

FINAL DESTINATION: CHINA

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China's rebalancing process will have a remarkable impact on the structure of global demand. Drawing on information from the World Input-Output Database (WIOD) and newly developed analytical frameworks, this paper analyzes i) the evolution of final demand in China since the mid-1990s, ii) how it has activated production in other countries, focusing in particular on the major euro area economies and iii) how the future growth of Chinese demand and the changes in its composition will affect production in Italy, France and Germany.

JEL Classification: E16, E21, E22, E27, F14, F15.

Keywords: China, final demand, trade, input-output tables, euro area.

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1. Introduction

China's imports in 2014 reached 10 per cent of the world total, about twice the share of Japan's and slightly lower than that of the euro area (excluding intra-area trade). China's share of total Italian exports has more than doubled since 2000, while its share of total German exports has grown nearly fivefold. Due to the export-led growth model that has characterized China in the last decades, about three quarters of its imports from advanced countries are intermediate and capital goods. After joining the WTO, China's consumption growth – albeit very rapid in absolute terms – has not kept the pace with exports and investment. Indeed, between 2000 and 2010 the private consumption share of GDP has decreased by more than 10 percentage points (from 46 to 35 per cent), owing to disposable income dynamics significantly below that of total output and to Chinese households' high propensity to save (35 per cent on average during the period considered).

The global economic crisis brought to light risks associated with an excessive dependence on external demand. Moreover the old growth model has become unsustainable as several structural factors (demographic and social) are changing China's economic environment. This has induced Chinese authorities to change their long term policy strategy.

In the post-war period, countries like Japan, Korea and Taiwan experienced a rapid economic expansion characterized by subdued private consumption and strong export and investment growth. However, once their per capita income (in real terms) got close to that now reached by China they moved toward a more balanced growth path. It is possible that, to some extent, China has been following a similar pattern. If this is the case, this adjustment will probably be accompanied by a sizable slowdown of the Chinese economy. Nevertheless, China is expected to keep growing at faster pace compared with advanced countries and to many other emerging economies, so its share of global demand will continue to increase over the medium to long term.

The purpose of this study is twofold: *i)* to investigate China's role as a final destination market for the products of the major Eurozone countries (France, Germany, Italy or 'EA3'), aiming to evaluate to what extent Chinese final demand has activated production in these countries; *ii)* to assess how a future change in China's demand will affect these countries and, in particular, which sectors/countries will benefit (or be harmed) the most. To this end two elements are needed: on the one hand, a medium-long term projection of Chinese demand; on the other hand, mapping the linkages through which final demand in China activates production abroad, taking into account the structure of global production networks.

To address the first issue we have relied on the OECD's long-term projections, which provide insights into the aggregate dynamics of China's consumption and investment. According to these estimates, Chinese domestic demand will continue to increase so that it will account for about one quarter of the world total in 2030 (valued at market exchange rates). In the same period the GDP share of total consumption should increase by about 15 percentage points, thus exceeding 65 per cent, while the investment share will decrease by a similar proportion. Finally, the gap in per capita income with respect to the advanced economies will narrow, leading to a remarkable expansion of the 'middle income class'. This is expected to bring relevant changes to the composition of final consumption. We exploit some long term structural relationships in order to assess how these changes will reshape Chinese final demand.

As regards the second issue, due to the diffusion of global production networks, traditional (gross) trade statistics no longer provide an adequate representation of supply and demand linkages among the economies. This is particularly true in the case of China where processing trade flows represent a relevant share of imports and exports, since it plays a central role within the Asian supply chain (Factory Asia). Consequently, we use data from WIOD's international input-output tables and new analytical tools (Koopman et al., 2014, Borin and Mancini, 2015) to provide a more satisfactory picture of production and demand linkages.

The article is organized as follows: in section two, we first describe the evolution of China's demand and consumption since the mid-nineties; relying on OECD long-term projections, we then estimate its future recomposition; in section three, using WIOD data, we assess how China's final demand activates production in the other countries; in section four, we analyze the linkages with the EA-3 economies and assess how the future evolution of Chinese demand will affect the GDP and sectoral value added of Italy, France and Germany.

2. Evolution of Chinese demand

2.1 The demand composition

Since the late 1970s, when China opened up to market forces, its domestic demand has grown at impressively high rates by international standards (at around 10% on average between 1980 and 2014). In 2014 it exceeded 13 per cent of the world GDP (evaluated at market exchange rates),² compared with a 23.4 per cent share for the United States, a 16.8 per cent share for the whole euro area and a 6.2 per cent share for Japan. According to the projections of the International Monetary Fund (*World Economic Outlook* of April 2015), in 2016 Chinese demand will surpass that of the euro area as well, becoming the world's second largest market after the United States.

In the last three decades the Chinese growth model has relied on exports and investment, while consumption growth has been far less vigorous. On average, between 1980 and 2014 the annual growth rate of real private consumption was about 2 percentage points lower than that of investment. This divergent trend has become more pronounced after China's accession to the WTO in the early 2000s. Private consumption share of GDP declined by about 10 percentage points, from 45 to about 35 per cent between 2000 and 2008, whereas the investment share continued to grow during the crisis thanks to the government's fiscal stimulus (Figure 1). Owing also to subdued investments in advanced economies in the aftermath of the crisis (Banerjee et al., 2015, FMI *World Economic Outlook*, 2015), China now accounts for almost one quarter of global investments, while its share of world consumption was just 8 per cent in 2014.

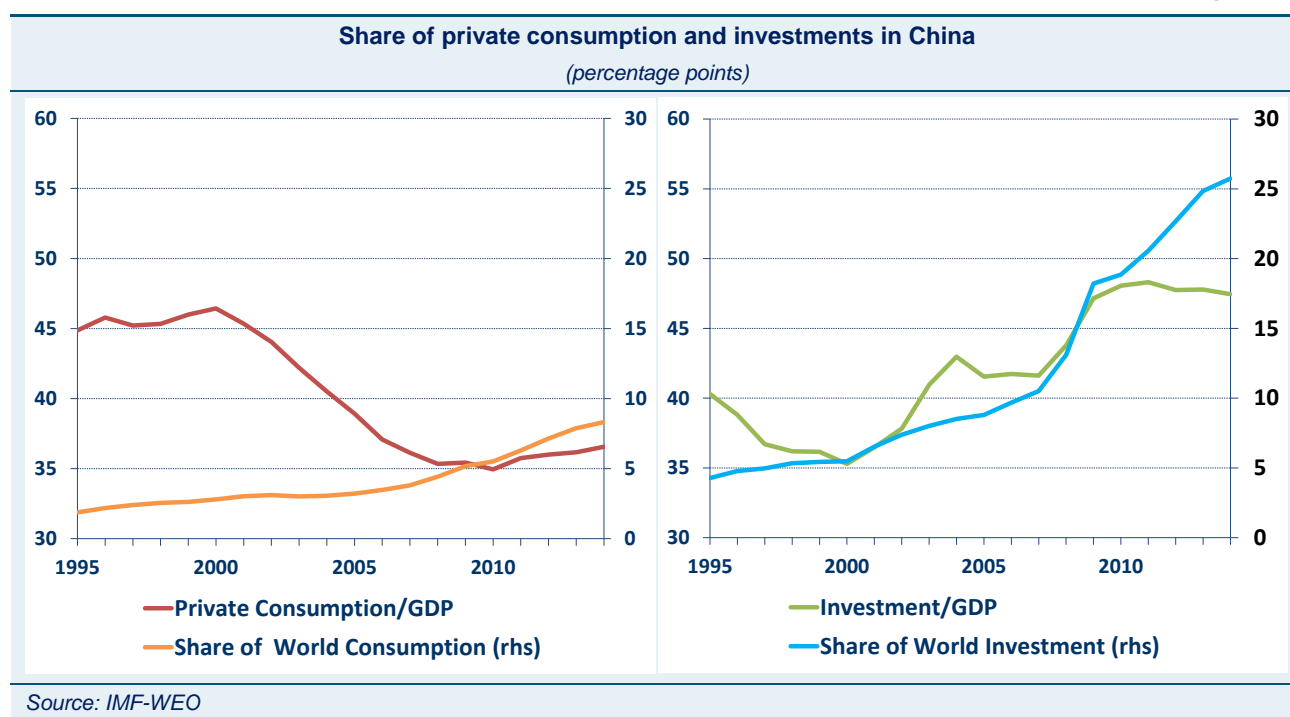
The reduction in the consumption share since the early 2000s reflects both the shift in the distribution of income towards profits (a remarkable part of which is undistributed), and the rapid increase in the household saving rate. In the pre-crisis years Chinese savings grew even more rapidly

² Evaluated at PPP the share of China's domestic demand is even higher, equal to 16.5 per cent of world GDP.

than investment, contributing to the widening of external imbalances between China and its trading partners (Obstfeld and Rogoff, 2009, Cristadoro and Marconi, 2012).³

The global economic crisis has highlighted the risks stemming from an excessive dependence on foreign demand. Moreover some structural forces have started to change the economic environment, affecting the medium to long-term trajectory of the Chinese economy.⁴ In order to avoid the country getting stuck in a ‘middle-income trap’, China needs to move towards a new growth model, one less dependent on foreign demand and investment (World Bank, 2013). This is acknowledged also by Chinese authorities, who have announced a comprehensive reform program aimed at fostering a more domestic consumption-based growth.⁵

Figure 1



The case of China is unique due to the country’s size, however China’s development path over the last three decades is in line with other Asian economies that experienced a rapid expansion in the post-World War II period. In Japan, Korea, Taiwan and Malaysia the share of private consumption fell

³ Cristadoro and Marconi (2012) show that between 2000 and 2008 the shares of savings in the public sector and in non-financial corporations grew to 20 and 8 per cent of GDP, respectively. Although household savings remained broadly stable at around 20 per cent of GDP, it demonstrated the most unusual trend: while the output share allocated to household disposable income shrank from 38 to 28 per cent, their saving rate rose by about 10 percentage points. The growth of corporate savings was similar to that of the other advanced and emerging economies in the same period. Instead, the growth of public savings reflects an increase in the tax revenues not matched by an equal increase in public spending.

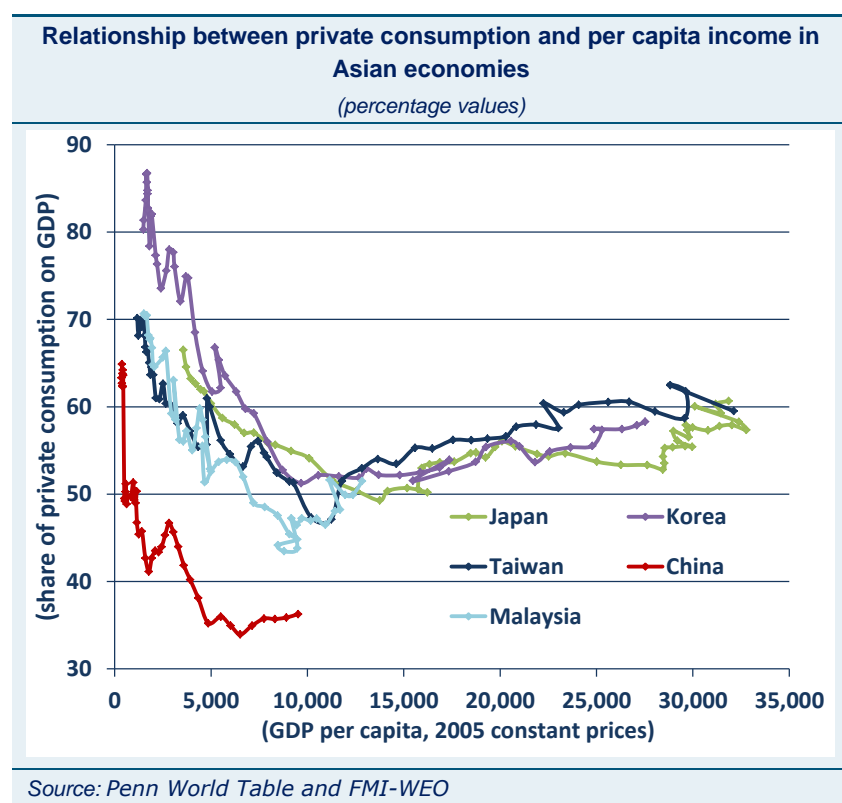
⁴ Di Stefano and Marconi (2015) estimate that in 2013 the potential growth rate was equal to 7.7 per cent, four percentage points below the level recorded in the two-year period 2006-07.

⁵ The rebalancing of the economy was already listed as a priority in the XII five-year plan (2011-16), and was also confirmed in the 3rd Plenary Session of the Central Committee of the CPC at the end of 2013 (see the official statement of the *18th Central Committee of the Communist Party of China*, <http://goo.gl/cBX1ul>). Measures aimed at supporting the growth of consumption include the strengthening of the welfare state, which could lower the precautionary savings of households (Blanchard and Giavazzi, 2005; Kuijs, 2005; Cristadoro and Marconi, 2012; Atella et al., 2015) and the reform of the financial system, which, by reducing the financial repression, would provide more resources to households, increasing the return on savings (Lardy, 2008).

during the first decades of rapid growth, then stabilized and gradually rebounded once their per capita incomes (in real terms) reached China's current levels (Figure 2).⁶

Over the last few years, initial signs of rebalancing have already emerged: between 2011 and 2014 consumption's contribution to GDP growth regularly outperformed that of investment, while the contribution of net exports turned slightly negative. Moreover, household disposable income has grown at faster pace compared to GDP (by more than 8 per cent per year).

Figure 2



2.2 The Chinese consumption structure and the future evolution of demand

In the next few years, the expansion of the medium and medium-high income classes will trigger a reallocation of consumption from basic products towards more sophisticated goods and services (Kharas, 2010; Marianera, 2012; Barton et al. 2013).

During the last twenty years the composition of Chinese consumption already experienced remarkable changes. In 2011 the share of essential goods, such as agricultural and food products, fell to about 17 per cent, from 40 per cent in the mid-1990s. In addition, the share of consumer goods in traditional sectors, such as clothing and footwear, decreased while durable goods rose to over 10 per

⁶ Compared to countries with similar per capita income, the share of consumption on GDP in China is remarkably lower. Huang et al. (2013) claim that this is also due to the underestimation of private consumption by official statistical surveys, particularly for services. According to their estimates, in 2010 the actual share of consumption was 15-20 points higher than the level reported by official statistics. Therefore it was broadly in line with that observed in other economies of the region at similar development stage.

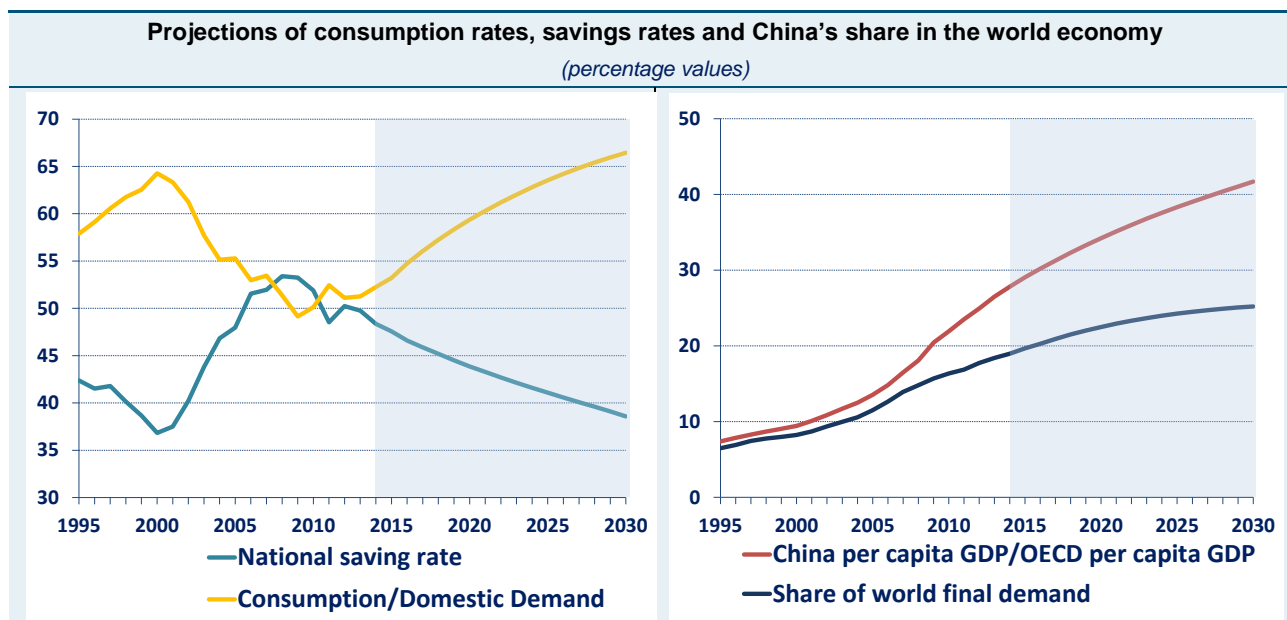
cent of the total. The shift towards consumer services was another noticeable trend: the share of expenditures in social services, health and education rose by more than 10 points, reaching about one quarter of total household and government spending (Table 1).

Table 1

Sectoral composition of China's consumption (percentage points)					
	1995	2000	2005	2011	Δ(2011-1995)
Agriculture	24.0	18.5	13.3	9.6	-14.4
Food, Beverages and Tobacco	16.1	13.8	13.3	13.5	-2.6
Traditional	8.2	8.6	5.3	5.5	-2.6
Machinery, Electrical and Optical Equipment	3.8	4.0	2.8	2.6	-1.2
Transport Equipment	6.6	5.1	9.9	10.5	3.9
Other Manufacturing	3.6	3.1	2.2	1.8	-1.9
Fuel, Gas and Electricity	1.3	2.1	1.9	1.3	0.0
Real Estate Services and Construction	4.7	5.8	6.3	7.4	2.8
Wholesale, Retail and Other Business	8.9	10.0	9.5	10.9	2.1
Hotels and Restaurants	4.3	4.2	4.7	4.4	0.1
Transport and Telecommunications	3.0	5.0	5.6	5.2	2.2
Financial Intermediation	2.7	2.2	2.3	3.5	0.8
Education	5.8	7.9	10.0	10.2	4.4
Health and Social Services	7.2	9.7	12.7	13.5	6.3

Source: WIOD

Figure 3



Source: OECD, long-term baseline projections 2014.

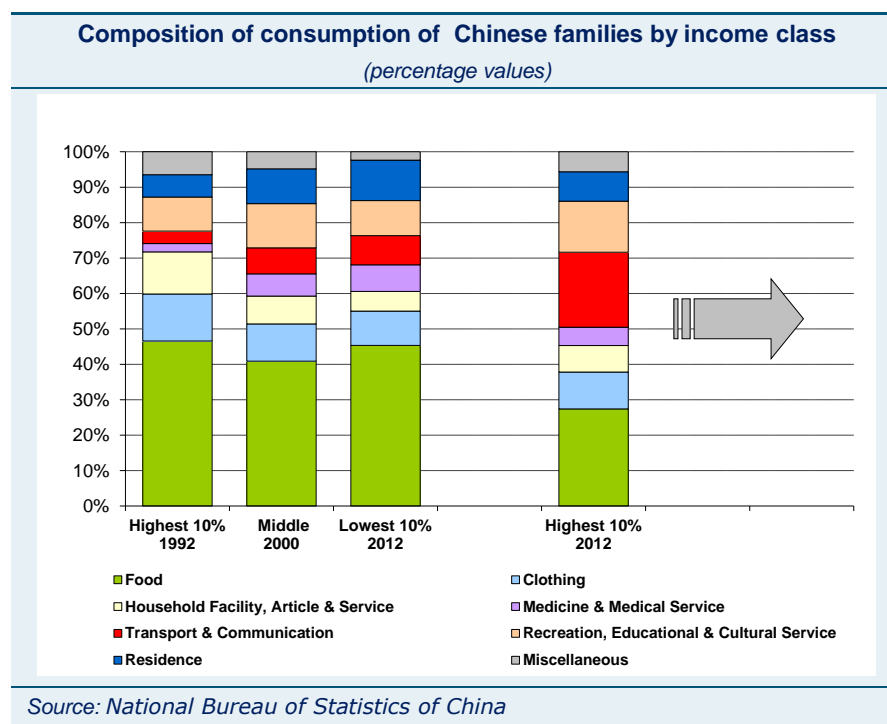
In China the future evolution of demand will be affected by changes in household disposable income and by the development strategies that the government will implement. Projections by private analysts (Huang et al., 2013; Towson and Woetzel, 2015) and by international institutions suggest that the share of total consumption should rise by about 15 points, exceeding 65 per cent in 2030 according

to the OECD. On the contrary, the investment share and the overall saving rate should decrease significantly (Figure 3). Although Chinese domestic demand is expanding at a slower pace compared to previous decades, its share of global demand should keep rising, reaching approximately 25 per cent in 2030. At the same time, the per capita income gap with respect to advanced economies will narrow further.

The increase in household spending power in the next 15-20 years will probably affect consumption more than it has so far. Several studies show that the transition to a middle income group (ranging between 10 and 100 dollars of income per day) provides a special impulse to certain types of consumption with non-linear effects on expenditure.⁷ Moreover, Murphy et al. (1989) show how reaching a critical mass of consumers with adequate spending power is even more crucial for foreign firms since they have to bear higher fixed costs to enter the market compared with their domestic competitors.

Past trends in household consumption classified by income class provide some preliminary insights into their future trajectory. Consumption by households in the top ten percent of the income distribution at the beginning of the 1990s is similar to that of the median family in the early 2000s and to the bottom ten percent in recent years (left hand side of Figure 4). Projections on income distribution (Kharas, 2010) confirm that the composition of China's total consumption in 10-15 years can be reasonably *proxied* by the current consumption of households in the top ten percent of the income distribution (Figure A1 in appendix). In 2012 it was characterized by a relatively low share of basic necessities, while the shares of consumer categories like transport and telecommunications were significantly above the average (right hand side of Figure 4).

Figure 4



⁷ For some types of goods and services (durable goods and financial services) a discontinuity in the relationship between disposable income and consumption has been detected (the so-called Engel curve), with income elasticity rising well above one (Nomura, 2009).

The relationship between disposable income and the allocation of expenditure among different goods and services (Engel's law) is confirmed by a cross-country comparison: for products such as food and traditional goods the share of total consumption decreases as the per capita income increases, while for others categories, such as education and financial services, there is a clear positive relationship with per capita income (Figure A2 in appendix). Thus we exploit this non-homotheticity of consumer preferences to project the future composition of total Chinese consumption.

For each year between 1995 and 2011 we combine data for the sectoral demand of 34 countries with a set of structural economic variables provided by the OECD.⁸ Then we estimate the coefficients of the following relationship separately for each of the 15 end-use consumer categories (*s*) :

$$Cons_{c,t}^s = \alpha_s + \rho_s Cons_{c,t-1}^s + \beta_s GDPpc_{c,t} + \gamma_s TotCons_{c,t} + \theta_s saving\ rate_{c,t} + \varepsilon_{c,t}$$

where $Cons_{c,t}^s$ e $Cons_{c,t-1}^s$ are the consumption (current dollars) in the sector *s* of the country *c*, in the year *t* and *t-1* respectively; $GDPpc_{c,t}$ is the per capita income of the country *c*; $TotCons_{c,t}$ is the total consumption per country and reference year; and $saving\ rate_{c,t}$ is the country's total saving rate.

On the basis of the estimated parameters and of the OECD long-term projections it is possible to assess the annual evolution of consumption in each country and sector between 2012 and 2030. As expected the estimates predict that the shares of primary goods will decrease in favor of an across the board increase in services. Among the latter, health and social services are expected to grow faster than the others, along with retail commerce, financial intermediation, transport and telecommunications. Overall, we expect that the share of durable goods in total consumption expenditures will remain roughly constant (Table 2).

Table 2

Sectoral composition of China's consumption: projections				
(percentage points)				
	2011	2020	2030	Δ(2030-2011)
Agriculture	10.2	6.4	4.3	-6.0
Food, Beverages and Tobacco	14.3	11.9	9.9	-4.5
Traditional	5.9	4.7	3.7	-2.2
Machinery, Electrical and Optical Equipment	2.8	3.3	3.4	0.5
Transport Equipment	4.9	4.5	4.1	-0.7
Other Manufacturing	1.9	1.6	1.5	-0.3
Fuel, Gas and Electricity	1.4	1.9	2.5	1.2
Real Estate Services and Construction	7.9	8.4	8.6	0.7
Wholesale, Retail and Other Business	11.6	13.4	14.5	2.9
Hotels and Restaurants	4.7	4.0	3.7	-0.9
Transport and Telecommunications	5.5	6.6	7.0	1.5
Financial Intermediation	3.7	4.6	5.1	1.3
Education	10.9	12.1	12.5	1.6
Health and Social Services	14.3	16.7	19.2	4.9

Source: own calculation on WIOD and OECD data

⁸ OECD, 2014, 'Long-term baseline projections, No. 95', OECD Economic Outlook: Statistics and Projections (database).

In the following analysis, these projections are employed to assess the effects of these changes on the largest euro area economies. In particular, (real) growth estimates for aggregate consumption and investment are drawn directly from the OECD, as well as the future reallocation of demand across these two macro-components. The future evolution of sectoral consumption follows Table 2, while the composition of investment is assumed to remain unchanged with respect to the 2011 structure. Indeed investment composition is related to the specific sectoral specialization of each country; moreover adequate estimates for some key variables necessary to predict their evolution in time (e.g. the composition of capital stocks by industry) are rarely available.

3. Value added composition of production activated by Chinese final demand

There are two main reasons why the description of China's role in world trade through traditional trade statistics, i.e. gross flows of imports and exports, is not sufficient.

Firstly, not everything that is exported to China is destined for its domestic market. A remarkable share of imports to China is processed and then re-exported owing to China's status as 'final assembler' within *Factory Asia*⁹ and the substantial weight of processing trade on Chinese exports.¹⁰

Secondly, a share of the foreign products destined for the Chinese market arrives there only indirectly (for instance the components produced in Italy and embedded in the German cars sold by Germany in China).

More generally, a simple analysis of a country's imports provides an incomplete picture of its interconnectedness with other economies from both a geographical and a sectoral point of view. With the diffusion of value chains the linkages between production and final demand have become more complex: the trade in intermediate goods for a given product has increased and the first destination of exports often does not coincide with the final market. So as to correctly identify the role of Chinese demand as an activator of foreign production it's important to first identify the share of value added produced by each country and embodied in China's imports; then, among them, distinguish between intermediate and final goods imported to meet the Chinese demand on one side and intermediate goods which will be transformed and re-exported on the other.

Using international input-output tables, like WIOD¹¹ (Timmer et al., 2015), and methodologies such as the one developed by Koopman et al. (2014) and extended by Borin and Mancini (2015) to the bilateral dimension,¹² it is possible to identify precisely the country of origin and the one of absorption

⁹ The integration of production activities has mainly occurred at a regional level, leading to the formation of three international 'poles': the so-called Asian *hub* (or *Factory Asia*, according to the terminology introduced by Baldwin and Lopez-Gonzales, 2013), *Factory Europe* and *Factory North America*.

¹⁰ According to our estimates, based on the WIOD, in 2011 about one quarter of imported goods was re-exported to third markets.

¹¹ Alternatively, we can resort to the OECD-WTO TiVA database (*Trade in Value Added*).

¹² Koopman et al. (2014) propose a methodology for the breakdown of a country's total exports based on the origin and on the final absorption of the value added embodied in them. Such an approach encompasses the majority of those reported in

of the value added produced in every economy, mapping out their paths along the international production chains. A first breakdown of Chinese final demand demonstrates that 18 per cent is met by value added produced in other countries (Table 3), a share lower than that recorded in the European Union (25 per cent), but higher than those of the US and Japan (13 and 12 per cent, respectively, Table 4). The share of foreign value added in Chinese final demand rises to 22 per cent when just investment is taken into account, which in 2011 represented nearly 50 per cent of the final demand (40 per cent in 1995).

Table 3

Breakdown of Chinese final demand by origin of value added				
<i>(% of total Chinese demand, 2011)</i>				
		Chinese Value Added	Foreign Value Added	Share of aggregate demand
Aggregate demand	1995	83.8	16.2	100
	2011	82.0	18.0	100
Consumption	1995	87.6	12.4	57.8
	2011	86.1	13.9	50.1
Investment	1995	78.7	21.3	42.2
	2011	77.7	22.3	49.9

Source: own calculation based on WIOD data

Table 4

Breakdown of foreign value added					
<i>(% of total Chinese demand, 2011)</i>					
	Domestic Value Added	Foreign Value Added		Foreign Value Added in the domestic productions	Foreign Value Added in the foreign productions
China	82.0	18.0	=	13.8	+ 4.3
EU-27	75.1	24.9	=	11.9	+ 13.0
France	80.3	19.7	=	9.4	+ 10.3
Italy	78.7	21.3	=	12.2	+ 9.2
Germany	74.5	25.5	=	10.7	+ 14.8
United States	87.2	12.8	=	7.1	+ 5.7
Japan	88.0	12.0	=	7.4	+ 4.6
Emerging Asia (excluding China)	78.6	21.4	=	13.5	+ 7.9
Other EMEs	82.3	17.7	=	8.1	+ 9.6

Source: own calculation based on WIOD data

the literature (for instance, Hummels et al., 2001; Daudin et al., 2009; and Johnson and Noguera, 2012), providing a rigorous accounting of the several components of the gross exports.

The foreign value added that is absorbed by Chinese final demand consists of both final goods that are imported directly, and intermediate goods used internally to produce final goods intended for the local market. This last category accounts for more than three quarters of the foreign value added absorbed by Chinese final demand (Table 4), a particularly high value, both in comparison with the other Asian countries (63 per cent) and, above all, compared to advanced economies such as the EU (48 per cent) and the US (55 per cent).

In sectoral terms, about two thirds of foreign value added destined for the Chinese market is concentrated in three sectors of consumption/investment: construction, machinery and transport equipment (Figure A5). The construction sector, which accounts for 34 per cent of Chinese demand, represents 30 per cent of the total foreign value added, notwithstanding the relatively low share of foreign goods per unit of final demand (16 per cent). Machinery and transport equipment are instead characterized by a foreign goods intensity of 40 per cent and more than 30 per cent, respectively. The highest share of foreign value added is in the chemical sector, which accounts for just 1 per cent of the total final demand. Conversely, food and agricultural products, destined to become less relevant to final demand (see section 2), are to a large extent produced internally.

Regarding the geographical composition, about 13 per cent of the foreign value added absorbed by China is generated in other Asian countries (Table 5), while the share of Chinese gross imports from these economies to total imports is significantly higher (19 per cent). The difference between the two statistics arises from the special role played by China in *Factory Asia*: only a small fraction of imported goods from the other countries in the region is destined for the Chinese market, while a significant share is re-exported. The value added generated in the EU and the US accounts for 22 per cent and 12 per cent, respectively, of the foreign value added consumed in China, more than the gross imports to China from these two areas. Despite processing trade representing a remarkable share of the exports from non-Asian countries to China, its weight is lower than the one observed for Asian countries.

Table 5

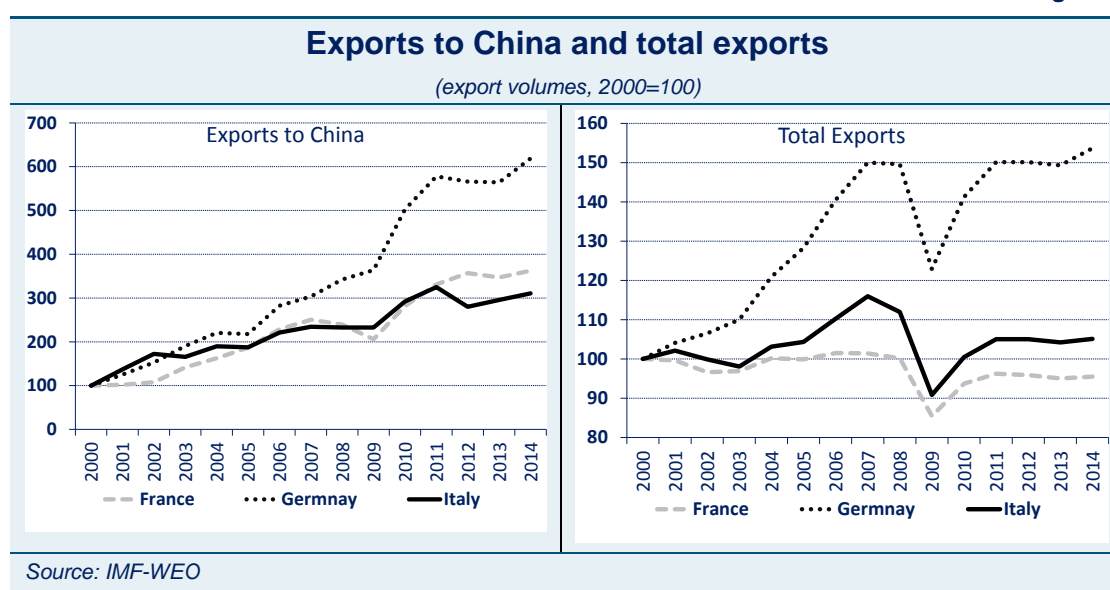
Geographical breakdown of the foreign value added in Chinese demand			
(percentage values, 2011)			
	Breakdown of foreign value added in Chinese demand	Breakdown of Chinese gross imports	Difference
EU-27	21.7	18.1	3.6
France	2.4	2.0	0.5
Italy	2.1	1.7	0.4
Germany	7.4	6.8	0.6
United States	11.7	9.8	1.9
Japan	10.4	10.0	0.3
Emerging Asia (ex. China)	12.9	18.9	-6.0
Altri emergenti	31.4	32.6	-1.3
Source: own calculation based on WIOD data			

4. Chinese demand for the major euro area countries

4.1 Analysis of the direct and indirect links between the EA3 (France, Germany, Italy) and Chinese demand

China's share of Italian total exports tripled between 2000 and 2014, from 0.9 to 2.7 per cent, while in the same period China's share of German total exports grew fivefold, from 1.3 to 6.6 per cent. During the global financial crisis (2008-09) Italian total exports fell by more than 20 per cent. However, those towards China remained unchanged (Figure 5). After the crisis, Italian exports to China have grown more rapidly than those towards other markets (by 33 per cent, versus an overall growth of 16). However, they have not kept pace with French and German exports to China (70 and 76 per cent, respectively).

Figure 5



Capital and intermediate goods account for about three quarters of the EA3 exports to China. Nevertheless, over the last few years the share of exports absorbed by household demand has increased: above all, cars from Germany and other consumer goods from France and Italy (Figure A6).

Chinese final demand activates the production activities of the three European countries not only directly, but also through the sale of intermediate goods embedded into the exports of third countries (especially other EU members). Therefore, export shares in gross terms tend to underestimate the actual importance of the Chinese market for the euro area countries. In terms of value added, China's share of Italian and French exports rose by one point, while in the case of Germany it rose slightly less (Table 6).¹³

¹³ The WIOD data differ from the official statistics. As underlined by Timmer et al. (2014) the construction of these tables requires a reconciliation of the national input-output data with the trade statistics and a harmonization procedure for the bilateral exchanges (*mirror statistics*) in order to obtain a single trade flow within a given sector between two countries. This could explain some of the differences between the various sources. Therefore, we have chosen to correct China's share of EA3 total exports through a revision of the relative sizes based on Eurostat gross exports data.

Table 6

China as a destination market of EA3 exports (nominal and percentage values, 2011)^a			
	France	Italy	Germany
Gross exports to China (million of US\$)	19,361	15,513	91,370
share of total exports	2.8%	2.6%	5.7%
VA absorbed in China (million of US\$)	16,996	13,811	70,574
share of total GDP exported	3.8%	3.6%	6.5%
GDP EXP / GROSS EXP	87.8%	89.0%	77.2%
<i>Source: own calculation based on Eurostat and WIOD data</i>			
<i>a) input-output WIOD tables are available until 2011.</i>			

Through the breakdown of bilateral exports, following Borin and Mancini's (2015) methodology,¹⁴ it is possible to disentangle how the value added produced in a given country reaches the Chinese market, both directly and indirectly. For example, it is well known that Italian firms supply intermediate inputs for the production of German cars destined for the Chinese market: this value added is generated in Italy, embedded into German goods and absorbed by China, but in the traditional statistics these production activities are recorded as exports from Italy to Germany. Only a portion of domestic value added which meets Chinese demand is embedded in the direct trade flow to China. In fact, about 30 per cent of the value added produced by Italy and France and absorbed by China reaches Asian country thanks to the intermediation of other countries (Table 7). In particular, half of it is exported by other European countries, and about one fifth by Germany alone, the center of the *Factory Europe* hub-and-spokes system, as pointed out in Baldwin and Lopez-Gonzalez (2013).

The share of Italian value added in bilateral exports to China is the highest (77.6 per cent), more than 5 percentage points higher than Germany and 3 percentage points higher than France.

On average, just one quarter of the value added exported by these three countries and absorbed in China is activated by Chinese final demand in the same sector which has produced the value added in the country of origin (diagonal elements in Tables A2, A3, A4).¹⁵ More than 60 per cent of Chinese final demand met by the production activities of EA3 countries is concentrated in three final consumption/investment sectors: machinery and electronic equipment, transport equipment and

¹⁴ Thanks to this methodology it is possible to determine, within any bilateral flow, the share of value added produced in the exporting country and the share of value added generated elsewhere, singling out the so-called *double counting*, that arises when intermediate inputs cross the borders of a given country several times during the various processing stages (Cappariello and Felettigh, 2015).

¹⁵ Tables A2-A4 in the appendix link the value added generated in a given sector of the EA3 countries with the category of Chinese final demand where it is absorbed. Therefore in the main diagonal of each table the share of value added which is absorbed in the same sector that produced it is reported (for instance, the value added generated in the German automotive sector which is activated by Chinese households' and firms' final demand of cars).

construction. Instead, if we look at the sectors of origin where the value added produced in the EA3 and destined for the Chinese market is generated, services account for more than half of the total.¹⁶ Regarding Italy, value added produced in several Italian sectors is absorbed by four main components of Chinese final demand: machinery and construction, absorbing almost 50 per cent, traditional consumer goods (clothing, footwear, etc.) and transport equipment.

Table 7

Geographical composition of the value added absorbed in China			
<i>(share on total value added absorbed by China, 2011)</i>			
	France	Italy	Germany
direct to China	70.7	71.2	77.5
through other countries	29.3	28.8	22.5
<i>share of VA exported to China through a third country</i>			
EU-27	49.4	50.7	40.2
France		7.6	6.9
Italy	4.9		4.0
Germany	20.4	22.1	
United States	3.7	3.5	3.9
Japan	2.2	1.3	2.0
Emerging Asia (excluding China)	8.9	6.6	10.4
Others	35.7	38.0	43.4
<i>Source: elaboration based on WIOD data</i>			

Nevertheless, the value added activated by Chinese final demand is produced in a large number of Italian sectors; the most relevant are business services and, within the manufacturing sector, machinery, in both cases accounting for around 20 per cent of the total. This picture diverges from the traditional analysis of trade flows: in terms of gross exports from Italy to China, machinery accounts for more than 40 per cent of the total and traditional consumer goods (clothing, footwear, etc.) for about 16 per cent (Figure A7). Although Chinese demand for Italian products from the traditional sectors is not negligible, the value added embodied in these goods is generated mostly in other sectors. This phenomenon is even more clear in the case of transport equipment: this category of final goods accounts for about 10 per cent of the Italian value added activated by Chinese demand, but only one tenth of it is generated in the transport equipment sector in Italy.

Germany is undoubtedly the country with the strongest manufacturing industry. German value added is concentrated in an even more limited number of Chinese absorbing sectors: machinery alone accounts for 30 per cent, and transport equipment 20 per cent. These sectors absorb a significant share

¹⁶ This share exceeds 60 per cent in France, 50 per cent in Italy, and is slightly lower than 40 per cent in Germany.

of German products from other sectors as well; however, unlike Italy, more than half of the value added absorbed by the Chinese transport equipment sector originates in the same German sector.

France is more specialized in the service sectors: in particular, business services and transport and telecommunications services together generate around 40 per cent of the French value added absorbed by China. Another peculiarity is represented by the role of Chinese demand in the food sector, which absorbs nearly 10 per cent of the total French value added, a share twice as high as Italy's.

The idiosyncratic features of each country described above are a fundamental tool for analyzing how the evolution of Chinese demand in each sector may affect production in Italy, Germany and France. With a traditional analysis, which disregards the relationships detailed above, this would not be possible. In the next section the structure described here will provide a basis for a forward-looking assessment of how Chinese demand may affect the main economies of the euro area, identifying those sectors and countries which could benefit the most from China's transition to a new economic model.

4.2 A look at future developments

In order to assess the effects of the rebalancing of China's demand towards private consumption and the reallocation across sectors stemming from the increase in household purchasing power, we look at the estimate for China's future demand (section 2) and the relationships between Chinese final demand and the countries/sectors of origin of the exported product and services, highlighted in the previous section. In this forecasting scenario we assume that these connections remain unchanged at 2011 levels.¹⁷ From 2011 to 2020 Chinese final demand will grow in real terms by 71 per cent, and by 148 per cent in 2030. Consumption, the most dynamic component, will increase by 94 per cent in 2020 and by 215 per cent in 2030.¹⁸ Imports will grow on average by 4.4 per cent per year and their composition will reflect domestic demand.

We provide a general assessment of the effects of the growth in Chinese demand on EA3 output assuming that import shares and cross-border supply relationships activated by each sectoral component of Chinese final demand¹⁹ will remain unchanged (at 2011 levels). According to these hypotheses, the value added of EA3 countries destined for the Chinese market increase on average by 65 per cent in 2020 and 130 per cent in 2030, compared to 2011, in line with the aggregate growth of Chinese demand (Table 9). For Italy, this corresponds to an average increase in GDP of nearly 0.1 percentage point per year, one third more than the average contribution of Chinese final demand in the 1995-2011 period; for France the increase is slightly lower (0.08), while for Germany it is about twice as high (0.20). These contributions are sizable, especially considering that the estimates do not take into

¹⁷ Even though we control for both the direct effects on the demand of final goods and for spillover effects on the supply of intermediate goods, other indirect effects generated by changes in Chinese demand, such as possible increases in investment levels induced by the growth in the production of a particular sector of origin, are not taken into account.

¹⁸ The investments are expected to increase by 46 per cent between 2011 and 2020 and by 75 per cent between 2011 and 2030.

¹⁹ Therefore the estimate of these effects does not take into account the possible changes in China's domestic production structure or in the international value chains; moreover the possible variations in the mix between domestic production and foreign imports (or between the countries of origin of the imports) activated by a given category of Chinese final demand are not taken into account (i.e. import substitution).

account the indirect effects of the growth in Chinese demand.²⁰ For Italy, the estimated effects imply a 2 percentage-point increase in GDP by 2020, 3 percentage points by 2030. After all, even during the recent financial crisis Chinese final demand played a crucial role: between 2009 and 2011 it provided a positive contribution to Italian GDP of more than half a percentage point (in cumulative terms), whereas the aggregate Italian GDP contracted by 3.3 per cent in the same period.²¹

Table 9

Value added absorbed by China's growth in demand, by sector of origin						
<i>(percentage changes compared to 2011, constant prices)</i>						
	2020			2030		
	France	Italy	Germany	France	Italy	Germany
Agriculture	54.8	58.4	61.9	106	115	123
Food etc.	60	61	62	116	119	123
Traditional	59	58	64	114	113	127
Machinery, Elec. and Optical Equip.	60	58	59	113	109	111
Transport Equipment	59	70	76	114	145	161
Chemical & plastic prod.	66	65	67	142	138	141
Basic Metals and Fabricated Metal	60	60	61	116	115	119
Fuel, Gas and Electricity	67	63	67	139	126	137
Real Estate Serv. & Construction	66	68	66	134	138	134
Wholesale, Retail & Restaurants	62	64	65	124	129	132
Renting of M&Eq & Oth. Business	69	72	69	142	150	140
Transport and Telecommun.	73	66	69	153	134	141
Financial Intermediation	66	65	67	135	130	136
Educ., Health and Social Services	69	64	68	145	127	138
Public Admin	79	77	70	172	167	145
TOTAL	66	64	65	133	129	131

Source: elaboration based on WIOD and OECD data

Among the sectors of origin, services lead the overall growth, especially for the longer term horizon. In the manufacturing sectors, the chemical industry in the three countries and the Italian and German transport equipment sectors grow much faster than the total value added exported to China, above all in the case of Germany. Italy seems to have the highest growth rates in the business services sector, higher than those recorded for Germany and France. Instead, in the health and social services sector Italy seems to benefit less than the other two countries.

As already explained, this is the joint effect of the overall increase in Chinese final demand and of the reallocation among sectors. In order to disentangle the effect of the new composition of demand on the sectors of origin, we have repeated the same exercise subtracting the overall growth trend from

²⁰ The estimates do not take into account the indirect effects such as the investments needed to expand the production capacity in the countries of origin, or the second round effects on income and domestic demand in the countries of production.

²¹ If we consider only the Italian value added activated by the foreign demand, which in the aggregate in 2011 fell by 4.4 per cent compared to the pre-crisis level of 2008, the cumulative contribution of China was equal to +2.3 per cent.

each sector's growth. The reduction in the growth rate of Chinese investments compared to consumption could disadvantage some sectors: in particular, according to our analyses, the machinery and metals sectors (Table 10) might decline with respect to the others. The change in China's consumption patterns could also harm the traditional sectors and the food sectors, especially for France and Italy, although this effect might be at least partly offset by the potential increase in Chinese demand for higher quality goods.

Table 10

Effect of the reallocation of Chinese demand on sectors of origin						
<i>(percentage changes compared to 2011 excluding the total change in the final demand, constant prices)</i>						
	2020			2030		
	France	Italy	Germany	France	Italy	Germany
Agriculture	-6.0	-4.7	-3.4	-12.1	-9.6	-7.2
Food etc.	-4.2	-3.9	-3.3	-9.4	-8.5	-7.3
Traditional	-4.6	-4.8	-2.7	-9.8	-10.2	-6.2
Machinery, Elec. and Optical Equip.	-4.3	-4.9	-4.6	-10.1	-11.4	-10.7
Transport Equipment	-4.3	-0.3	1.8	-10.0	-0.8	3.7
Chemical & plastic prod.	-1.8	-2.1	-1.5	-1.8	-2.9	-2.1
Basic Metals and Fabricated Metal	-4.0	-4.2	-3.6	-9.2	-9.6	-8.5
Fuel, Gas and Electricity	-1.5	-2.9	-1.6	-2.7	-6.3	-3.4
Real Estate Serv. & Construction	-1.8	-1.2	-1.8	-4.0	-2.9	-4.2
Wholesale, Retail & Restaurants	-3.2	-2.5	-2.1	-7.0	-5.6	-4.8
Renting of M&Eq & Oth. Business	-0.8	0.3	-0.9	-1.8	0.4	-2.3
Transport and Telecommun.	0.8	-1.8	-0.8	1.4	-4.3	-2.1
Financial Intermediation	-1.8	-2.3	-1.5	-3.9	-5.3	-3.4
Educ., Health and Social Services	-0.6	-2.7	-1.2	-1.0	-6.2	-2.9
Public Admin	2.8	2.1	-0.5	6.9	5.3	-1.0
TOTAL	-2.0	-2.5	-2.1	-4.5	-5.6	-4.9

Source: elaboration based on WIOD and OECD data

5. Conclusion

The relevance of China on global demand has become fairly significant, reaching a share similar to that of the euro area. In the next few years the Chinese economy, despite slowing down, will probably keep on outpacing the advanced economies, increasing its share of world demand.

The export-led growth model followed by China in the last several decades has involved a relative reduction in domestic consumption. Several factors, such as the level of economic development reached and China's new public policy stance, suggest that China can no longer postpone changing its growth model. The structure of Chinese demand will see a reduction in the investment-to-output ratio and a reallocation of the consumption pattern across sectors. Our estimates, based on OECD projections and on long run structural relationships, foresee a reduction in the relative weight of primary goods (food and traditional sectors) for the next 15 years, and a relative increase in the demand for services, while purchases of transport equipment and durable consumer goods will continue to expand at a fast pace, albeit in line with the average for Chinese demand.

These changes will certainly have important effects on the partner economies, including the European ones. However, the magnitude of these effects can only be evaluated by taking into account all the connections linking Chinese final demand with production in third countries. This analysis has become increasingly complex owing to the spread of global value chains; nevertheless, WIOD tables and new analysis tools allow us to identify with greater precision the connections between production and Chinese final demand.

Already today 18 per cent of Chinese final demand is met by value added generated abroad, a share higher than that of other large economies such as the US and Japan. About 22 per cent of the foreign value added absorbed by Chinese final demand is generated in EU countries, nearly 4 percentage points more than the share calculated on the basis of traditional international trade statistics. The share of foreign value added in Chinese demand is higher for investment than consumption and shows a strong sectoral concentration.

About one third of the Italian value added destined for the Chinese market reaches it only indirectly, embedded into intermediate goods exported from Italy to other countries, in particular Germany.

In value added terms, for France, Germany and Italy (EA3), the role of the service sectors as sectors able to satisfy Chinese final demand is much more prominent than the one inferred from traditional export flows. On the contrary, some manufacturing sectors, such as machinery and transport equipment, turn out to be much less relevant.

Among the categories of Chinese final demand satisfied by EA3 production activities, the share represented by the real estate and construction sector is only slightly lower than the machinery sector. For the machinery sector, the demand for capital goods activates more than one fifth of the entire EA3 production destined for the Chinese market, with spillovers on almost all the sectors of origin both in the manufacturing and services sectors.

We estimate that the evolution of Chinese demand should increase output by nearly 0.1 percentage points in Italy and France, and by 0.2 percentage points in Germany. The effects across EA3 sectors are certainly positive, but heterogeneous. Services, especially those provided to firms, would lead the overall growth, particularly for Italy. In the manufacturing sector, the chemical and transport equipment sectors in Germany and, to a lesser extent, in Italy, would benefit the most. On the contrary, the machinery and metals sectors would display a more limited expansion, suffering from the lower growth rate of investments in China.

Two issues still need to be addressed: (1) in the analysis described above the growth in demand of higher quality goods by Chinese consumers is not taken into account; a relative increase in this demand could provide sizable benefits to other sectors, such as the food and traditional goods sectors in France and Italy; (2) the greater difficulties faced by Italian firms when trying to directly reach the most dynamic extra-European markets, such as the Chinese market, could limit their ability to fully seize the opportunities that these economies will generate.

References

- Atella, V., A. Brugiavini and N. Pace, 2015, 'The health care system reform in China: Effects on out-of-pocket expenses and saving', *China Economic Review*, forthcoming.
- Aziz, J. and L. Cui, 2007, 'Explaining China's low consumption: The neglected role of household income', *IMF Working Paper* 07/181.
- Bai, C.-E. and Z. Qian, 2009, 'Who is squeezing out household income? An analysis of the national income distribution in China', *Social Sciences in China*.
- Baldwin, R., 2012, 'Global supply chains: Why they emerged, why they matter, and where they are going', *CEPR Discussion Paper* No. 9103 August.
- Baldwin, R. and J. Lopez-Gonzalez, 2013, 'Supply-Chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses', *NBER Working Papers* 18957.
- Banerjee R., J. Kearns and M. Lombardi, 2015, '(Why) is Investment Weak?', *BIS Quarterly Review*, Bank for International Settlements.
- Barton, D., Y. Chen and A. Jin, 2013, 'Mapping China's middle class', McKinsey and Company, June.
- Blanchard, O., and F. Giavazzi, 2006, 'Rebalancing growth in China: A three handed approach', *CEPR Discussion Paper* No. 5403.
- Borin, A. and M. Mancini, 2015, 'Follow the value added', mimeo, Banca d'Italia.
- Cristadoro, R. and D. Marconi, 2012, 'Household savings in China', *Journal of Chinese Economic and Business Studies*, Taylor & Francis Journals, vol. 10(3), pages 275-299, November.
- Daudin, G., C. Riffart and D. Schweisguth, 2009, 'Who produces for whom in the world economy?', Document de travail de l'OFCE N° 2009-18, July.
- FMI, 2015, *World Economic Outlook*, April.
- Huang, Y., Chang J. and Yang, L., 2013, 'China: beyond the miracle', Economic Research, Barclays Capital.
- Hummels, D., J. Ishii and K.M. Yi, 2001, 'The Nature and Growth of Vertical Specialization in World Trade', *Journal of International Economics*, 54, pp. 75-96.
- Johnson, R. C. and G. Noguera, 2012, 'Accounting for Intermediates: Production Sharing and Trade in Value Added', *Journal of International Economics*, 86, Iss. 2, pp. 224-236.
- Kharas, H., 2010, 'The emerging middle class in developing countries', *OECD Working Paper* No. 285.
- Koopman, R., Z. Wang and S.J. Wei, 2014, 'Tracing Value-Added and Double Counting in Gross Exports', *American Economic Review*, 104(2): 459-94.
- Kuijs, L., 2005, 'Investment and Saving in China', *World Bank Policy Research Paper Series* No. 3633.
- Lardy, N., 2008, 'Financial repression in China', Peterson Institute for International Economics *Working Paper No. Policy Brief* 08-8.

Marconi, D. and E. Di Stefano, 2015, 'Assessing potential growth in emerging countries after the global financial crisis', *Questioni di Economia e Finanza*, N° 256, Banca d'Italia.

Gambini, A. and M. Marianera, 2013, 'Trends in Private Consumption in China: The emergence of the Chinese High-Income class and its Global Relevance', in *The Chinese Economy*, ed. G. Gomel, D. Marconi, I. Musu e B. Quintieri, Springer.

Murphy, K. M., A. Shleifer and R. Vishny, 1989, 'Income Distribution, Market Size, and Industrialization'. *The Quarterly Journal of Economics* 104 (3): 537-64.

Nomura International, 2009, 'China: a secular shift', *Asian Bank Reflections*, vol. 3.

Obstfeld, M. and K. Rogoff, 2009, 'Global imbalances and the financial crisis: Products of common causes', University of California, Berkeley, and Harvard University. Paper prepared for the Federal Reserve Bank of San Francisco Asia Economic Policy Conference, Santa Barbara, CA, October 18-20, 2009.

Towson, J., and J. Woetzel, 2015, 'Why China's consumers will continue to surprise the world', Mc Kinsey and Company.

World Bank, 2013, *China 2030: Building a Modern, Harmonious, and Creative Society*.

Zhou X., 2009, 'Thoughts on Saving Rate', Essay published on the official website of the People's Bank of China, Beijing, China, 24 March 2009.

Figure A1

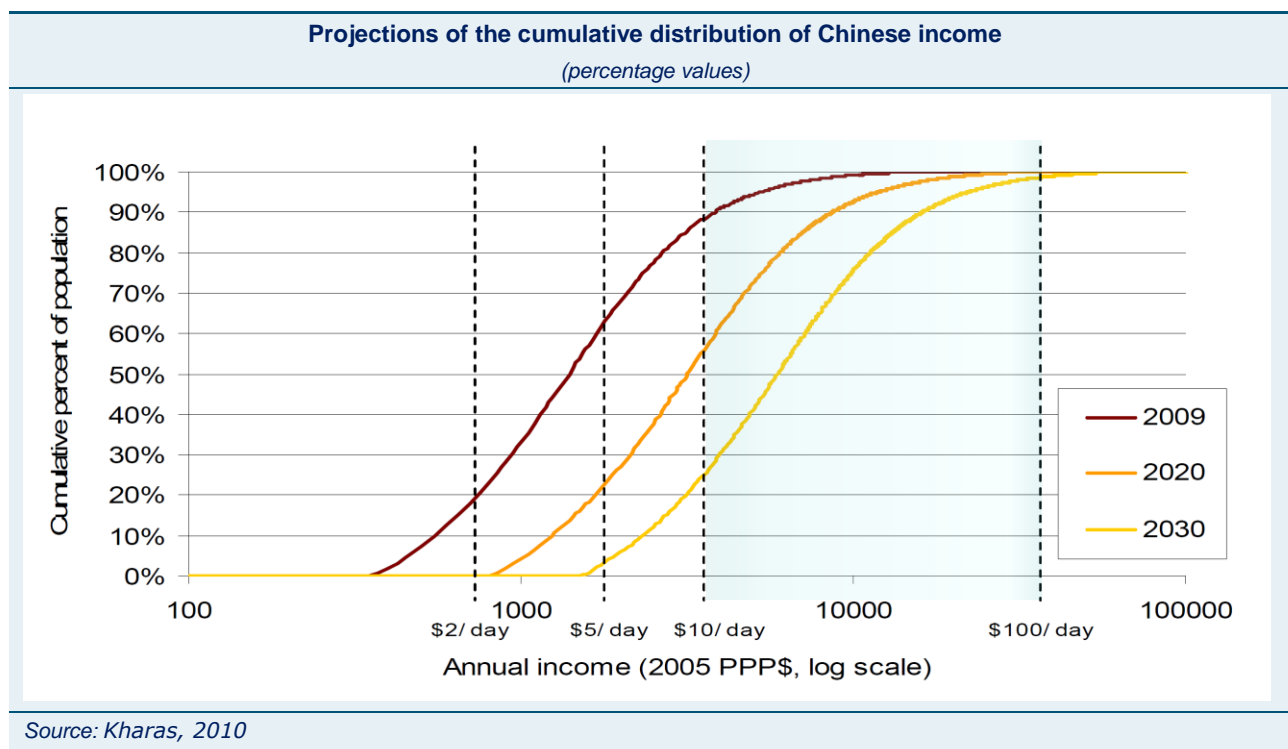


Figure A2

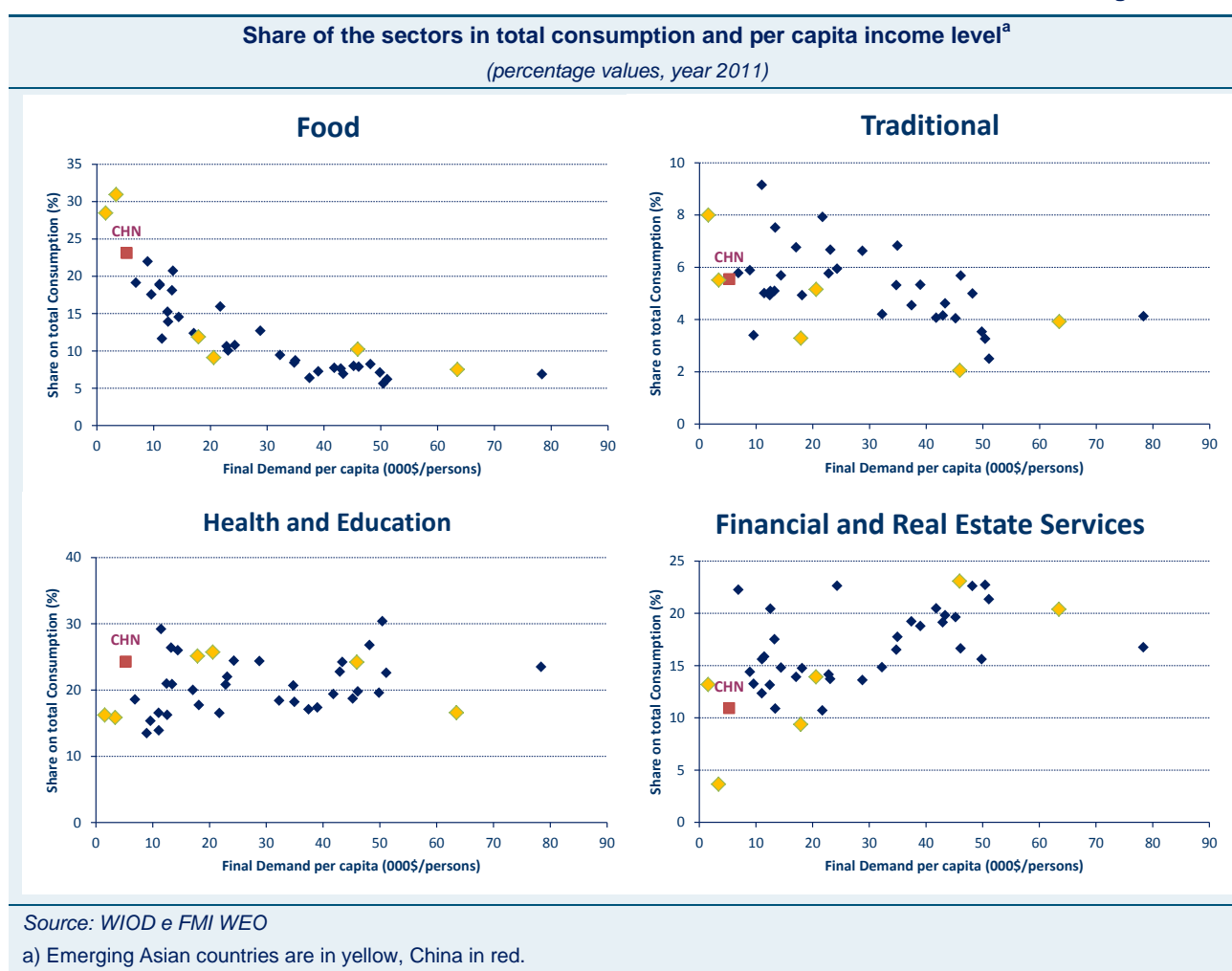


Figure A3

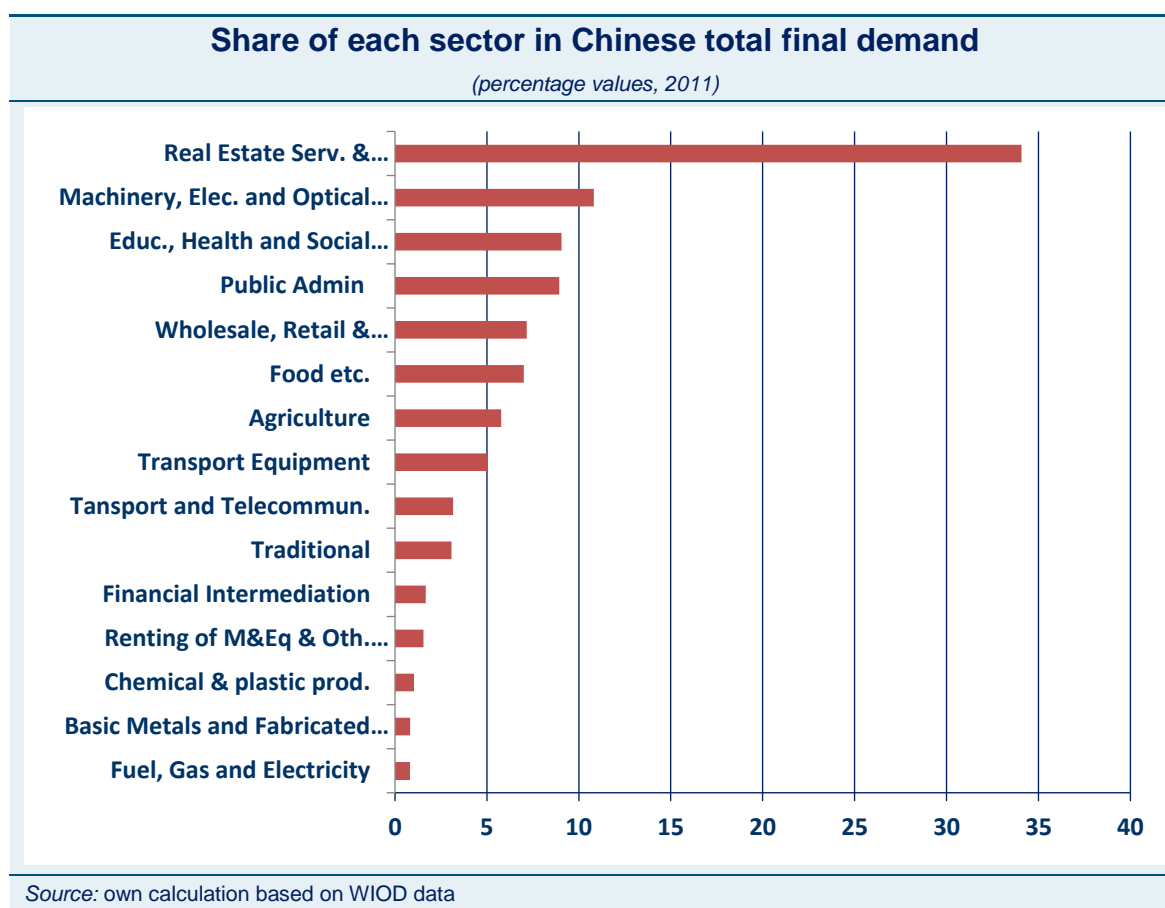


Figure A4



Figure A5

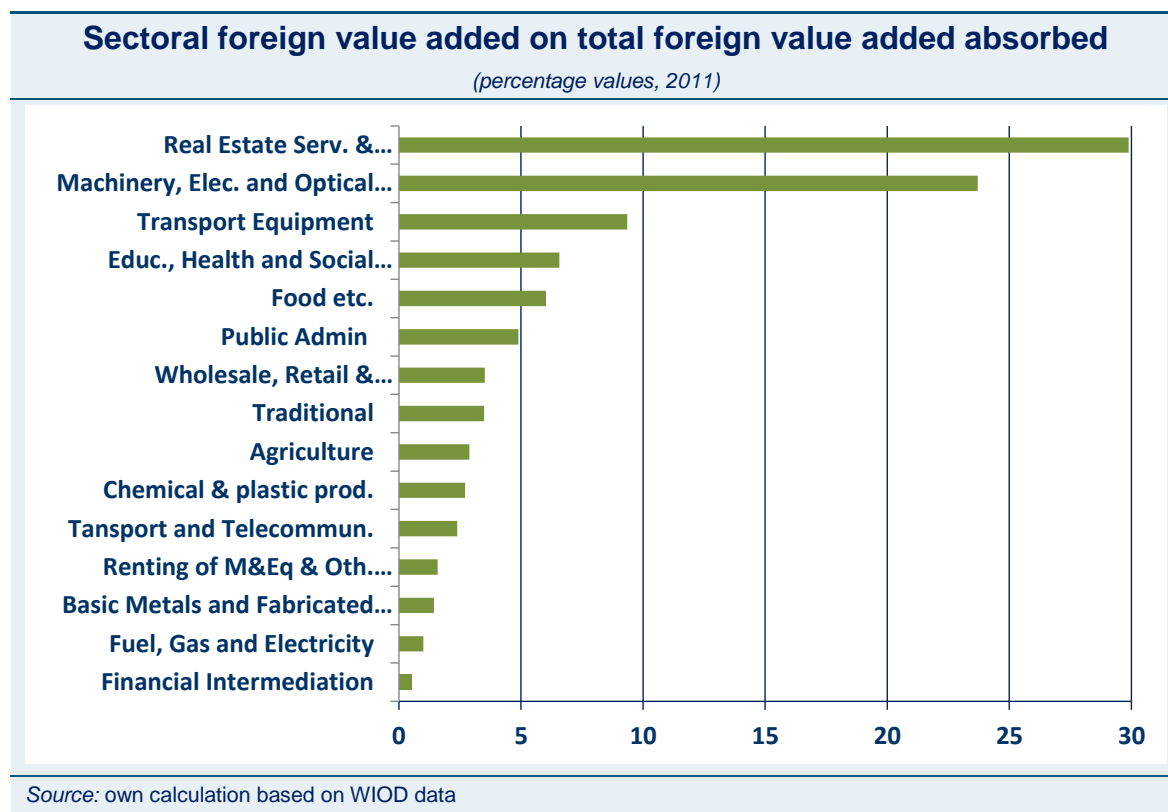


Figure A6

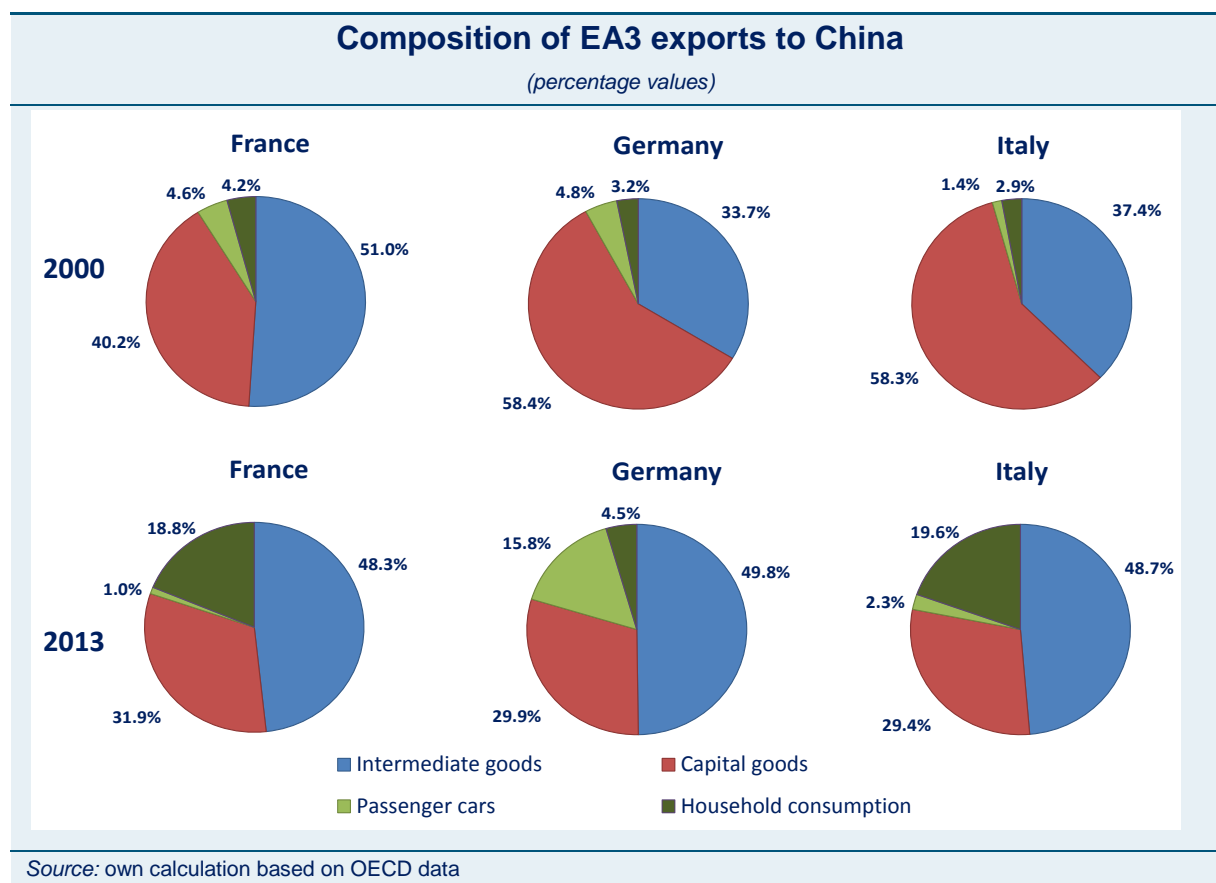
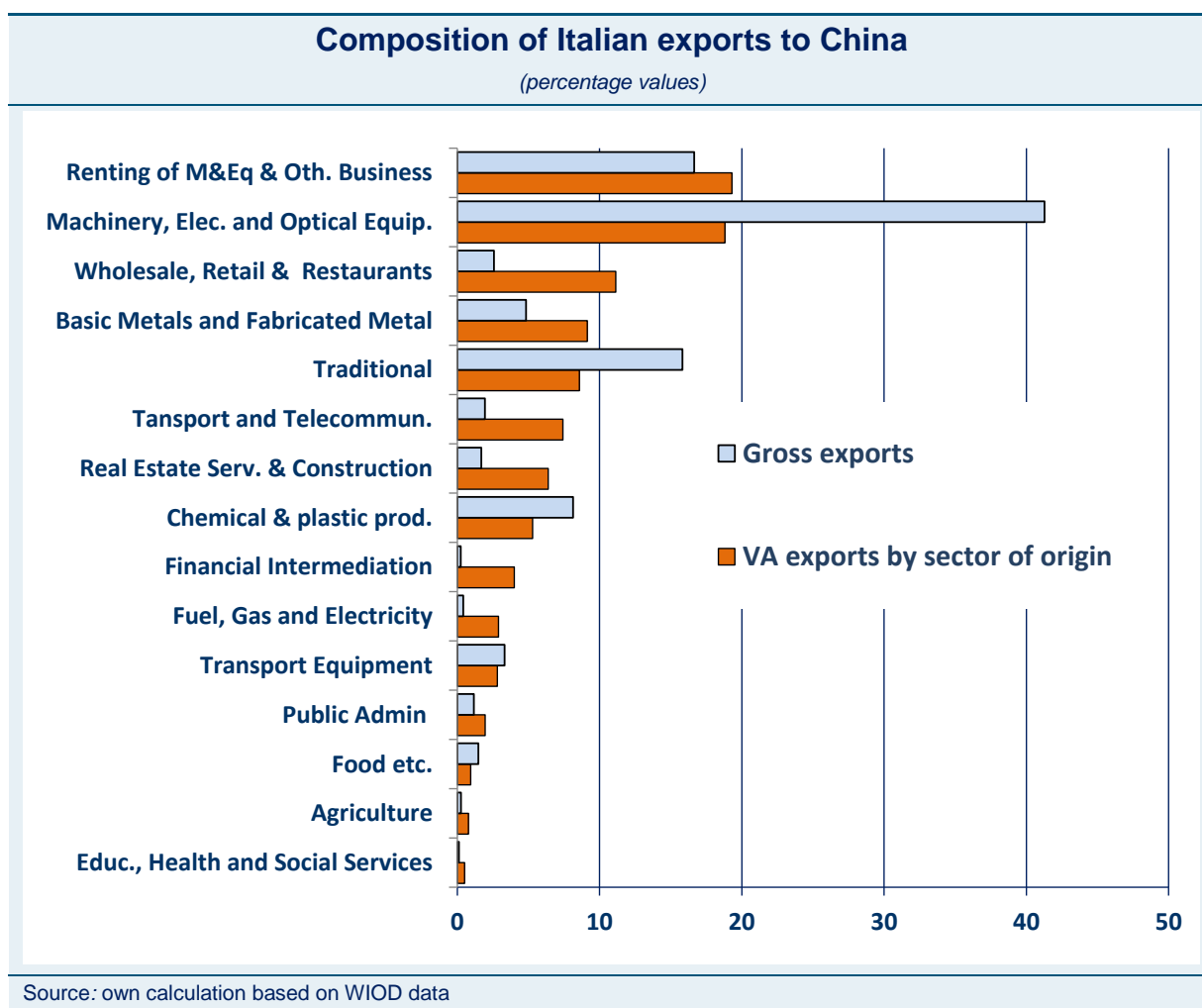


Figure A7



Italian value added by sector of origin and absorption category in Chinese final demand

(percentage share, 2011)

<div> <div>ABSORPTION in CHINA →</div> <div>↓ ORIGIN IN ITALY</div> </div>	Agriculture	Food etc.	Traditional	Machinery, Elec. and Optical Equip.	Transport Equipment	Chemical & plastic prod.	Metal prod.	Fuel, Gas and Electricity	Real Estate Serv. & Construction	Wholesale, Retail & Restaurants	Renting of M&Eq & Oth. Business	Transport and Teleco.	Financial Intermed.	Educ., Health and Social Services	Public Admin	TOTAL
	0.08	0.23	0.12	0.09	0.04	0.02	0.00	0.00	0.10	0.03	0.01	0.01	0.00	0.03	0.02	0.8
Food etc.	0.02	0.43	0.15	0.09	0.04	0.03	0.00	0.00	0.09	0.03	0.01	0.01	0.00	0.03	0.02	0.9
Traditional	0.07	0.17	4.77	0.87	0.49	0.14	0.05	0.02	1.16	0.16	0.07	0.07	0.02	0.26	0.27	8.6
Machinery, Elec. and Optical Equip.	0.19	0.32	0.29	9.92	1.54	0.15	0.13	0.11	4.03	0.30	0.18	0.25	0.04	0.89	0.47	18.8
Transport Equipment	0.03	0.08	0.18	0.47	1.17	0.06	0.02	0.01	0.43	0.07	0.03	0.04	0.01	0.10	0.09	2.8
Chemical & plastic prod.	0.13	0.21	0.29	0.89	0.44	1.40	0.04	0.02	1.05	0.12	0.05	0.06	0.01	0.39	0.18	5.3
Basic Metals and Fabricated Metal	0.10	0.19	0.24	3.22	1.31	0.11	0.52	0.05	2.38	0.16	0.09	0.12	0.02	0.38	0.25	9.1
Fuel, Gas and Electricity	0.05	0.12	0.28	0.74	0.28	0.16	0.04	0.05	0.72	0.10	0.04	0.05	0.01	0.16	0.11	2.9
Real Estate Serv. & Construction	0.09	0.24	0.67	1.46	0.52	0.19	0.07	0.03	1.68	0.37	0.15	0.12	0.05	0.40	0.32	6.4
Wholesale, Retail & Restaurants	0.15	0.43	1.48	2.95	1.09	0.44	0.14	0.05	2.16	1.00	0.15	0.16	0.04	0.53	0.37	11.1
Renting of M&Eq & Oth. Business	0.38	0.97	1.29	3.63	1.46	0.45	0.18	0.10	4.55	1.64	1.38	0.47	0.30	1.46	1.05	19.3
Transport and Telecommun.	0.12	0.32	0.78	1.80	0.68	0.27	0.09	0.04	1.70	0.31	0.14	0.33	0.05	0.43	0.36	7.4
Financial Intermediation	0.07	0.16	0.37	1.11	0.37	0.13	0.06	0.02	0.91	0.17	0.08	0.08	0.07	0.22	0.17	4.0
Educ., Health and Social Services	0.01	0.02	0.04	0.13	0.05	0.01	0.01	0.00	0.11	0.02	0.01	0.01	0.00	0.07	0.02	0.5
Public Admin	0.03	0.07	0.17	0.34	0.14	0.06	0.02	0.01	0.38	0.09	0.03	0.03	0.02	0.12	0.45	2.0
TOTAL	1.5	4.0	11.1	27.7	9.6	3.6	1.4	0.5	21.5	4.6	2.4	1.8	0.7	5.5	4.1	100

Source: own calculation based on WIOD and IMF data

German value added by sector of origin and absorption category in Chinese final demand

(percentage share, 2011)

ABSORPTION IN CHINA →		ORIGIN IN GERMANY														TOTAL	
		Agriculture	Food etc.	Traditional	Machinery, Elec. and Optical Equip.	Transport Equipment	Chemical & plastic prod.	Metal prod.	Fuel, Gas and Electricity	Real Estate Serv. & Construction	Wholesale, Retail & Restaurants	Renting of M&Eq & Oth. Business	Transport and Teleco.	Financial Intermed.	Educ., Health and Social Services		
↓ ORIGIN IN GERMANY																	
Agriculture	0.02	0.11	0.01	0.04	0.02	0.01	0.00	0.00	0.06	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.3
Food etc.	0.01	0.26	0.01	0.03	0.02	0.01	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.4
Traditional	0.04	0.11	0.38	0.47	0.29	0.06	0.02	0.01	0.75	0.07	0.04	0.04	0.04	0.01	0.15	0.13	2.6
Machinery, Elec. and Optical Equip.	0.27	0.44	0.31	15.25	2.39	0.17	0.17	0.18	6.02	0.45	0.30	0.40	0.07	1.39	0.73	28.5	
Transport Equipment	0.08	0.13	0.08	0.73	7.92	0.06	0.03	0.03	1.01	0.17	0.07	0.13	0.02	0.23	0.28	11.0	
Chemical & plastic prod.	0.22	0.32	0.26	1.08	0.65	1.34	0.04	0.03	1.59	0.17	0.08	0.09	0.02	0.67	0.28	6.8	
Basic Metals and Fabricated Metal	0.09	0.16	0.12	2.50	1.57	0.09	0.36	0.04	2.43	0.14	0.08	0.11	0.02	0.33	0.23	8.3	
Fuel, Gas and Electricity	0.05	0.10	0.07	0.66	0.47	0.11	0.03	0.14	0.64	0.07	0.03	0.05	0.01	0.16	0.10	2.7	
Real Estate Serv. & Construction	0.06	0.14	0.09	1.18	0.97	0.12	0.04	0.03	1.09	0.12	0.07	0.09	0.02	0.24	0.16	4.4	
Wholesale, Retail & Restaurants	0.09	0.21	0.16	1.82	1.48	0.21	0.06	0.05	1.30	0.32	0.07	0.10	0.02	0.33	0.21	6.4	
Renting of M&Eq & Oth. Business	0.40	0.79	0.42	4.34	2.88	0.52	0.14	0.13	4.49	0.87	0.83	0.37	0.16	1.20	0.78	18.3	
Transport and Telecommun.	0.10	0.21	0.12	1.25	0.85	0.14	0.05	0.04	1.41	0.19	0.07	0.35	0.04	0.35	0.31	5.5	
Financial Intermediation	0.03	0.07	0.04	0.51	0.37	0.06	0.02	0.02	0.44	0.05	0.03	0.04	0.04	0.10	0.08	1.9	
Educ., Health and Social Services	0.01	0.02	0.01	0.13	0.13	0.02	0.00	0.00	0.12	0.02	0.01	0.01	0.00	0.03	0.02	0.5	
Public Admin	0.04	0.09	0.05	0.52	0.43	0.10	0.02	0.02	0.50	0.07	0.05	0.04	0.01	0.14	0.21	2.3	
TOTAL	1.5	3.1	2.2	30.5	20.4	3.0	1.0	0.7	21.9	2.7	1.7	1.8	0.4	5.4	3.5	100	

Source: own calculation based on WIOD and IMF data

Table A4

French value added by sector of origin and absorption category in Chinese final demand

(percentage share, 2011)

<div> <div>ABSORPTION IN CHINA →</div> <div>↓ ORIGIN IN FRANCE</div> </div>	Agriculture	Food etc.	Traditional	Machinery, Elec. and Optical Equip.	Transport Equipment	Chemical & plastic prod.	Metal prod.	Fuel, Gas and Electricity	Real Estate Serv. & Construction	Wholesale, Retail & Restaurants	Renting of M&Eq & Oth. Business	Transport and Teleco.	Financial Intermed.	Educ., Health and Social Services	Public Admin	TOTAL
	0.40	1.09	0.10	0.10	0.06	0.04	0.01	0.00	0.23	0.06	0.01	0.01	0.00	0.06	0.05	2.2
	0.03	1.72	0.04	0.04	0.02	0.03	0.00	0.00	0.06	0.02	0.00	0.01	0.00	0.02	0.02	2.0
Traditional	0.05	0.19	2.45	0.55	0.37	0.12	0.02	0.01	0.77	0.09	0.05	0.05	0.02	0.17	0.15	5.1
Machinery, Elec. and Optical Equip.	0.11	0.21	0.14	5.53	0.97	0.09	0.06	0.07	2.28	0.19	0.13	0.18	0.03	0.53	0.31	10.8
Transport Equipment	0.06	0.18	0.10	0.43	3.69	0.09	0.02	0.02	0.55	0.09	0.04	0.08	0.01	0.13	0.16	5.6
Chemical & plastic prod.	0.16	0.25	0.22	0.79	0.49	1.96	0.03	0.02	1.10	0.12	0.05	0.07	0.01	0.47	0.20	5.9
Basic Metals and Fabricated Metal	0.07	0.17	0.13	1.90	1.13	0.11	0.13	0.03	1.59	0.11	0.06	0.09	0.02	0.25	0.17	5.9
Fuel, Gas and Electricity	0.07	0.26	0.13	0.50	0.30	0.28	0.02	0.06	0.60	0.08	0.04	0.07	0.01	0.18	0.13	2.7
Real Estate Serv. & Construction	0.07	0.32	0.21	0.76	0.51	0.25	0.02	0.02	0.76	0.13	0.09	0.10	0.03	0.22	0.19	3.7
Wholesale, Retail & Restaurants	0.19	1.12	0.65	2.08	1.70	0.73	0.06	0.05	1.69	0.22	0.12	0.16	0.03	0.47	0.33	9.6
Renting of M&Eq & Oth. Business	0.58	2.06	1.14	4.88	3.17	1.33	0.16	0.15	5.98	1.52	1.29	0.68	0.30	1.82	1.33	26.4
Transport and Telecommun.	0.23	0.72	0.41	1.71	0.93	0.39	0.07	0.06	2.91	0.51	0.20	1.15	0.12	0.95	1.06	11.4
Financial Intermediation	0.11	0.45	0.27	0.95	0.55	0.26	0.03	0.03	0.97	0.15	0.09	0.13	0.10	0.26	0.22	4.6
Educ., Health and Social Services	0.02	0.09	0.05	0.23	0.16	0.06	0.01	0.01	0.22	0.04	0.02	0.03	0.01	0.15	0.06	1.2
Public Admin	0.04	0.16	0.12	0.37	0.22	0.11	0.01	0.01	0.54	0.13	0.05	0.06	0.03	0.19	0.65	2.7
TOTAL	2.2	9.0	6.2	20.8	14.3	5.9	0.7	0.5	20.2	3.5	2.3	2.9	0.7	5.9	5.0	100

Source: own calculation based on WIOD and IMF data