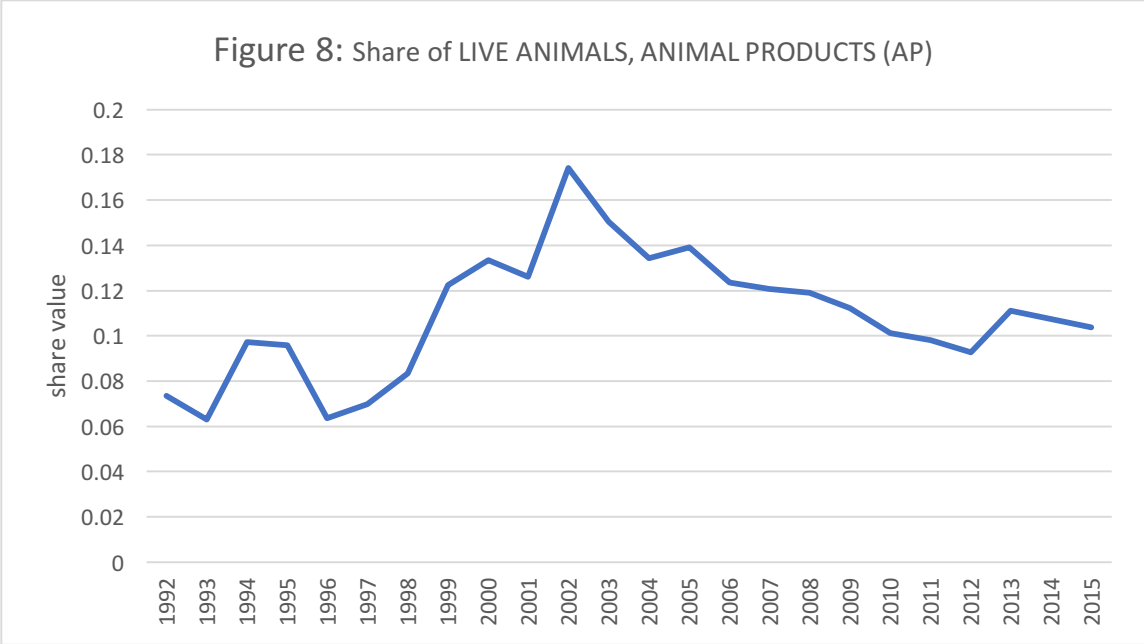


Source: Author’s calculations based on UN COMTRADE data.

#### **c.4. Live Animals and Animal Products**

Figure 8 shows the import share of live animals and animal products. This was the fourth largest subcategory of Chinese imports of consumption goods in 2015. Even though it was low in proportion sitting at 6.3% in both 1993 and 1996, the trend climbed to 17.4% in 2002. The figure then shows a steady decrease in this share almost every year since 2002, finally dipping to 10.4% in 2015. This subcategory included live animals, meat, aquatic products<sup>7</sup>, dairy produce and products of animal origin. The meat was the most important among these goods in 2015, at a proportion was 44% of the category’s value. Among meat products, the highest proportion of imports in this subcategory was boneless meat of bovine animals, at 13% of the category's value. However, the proportion of aquatic products’ imports in this subcategory was 67% in 2002 and 41% in 2015. Thus, after 2002, the relative demand for the aquatic products’ imports declined in China, which was similar to the overall trend in this subcategory.

<sup>7</sup> The aquatic products include fish, crustaceans, molluscs, and other aquatic invertebrates.



Source: Author’s calculations based on UN COMTRADE data.

**c.5. Specific Goods of Interest**

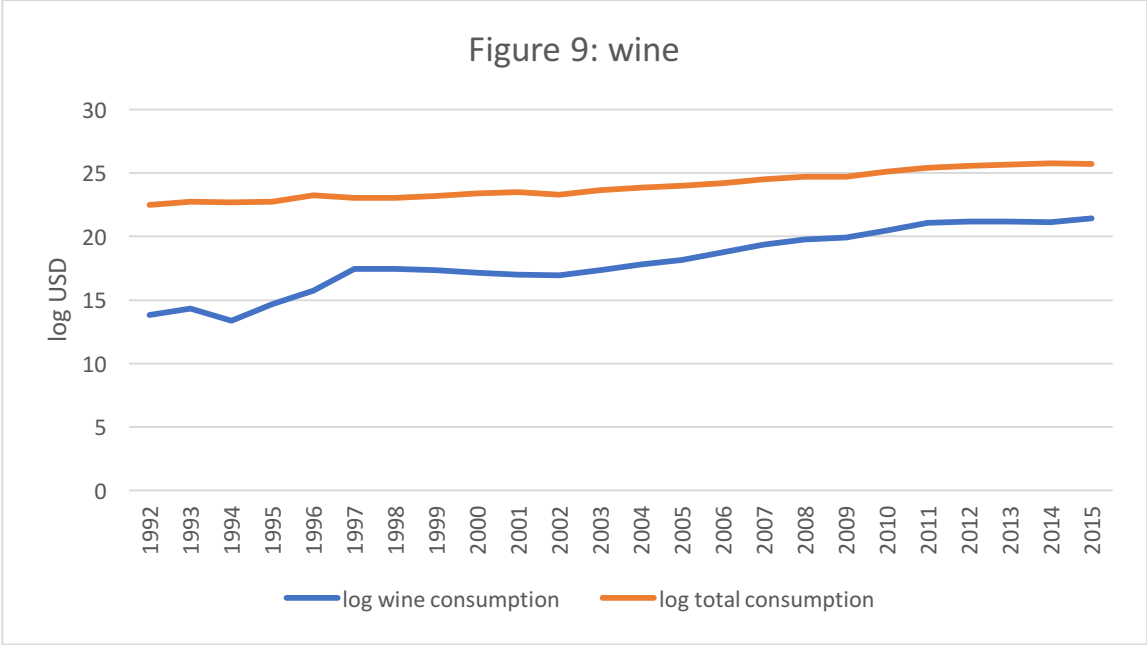
Chinese consumers have started to diversify their preferences over the past thirty years. Many products which are often more used in Western countries are now becoming popular in China. This increased demand has also led to an increase in imports in China. In this subsection, I explore whether several luxury goods popular in the west have become increasingly prominent in China’s import basket.

For example, Figure 9 shows that the consumption of wine has increased steadily over the past ten years. Wine’s growth rate has increased faster compared to overall log import consumption, and it has now become fairly important. From 1992 to 2015, the growth rate was 205728%, as compared to growth of 2478% in total imports of consumption goods. According to Anderson and Wittwer (2015), China’s wine import market will continue to grow in the future.

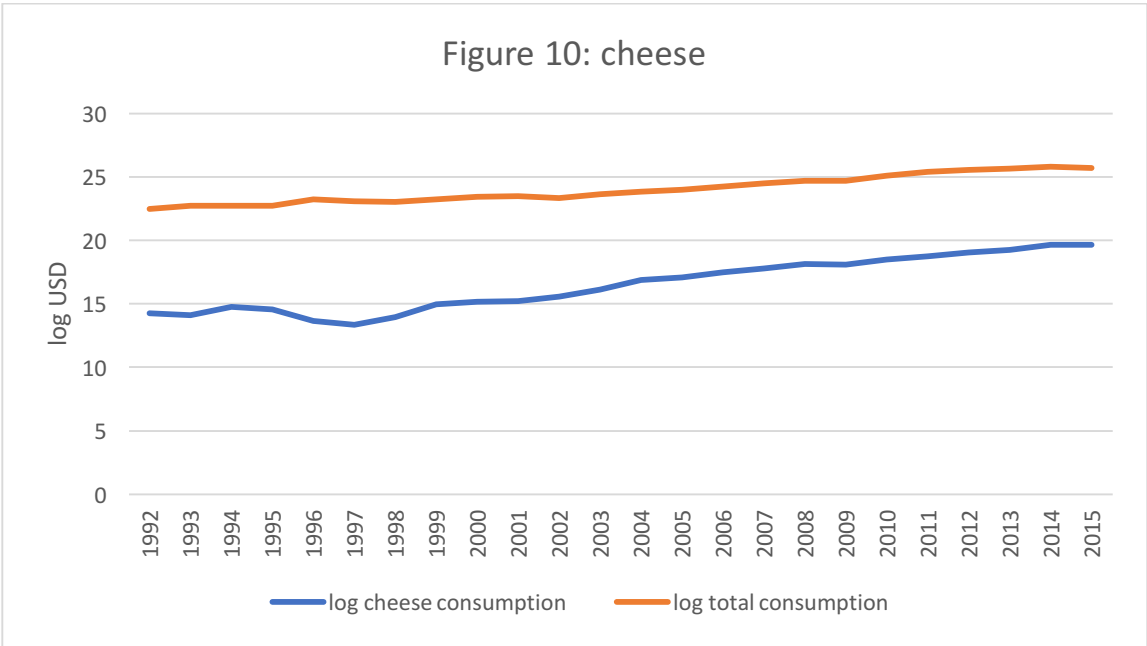
Similar to wine, other such products such as cheese, leather handbags, coffee, and avocados<sup>8</sup> have also seen an increase in import value relative to total consumption goods imports that is illustrated in figures 10 to 13. From 1992 to 2015, the growth rate of cheese, leather handbags, coffee, and avocados were 22630%, 342171%, 3870%, and 407239% respectively. All of these products’ growth rate is higher than the overall import consumption trend, especially for avocados. From 2010 to 2015, avocados’ import increased particularly steeply at a growth rate of 455655%.

<sup>8</sup> Avocados import value is missing in some years. So, the figure and the table have blank entries for these years.

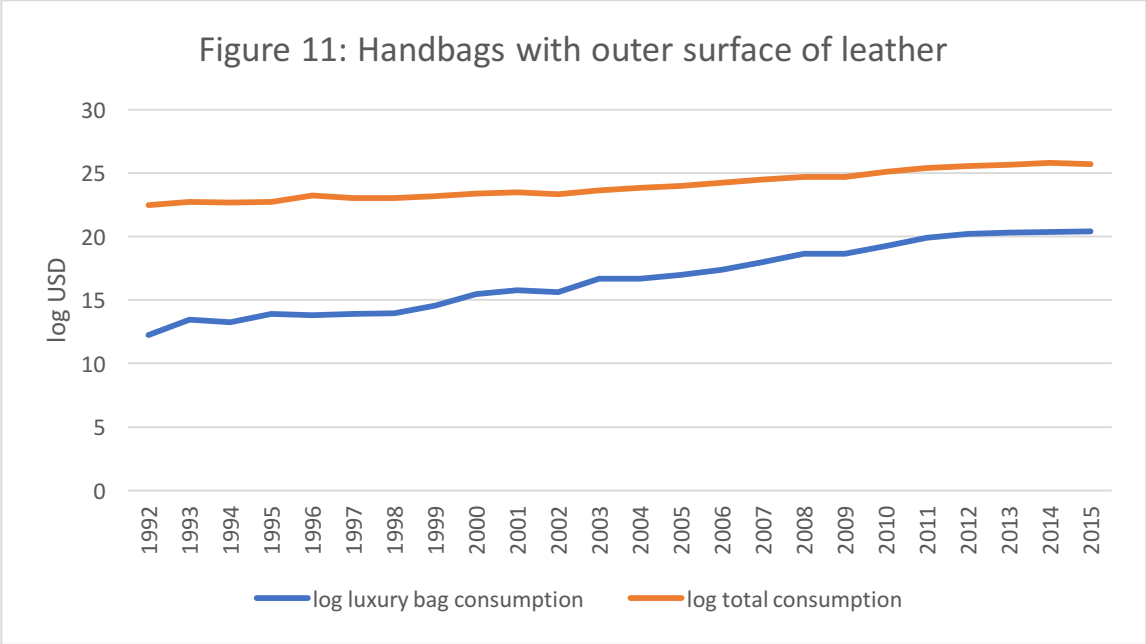
The high growth trends of these luxury goods which are popular in the west suggest that the Chinese import market is internationalizing. It seems that Chinese people are more likely to consume foreign goods. In the next section, I will do some empirical work to examine the relationship between China and other countries in consumption goods imports.



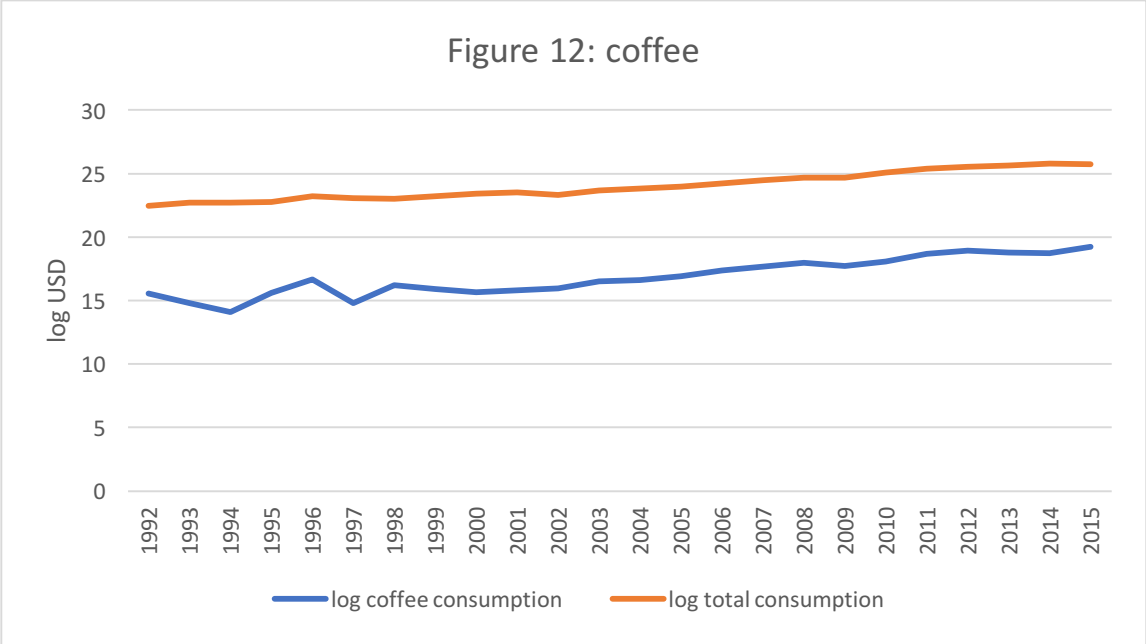
Source: Author’s calculations based on UN COMTRADE data.



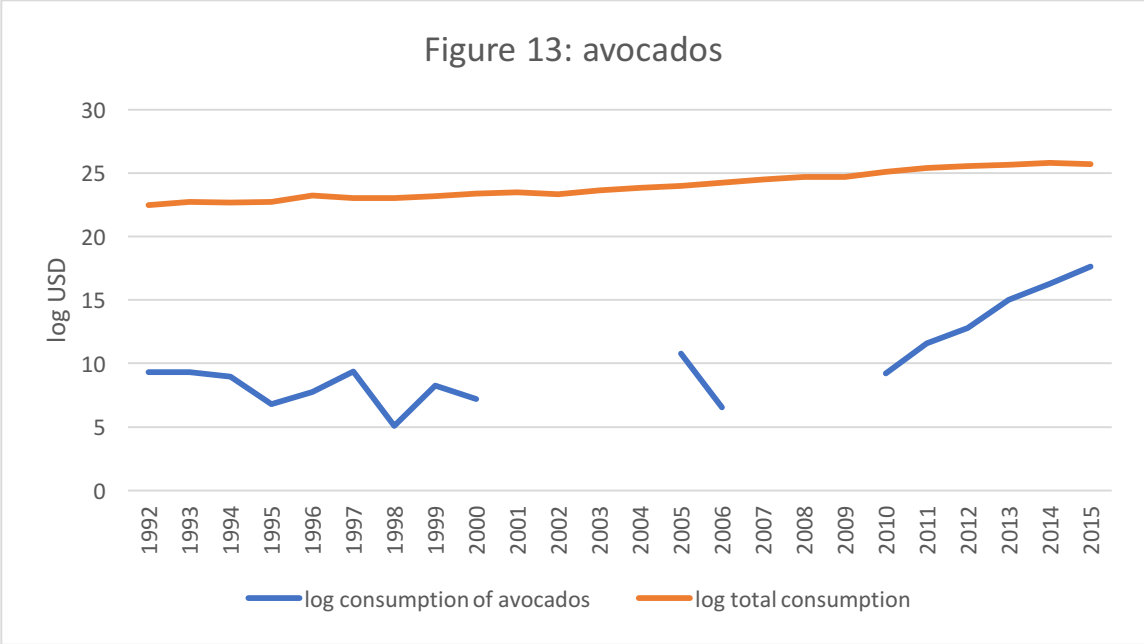
Source: Author’s calculations based on UN COMTRADE data.



Source: Author's calculations based on UN COMTRADE data.



Source: Author's calculations based on UN COMTRADE data.



Source: Author’s calculations based on UN COMTRADE data.

### 4. Empirical Result

In this section, I will do some empirical work to find the relationship between China’s consumption goods imports and other regions’ import of such goods. The question I explore is whether the set of consumption goods imported by China become more similar to those imported by OECD countries in the years after China joined WTO. All import values and calculations include imported vehicles.

According to Schott’s (2008) paper, I will use three methods to explore China’s consumption import goods from 2002 to 2015. Firstly, I will calculate China’s share of consumption goods in total imports in 2015 and compare to all other countries. Secondly, I will find China’s consumption goods import similarity to the aggregate Organisation for Economic Co-operation and Development (OECD) in several years between 2002 and 2015. Finally, I will run the regressions of non-OECD regions’ log import similarity with the OECD on log GDP, log GDP per capita, log  $GDP^2$  and three China-year interactions for 2002-2005, 2006-2010, 2011-2015 to see if China is different from other non-OECD regions.

Table 3 lists all the regions that I will use in all the empirical work. There are two types of regions, OECD and non-OECD. Firstly, I define the OECD to include 24 members, and those countries are all developed countries<sup>9</sup>. Then, I chose 19 major non-OECD economies for comparison including China.

<sup>9</sup> The OECD has 35 members now. The OECD definition excludes post-2000 entrants and includes all the major country members.

Table 3. List Countries, by OECD or non-OECD

Country	Region	2015 share of consumption goods	Country	Region	2015 share of consumption goods
Australia	OECD	0.32	Argentina	Non-OECD	0.17
Austria	OECD	0.28	Brazil	Non-OECD	0.16
Belgium	OECD	0.29	<b>China</b>	<b>Non-OECD</b>	<b>0.09</b>
Canada	OECD	0.27	Colombia	Non-OECD	0.21
Denmark	OECD	0.34	Hong Kong	Non-OECD	0.18
Finland	OECD	0.23	Hungary	Non-OECD	0.17
France	OECD	0.31	India	Non-OECD	0.05
Germany	OECD	0.24	Indonesia	Non-OECD	0.07
Greece	OECD	0.30	Iran	Non-OECD	0.05
Iceland	OECD	0.27	Israel	Non-OECD	0.24
Ireland	OECD	0.27	Malaysia	Non-OECD	0.11
Italy	OECD	0.29	Panama	Non-OECD	0.39
Japan	OECD	0.25	Poland	Non-OECD	0.23
Korea	OECD	0.13	Romania	Non-OECD	0.21
Netherlands	OECD	0.25	Russian Federation	Non-OECD	0.30
New Zealand	OECD	0.34	Saudi Arabia	Non-OECD	0.34
Norway	OECD	0.30	Singapore	Non-OECD	0.11
Portugal	OECD	0.32	South Africa	Non-OECD	0.19
Spain	OECD	0.31	Thailand	Non-OECD	0.11
Sweden	OECD	0.30			
Switzerland	OECD	0.28			
Turkey	OECD	0.13			
UK	OECD	0.36			
USA	OECD	0.31			

*Notes:* OECD definition excludes Mexico because it missed some years of data. Iran missed data for 2015, so the share of consumption goods is for 2011. *Source:* Author's calculations based on UN COMTRADE data.

### a. The Import Share of Consumption Goods in 2015

The import share of consumption goods takes the following form:

$$SC_{ti} = \frac{\sum_c V_{itc}}{T_{it}} \quad (1)$$

where  $SC_{ti}$  is the share of consumption goods in total imports for country  $i$  in year  $t$ ,  $T_{it}$  is total import value for country  $i$  in year  $t$ , and  $V_{itc}$  is import value of consumption good  $c$  for country  $i$  in year  $t$ .

Table 3 shows the import share of consumption goods for each region in 2015. China's import share of consumption goods is only 0.09 which is quite low among these regions. Compared to the OECD, China's consumption goods import share is not close to that of any OECD countries. Most of the OECD's import share of consumption goods is around 0.2 to 0.3 which is 122% to 233% higher than China. Compared to the non-OECD regions, China's import share is only higher than India's, Indonesia's and Iran's which are 0.05, 0.07 and 0.05 respectively. Notably, these are also very large developing countries, like China. Therefore, China's import share of consumption goods is small by contrast to either the OECD or non-OECD.

### b. Consumption Goods Import Similarity Index (CISI)

In this part, I discuss the non-OECD regions' consumption goods import similarity index to the aggregate OECD from 2002 to 2015. This index is based on the export similarity index used in Schott (2008), from Finger and Kreinin (1979). The index takes the following form:

$$CISI_t^{ab} = \sum_c \min(S_{tc}^a, S_{tc}^b) \quad (2)$$

where  $CISI_t^{ab}$  is the consumption goods import similarity index for country  $a$  and country  $b$  in year  $t$ ,  $S_{tc}^a$  is the share of country  $a$ 's import value in consumption good  $c$  relative to all of its consumption imports in year  $t$ , and  $S_{tc}^b$  is the share of country  $b$ 's import value in consumption good  $c$  relative to all of its consumption imports in year  $t$ . If  $CISI_t^{ab}$  equals zero, the countries  $a$  and  $b$  have no consumption goods in common in their respective import baskets in year  $t$ .

Table 4 shows the CISI values based on equation (2). I choose four years from the interval and rank the regions by the highest CISI to lowest. The CISI of China was very similar in 2002 and 2005 at approximately 0.50. However, in 2006 and 2011, the China's CISI was somewhat lower at 0.45 and 0.42. So, overall China's CISI is quite small. Compared to the other non-OECD regions, the rank of China's CISI is always on the lower end. The lowest rank was 16 out of 19 in 2011. Therefore, according to the CISI, China's consumption goods imports were not especially similar to the OECD's from 2002 to 2015, and the similarity with OECD is relatively low among non-OECD regions.

Table 4. Regions with the consumption goods import similarity to the OECD

2002		2006		2011		2015		
1	Israel	0.64	South Africa	0.67	Poland	0.73	Poland	0.73
2	Hungary	0.63	Poland	0.67	Russia	0.66	Israel	0.68
3	South Africa	0.62	Hungary	0.64	South Africa	0.65	South Africa	0.67
4	Poland	0.61	Israel	0.64	Romania	0.64	Russia	0.67
5	Russia	0.52	Russia	0.60	Israel	0.63	Hungary	0.65
6	Singapore	0.52	Romania	0.57	Hungary	0.63	Romania	0.63
7	<b>China</b>	<b>0.50</b>	Argentina	0.56	Colombia	0.58	Panama	0.63
8	Colombia	0.50	Colombia	0.55	Brazil	0.54	Colombia	0.61
9	Romania	0.49	Singapore	0.54	Panama	0.51	Brazil	0.58
10	Argentina	0.48	Brazil	0.50	Malaysia	0.49	Malaysia	0.54
11	Hong Kong	0.48	Malaysia	0.46	Singapore	0.49	Singapore	0.51
12	Brazil	0.48	Hong Kong	0.45	Argentina	0.48	<b>China</b>	<b>0.50</b>
13	Saudi Arabia	0.47	<b>China</b>	<b>0.45</b>	Hong Kong	0.47	Argentina	0.50
14	Malaysia	0.45	Saudi Arabia	0.42	Thailand	0.46	Saudi Arabia	0.49
15	Thailand	0.39	Panama	0.42	Saudi Arabia	0.45	Indonesia	0.49
16			Thailand	0.39	<b>China</b>	<b>0.42</b>	Thailand	0.48
17			Iran	0.38	Indonesia	0.42	Hong Kong	0.47
18			India	0.35	Iran	0.37	India	0.35
19					India	0.37		

Notes: There was no data available for India in 2002, Indonesia in 2002 and 2006, Iran in 2002 and 2015, and Panama in 2002. Source: Author's calculations based on UN COMTRADE data.

### c. Regression Analysis

In this part, I will do some regressions with non-OECD regions' CISI with the OECD as the dependent variable to find whether China is significantly different from other non-OECD regions and whether this changes over time. All the regressions include time fixed effects. In all cases, I also cluster the standard errors by region, to account for serial correlation in the error term. The full regression equation takes the following form:

$$\begin{aligned} \text{Log}(CISI_{ta}) = & \alpha_t + \beta_1 \log(GDP_{ta}) + \beta_2 \log(GDPPC_{ta}) + \beta_3 [\log(GDP_{ta})]^2 + \beta_4 Ch1_{ta} + \beta_5 Ch2_{ta} \\ & + \beta_6 Ch3_{ta} + \varepsilon_{ta} \end{aligned} \quad (3)$$

where  $CISI_{ta}$  is the consumption goods import similarity index with the OECD for the non-OECD region a in year t,  $GDP_{ta}$  is in current USD for the country a in year t, and  $GDPPC_{ta}$  is GDP per capita in current

USD for the country  $a$  in year  $t$ .  $Ch1$  is a binary variable equal to one if the country is China in the year 2002 to 2005 and zero otherwise,  $Ch2$  is a binary variable equal to one if the country is China in the year 2006 to 2010 and zero otherwise,  $Ch3$  is a binary variable equal to one if the country is China in the year 2011 to 2015 and zero otherwise, and  $\alpha_t$  are time fixed effects.

Firstly, I start the regressions with the three China interval dummies and time fixed effects only. According to the column (1) result, only  $Ch2$  and  $Ch3$  are significant at 1% level. So, without controlling for income effects, China is 20% lower than other non-OECD regions in similarity with OECD in the years 2006 to 2010, and 18% lower than other non-OECD regions in similarity with OECD in the years 2011 to 2015. Thus, China's CISI with OECD is different from other non-OECD regions, and as time goes on, the difference between China and other non-OECD regions increases from the first four years to the next ten years.

Next, for column (2), if I control for GDP per capita in the regression, only  $Ch3$  is significant at 5% level. When GDP per capita has been controlled for, China is 14% lower than other non-OECD regions in similarity with OECD in the year 2011 to 2015. Thus, considering income effects, China is different from other non-OECD regions only in 2011 to 2015. Finally, according to the column (3), (4) and (5) results, if I control for aggregate GDP in different ways, all the China year interval dummies are not significant at any level. So, controlling for size, China is not special, and it is similar to the other non-OECD regions.

Note that the estimates are quite imprecise. For example, the estimated coefficient of variable  $Ch3$  in column 3 is -0.05 and its standard error is 0.16. The confidence interval is 0.11 to -0.21. We could not reject the null hypothesis that the parameter on  $Ch3$  is 0 even if the estimate is -0.05. So, it is difficult to conclude anything from the estimation.

Also, some of the independent variables may be endogenous. One possible bias in this case is nonclassical measurement error. Some countries may have recorded their GDP data as larger than the actual value because they want to illustrate their country is growing quickly. When we use recorded GDP as an independent variable, this would bias the estimator of the effect of GDP on CISI. If these countries tend to be poorer, the bias is likely to be downward.

Finally, the predicted sign of the coefficients may be different from my findings. Firstly, in the regression of Table 5 column 2, the sign expected for the coefficient of  $GDPPC$  would be positive because with increasing  $GDPPC$ , people's lives have improved and they are likely to want to buy more varied consumption goods. Consumption goods imports will increase and included more variety. So, the composition of consumption imports will be more similar to that of the OECD and CISI is predicted to be larger than before. In column 3, the coefficient of GDP would be also positive even though this is not what I find because with increasing GDP, the country becomes richer and people will increase their living

standard. Again, the consumption goods imports will become more varied and therefore more similar to that of the OECD and CISI will be larger than before.

Therefore, according to my finding, without controlling for income effects, China's CISI with OECD is significantly different from other non-OECD regions and this difference is increasing over the years. If income effects are controlled for, China's consumption goods imports similarity to the OECD is similar to others in all years, except from 2011 to 2015. Finally, controlling for aggregate GDP eliminates these differences in all years.

Table 5. Regression Results: non-OECD regions' CISI

	( 1 )	( 2 )	( 3 )	( 4 )	( 5 )
Variables	$\log(CISI_{ta})$	$\log(CISI_{ta})$	$\log(CISI_{ta})$	$\log(CISI_{ta})$	$\log(CISI_{ta})$
$\log(GDPPC_{ta})$		0.08 (0.05)			0.07 (0.06)
$\log(GDP_{ta})$			-0.04 (0.04)	0.20 (0.96)	-0.21 (0.82)
$\log[(GDP_{ta})^2]$				-0.01 (0.02)	0.01 (0.02)
Ch1	-0.05 (0.05)	0.05 (0.09)	0.05 (0.13)	0.07 (0.16)	0.10 (0.13)
Ch2	-0.20*** (0.05)	-0.11 (0.07)	-0.08 (0.14)	-0.05 (0.23)	-0.07 (0.18)
Ch3	-0.18*** (0.04)	-0.14** (0.05)	-0.05 (0.16)	0.01 (0.33)	-0.10 (0.26)
Constant term	-0.66 *** (0.04)	-1.31 ** (0.48)	0.44 (1.11)	-2.68 (12.28)	1.80 (10.44)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.08	0.18	0.12	0.12	0.19
Observations	239	239	239	239	239

*Notes:* The standard errors, clustered by region, are in brackets. \* significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level (all two-tailed tests). All data on GDP and GDP per capita come from World Bank.

*Source:* Author's calculations based on UN COMTRADE data.

## 5. Conclusion

China's integration into the world economy is one of the most important events affecting the evolution of the global trade system in the 21<sup>st</sup> century. As China is rapidly developing and Chinese consumers' income has increased consistently, the Chinese market for consumption goods has changed. Consumers are more interested in understanding foreign cultures and also pursue a higher quality of life. So, the Chinese consumption market has become more varied, and the expansion of imports meets the diversity of consumer preference. In this paper, I focused on consumption goods imports in China, especially after its accession to the WTO. I explored the changes in consumption goods imports over time as well as the different categories of consumption goods. I compared China's consumption goods imports to the OECD relative to other non-OECD regions.

At the beginning of the paper, I cited several related studies arguing that trade patterns are affected by income per capita. Then, according to the data, I found that in China, both total imports and consumption goods imports rapidly grew from 1992 to 2015. After accession to the WTO, imported vehicles were the most important consumption imports in the Chinese market. In addition, some foreign cultural import goods such as wine and avocado grew extremely quickly, with a growth rate much higher than the total consumption goods imports'. In comparison with the OECD and some non-OECD regions, the share of China's consumption goods imports in its total imports is quite small, and it is not similar to that of the OECD. Without controlling for income effects or only controlling for income per capita but not aggregate GDP, China's similarity with the OECD in the pattern of its consumption imports is significantly smaller than other non-OECD regions in some years. But controlling for the size of the Chinese economy, China's similarity with the OECD is not significantly different from other non-OECD regions.

Overall, within the Chinese industrialization process, the needs of economic development should not only rely on the domestic economy. Imports are an important way to meet local consumption needs, especially when taking into consideration the deteriorating conditions of today's current climate quality. Environmental pollution has been rapidly expanding from eastern and southern regions to the central, western, and northern areas of China. China's resources face the rapid depletion of domestic supply and cannot satisfy domestic consumption, which may be one of the reasons why China will continue to rely on imports to accommodate the demand of its domestic consumers. Furthermore, with the introduction of some new consumer attitudes, imported products can promote the upgrading of consumption structure for the Chinese market, and also provide a stable driving force in the future. For instance, the trade relationship in the auto industry is quite strong between China and other countries. However, Chinese domestic automotive firms are unlikely to become an export candidate to the western countries in the present years. Chinese vehicle exports and the relationship of Chinese environmental pollution with international trade are two interesting potentially interesting related topics of study for the future.

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