Understanding the Role of China's Domestic Market in the (Unequal) Growth of World Economy*

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December 2016

Very preliminary draft

Abstract

This study investigates the role of China's domestic market expansion in the growth of world economy with special attention to neighboring countries over the 2009–2011 period. Despite the worldwide economic collapse, China maintained high domestic final demand growth rates at 11.9% on average for three years. This strong demand growths are mainly driven by the demand for durable goods of which productions are widely fragmented across Asian countries. Meanwhile, China's integration into the global economy had been much deeper than, say, in 1995. These two forces combine to magnify the impact of Chinese domestic market expansion on the other economies, but disproportionately more on its neighboring countries and sectors related to durable good productions. Specifically, our estimates find that the growth of Chinese domestic demand over the 2009–2011 period had increased the annual GDP growths in Korea, Malaysia and Taiwan by about 1%p, whereas the NAFTA and EU member countries had typically benefited from less than 0.1%p.

JEL Classification: F1, F4, F6

Keywords: China's Domestic Market, Asia, Global Value Chain, Structural Change, Growth Decomposition.

*A version of this paper has been circulated as "Global Value Chains and Impacts of China's Structural Changes." I thank seminar participants at KDI for helpful comments. All errors are mine.

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1 Introduction

China's rapid growth for the last a few decades and its impacts on the world economy have been an interesting topic to academic researchers. Since the implementation of its open-door policy in 1979, China had grown by more than 10% per annum in GDP, with more or less stability, over the following 30 years until 2011.[1] Moreover, this sustained high growth of China was accompanied by the increasing inter-connections among countries through the global fragmentation of production or so called global value chains (GVCs). These two facts seem already enough to draw one's attention with expectation that China could have a substantial influence on the other economies, particularly in recent years.

A burgeoning literature in international economics has indeed investigated on China's global impact in various ways. Arguably, the most popular approach in the literature is to view China as a "world factory" because of its massive productions tightly linked to international trade and foreign direct investment. From this view, one of the main interests in the literature has been to assess the various effects of import competition from China on domestic goods and labor markets in importing countries. An influential paper by Autor et al. (2013), for example, finds that the import surge from China can explain one quarter of the total decline in the U.S. manufacturing employment over the 1990–2007 period. Bloom et al. (2016) investigate on firm's strategic responses in 12 European countries to the massive imports from China and reveal that the import competing firms tend to innovate more to survive. Many different countries/regions or different markets within the same countries have been studied in the spirit of viewing China as a giant (and cheap) supplier to the rest of the world.[2]

This paper approachs to China from the opposite side: we view China as a demander and ask the question of how important this country is as a demander to the rest of the world. Specifically, we quantitatively evaluate the role of Chinese domestic market in the production and ultimately the growth of world economy over the period of 1995 to 2011 with special focus on the last three years, the period of global financial crisis and subsequent recovery. This approach is not entirely new. It is well understood that, with the rapid economic expansion, China has already become the second largest market after the US since 2010, yet has much more potential considering its population and the need for further development. Surprisingly, however, poor investigations have been conducted to our knowledge from this "world market" view, and we aim to fill the deficiency in the literature.

To assess the question, we employ the input-output framework proposed by Bems et al. (2010, 2011), which originally is used to explain the great trade collapse during the global financial crisis in 2008 and 2009. The core underlying mechanism through which the world

[1] The annual growth rates are calculated in previous year's prices. Source: the CEIC China Premium.

[2] Related studies include Iacovone et al. (2013) and Utar and Ruiz (2013) for Mexico, Mion and Zhu (2013) for Belgium, Utar (2014) for Norway, Eichengreen et al. (2007) for Asian countries, Hanson and Robertson (2010) for developing countries. Also, see Acemoglu et al. (2015) and Pierce and Schott (2016) for the import competition from China on the US labor markets and Bernard et al. (2006) on goods market in the US.

trade can collapse in this framework is the strong vertical production linkages across countries, particularly for durable goods, that amplifies a final demand shock (hereafter, demand means final demand unless specified otherwise). Since the demand for durables had shrinked significantly more than other demands during the crisis and this negative shock was transmitted through all production stages along the global supply chains or GVCs, the trade among those chains sequentially plummeted.[3] Although the degree of amplification is smaller than trade, the mechanism works for production and value-added exactly the same way. Thus, we apply the input-output framework to the change in China's domestic demand.

Armed with the analytical framework, we then examine two structural changes in Chinese economy over the 1995–2011 period that are the key to understand the role of its domestic market for the rest of the world. The first change is the unequal growth in China's domestic demand. By classifying the aggregate demand into four product groups (i.e., nondurables, durables, utilities & construction, and services), we show that the rapid expansion of Chinese domestic market over the sample period is largely attributed to the demand for durables. In particular, the demand growth for durables remains high even in the global crash of 2008–2009 when most countries suffer from considerably negative demand shocks for durables. The second structural change lies in the structure of Chinese imports. Whilst the share of final goods in the total imports declines from 31.6% in 1995 to 22.5% in 2010, we report that all Chinese sectors for domestic sales use more imported intermediate inputs in the later years through the integration into global economy. These two structural changes reinforce each other to magnify the impact of Chinese domestic market on other countries. However, the size of impact would depend on the shape of trade network with China: countries that are nearby geographically and have formed tighter input-output relationship with China–notably through durables–would tend to be more affected by Chinese demand shocks.

All our estimates consistently confirm the arguments described above. Using the Inter-Country Input-Output Tables from the OECD, we first calculate the elasticity of GDP with respect to final demand to show that a unit increase in Chinese domestic demand, regardless of product group, induces unilaterally more GDP growths across all countries in 2010 than in 1995. However, the size of the impact on GDP varies substantially for each product group: the impact of durable demands have been much bigger than others. These heterogeneous unit impacts are combined with the unbalanced demand growth towards durables to induce GDP growth in foreign countries, but disproportionately more in its neighboring countries and sectors related to durable productions. Specifically, the induced annual GDP growth rates are close to 1%p in Taiwan, Malaysia, and Korea over the 2009–2011 period, whereas the NAFTA and EU member countries typically benefits from less than 0.1%p. Moreover, the sustained demand expansion in China absorbed significant portions of negative growth shocks in Asian

[3]This explanation is also supported by Eaton et al. (2016) who explore the sources of the great trade collapse with a general equilibrium model framework. See Bems et al. (2013) for a comprehensive review on the related literature about the great trade collapse.

countries in 2009 and helped their recoveries in subsequent years.

As mentioned earlier, this paper relates and contributes to the literature on China's global impact. A recent review article by Qiu and Zhan (2016) nicely classifies the relevant studies by the group of affected countries and type of markets. Particularly, they point out that China's "(i) rapid growth and development of the domestic economy, and (ii) gradual integration of the domestic economy into the global economy (pp. 45)" are the fundamental sources of its significant and extensive influence on the world economy. The main contribution of this paper is to examine how the two factors can affect other countries through the demand side in China, whereas most prior studies focus on the supply (or production) side channel.

Second contribution is that, although the vertical linkage channel through which a demand shock in China can be magnified is qualitatively well understood from the prior literature (e.g., Bems et al., 2010, 2011; Bussière et al., 2013; Eaton et al., 2016), we still want to know quantitatively how important or how bigger, compared to the past, the role of Chinese market is for the rest of economies. Indeed, there are claims by policymakers or media that China played as a significant bumper against the negative shocks during the 2008–2009 crisis to its major trading partners, but they lack empirical supporting evidences.[4] We provide such evidence and further claim that, not only during the crisis, China served as a leading contributor to the recovery of world economy even after the crisis.

Third, our estimates for the implied GDP growth rates in each sample country by the demand growths in China provide clearer interpretation and policy implications than a model-driven measure of welfare. There are some studies that assess the China's global impact on the worldwide welfare using multi-country, multi-sector general equilibrium models. Both di Giovanni et al. (2014) and Hsieh and Ossa (2016), for example, develop their own models to assess how China's productivity growth would increase the real income for the rest of the economies. Despite the several advantages in their general equilibrium features, however, their model-driven measures of welfare is not very clear to interpret in the sense that they cannot be observed in real world. We instead estimate directly the annual GDP growth rate, the most common measure for national welfare. Policy-wise, this GDP based estimates can provide a practical guideline when policymakers develop strategic plans for their economic growth or countermeasures to any possible change in Chinese economy.

The rest of the paper is organized as follows. Section 2 introduces our analytical model to investigate the role of Chinese domestic market and necessary data to implement the model empirically. Section 3 highlights the two aspects of structural change in China, i.e., the compositional changes in the domestic demand and in imports. Our estimation results are reported and discussed in section 4 with some practical implications for the concerns about China's growth slowdown. Section 5 concludes.

[4] As an example of such claims, see King (2015) in *Financial Times*.

2 Analytical Framework and Data

2.1 Analytical Framework

Our analysis employs the Input-Output framework suggested by Bems et al. (2010, 2011). Although readers can refer to the original papers for detailed explanations about the model environment and the estimation procedure, we concisely re-introduce the overall framework to clarify the key mechanism through which China's domestic market affects other countries' economic growth.

Consider an economy where there are N countries with each country having S sectors. Countries and sectors are indexed by $i, j \in N$ and $s, t \in S$, respectively. One sector can produce only one product (i.e., good or service). Hence, the sector indices are used interchangeably to stand for the products of corresponding sectors. Products are differentiated across countries within the same variety s, so each product faces a different demand. The output quantity or real output that sector s in country i produces, denoted by $q_i(s)$, must satisfy the following market clearing condition: $q_i(s) = \sum_j \sum_t q_{ij}^m(s,t) + \sum_j q_{ij}^f(s)$. This equation implies that $q_i(s)$ is either used as an intermediate input, $q_{ij}^m(s,t)$, for another production in sector t in country j or consumed as a final product, $q_{ij}^f(s)$, in country j. The equation above holds for all i, j, s, t. Using the market clearing conditions, we can present the growth rate of $q_i(s)$ as a linear function of intermediate demand growths and final demand growths:

$$\hat{q}_i(s) = \sum_j \sum_t \left[\frac{q_{ij}^m(s,t)}{q_i(s)} \right] \hat{q}_{ij}^m(s,t) + \sum_j \left[\frac{q_{ij}^f(s)}{q_i(s)} \right] \hat{q}_{ij}^f(s), \quad \forall i, j \in N \text{ and } s, t \in S \tag{1}$$

where $\hat{x} \equiv (x_t - x_{t-1})/x_{t-1}$ represents the growth term. The terms inside the two brackets on the right-hand side of Eq. (1) are the shares of intermediate and final demands in each sector, respectively, and adds up to one. Thus, the overall growth of $q_i(s)$ equals the weighted average of the intermediate and the final demand growths.

With a couple of assumptions, Eq. (1) can be reduced to an empirically implementable form. The necessary assumptions are listed: (i) shipment price of a product does not vary across destination countries or sectors, (ii) each sector has a Leontief production technology, and (iii) consumers in each country have a Leontief preference over the differentiated products within varieties.

By assumption 1, the product price, $p_i(s)$, is set equal regardless of where it exports for what purposes. This allow the shares in the two brackets in Eq. (1) to be expressed in value terms, i.e., $\frac{q_{ij}^m(s,t)}{q_i(s)} = \frac{m_{ij}(s,t)}{y_i(s)}$ and $\frac{q_{ij}^f(s)}{q_i(s)} = \frac{f_{ij}(s)}{y_i(s)}$ where $y_i(s)$, $m_{ij}(s,t)$ and $f_{ij}(s)$ are the nominal values of output, intermediate and final demand, respectively. Assumption 2 tells us that each production requires a fixed amount of inputs with constant return to scale. This implies that the demand growth rate for intermediate inputs should be equal to its real output growth

rate. Namely, we have $\hat{q}^m_{ij}(s,t) = \hat{q}_j(t)$ for all i, j, s, t. Likewise, assumption 3 means that consumer's demand for products within the same varieties should grow at an equal rate across all countries, i.e., $\hat{q}^f_{ij}(s) = \hat{q}^f_j(s)$ for all i, j, s.

Combining all three assumptions above, we can re-write Eq. (1) as

$$\hat{q}_i(s) = \sum_j \sum_t \left[\frac{m_{ij}(s,t)}{y_i(s)}\right] \hat{q}_j(t) + \sum_j \left[\frac{f_{ij}(s)}{y_i(s)}\right] \hat{q}^f_j(s), \quad \forall i, j \in N \text{ and } s, t \in S. \tag{2}$$

For further calculations, it is convenient to express Eq. (2) in vector and matrix form. Let $(S \times 1)$ vector, y_i, be the output of country i and y $(SN \times 1)$ be the output of all countries. f_{ij} $(S \times 1)$ is the final demand in country j for the products in country i and A $(SN \times SN)$ is the input coefficient matrix with its element $a_{ij}(s,t) \equiv m_{ij}(s,t)/y_i(s)$. After some matrix algebra, Eq. (2) can be solved for the real output growth vector so that

$$\begin{pmatrix} \hat{q}_1 \\ \hat{q}_2 \\ \vdots \\ \hat{q}_N \end{pmatrix} = \underbrace{[diag(y)]^{-1}(I-A)^{-1}}_{\equiv Z} \underbrace{\begin{bmatrix} diag(f_{11}) & diag(f_{12}) & \cdots & diag(f_{1N}) \\ diag(f_{21}) & diag(f_{22}) & \cdots & \vdots \\ \vdots & \vdots & \ddots & \vdots \\ diag(f_{N1}) & \cdots & \cdots & diag(f_{NN}) \end{bmatrix}}_{\equiv F} \begin{pmatrix} \hat{q}^f_1 \\ \hat{q}^f_2 \\ \vdots \\ \hat{q}^f_N \end{pmatrix} \tag{3}$$

where $[diag(x)]$ is the diagonalized matrix of vector x.

Eq. (3) demonstrates that the output growths are proportionally increasing in the final demand growths (the last term on the right-hand side). To see this relationship vividly, the matrix defined as Z needs to explained. First, $(I-A)^{-1}$ is the well-known Leontief inverse matrix and F is the (rearranged form of) final demand. Hence, $(I-A)^{-1}F$ implies that how much products should be supplied both directly and indirectly to meet the final demand.[5] This term is then divided by the (diagonalized) output vector y to be shown as shares. Therefore, an element, $z_{ij}(s,t)$, of the matrix Z represents the output share of product s in country i required to meet the final demand for product t in country j. Mathematically speaking, $z_{ij}(s,t)$ is the elasticity of output of the product s in country i with respect to the final demand for product t in country j. By construction, each row of Z sums up to one, meaning that 1% increase in the final demand for all products induces 1% increase in the production in all sectors. The real output growth in each sector can be obtained when this Z is pre-multiplied by the actual final demand growths for all products.

The real value-added growth at sectoral level, $\hat{r}_i(s)$, is simply equal to the output growth $\hat{q}_i(s)$ as long as the value-added, $va_i(s)$, is defined as proportional to output, i.e., $r_i(s) \equiv$

[5] Specifically, $(I-A)^{-1}F = F + AF + A(AF) + \cdots$. Hence, sectors should supply (i) the final products by F, (ii) the intermediate inputs by AF that are necessary to produce the F, (iii) the intermediate inputs by $A(AF)$ that are necessary to produce the AF, and so on.

$va_i(s)/y_i(s)$. Hence, Z is also the elasticity of value-added or GDP to the final demand. In aggregate level, however, the output growth rates and value-added growth rates can be different among each other: aggregate growth rates are calculated as the weighted averages of individual sector growth rates with the weights being the sizes of output and value-added in the base year, respectively. Since the value-added ratios are heterogeneous across sectors, the weights are also different.

We also calculate the real growths of intermediate exports and final exports to better understand the framework, albeit not directly used in this paper.[6] By Eq. (1), intermediate exports are created by productions in foreign countries, while final exports are driven by final demands in foreign countries. Hence, the real growth in intermediate exports, $\widehat{MX}_i$, can be defined as the weighted average of all foreign output growths. The real growth in the final exports, $\widehat{FX}_i$, is defined in the same way. Thus, we have

$$\widehat{MX}_i = \sum_{j \neq i} \sum_s \sum_t \left[\frac{m_{ij}(s,t)}{mx_i} \right] \hat{q}_j(t) \quad \text{and} \quad \widehat{FX}_i = \sum_{j \neq i} \sum_s \left[\frac{f_{ij}(s)}{fx_i} \right] \hat{q}_j^f(s) \tag{4}$$

where mx_i and fx_i are the total intermediate exports and final exports in country i, respectively. Finally, the real growth of aggregate exports in country i, $\widehat{EX}_i$, is obtained as the weighted average of $\widehat{MX}_i$ and $\widehat{FX}_i$ with the weights being the share of intermediate and final exports in total exports in the base year, respectively.

We finish with two comments on the features of our analytical model. First, our approach is purely demand-driven in the sense that production only and always occurs to meet the demand, as Eq. (3) imply. Despite some limitations compared to general equilibrium approach (e.g., Eaton et al., 2016), this parsimonious model efficiently isolates the effect of demand change from any other effects, such as supply-side productivity shocks or input share adjustment to price changes. Moreover, the model can reflect the structures of processing trade in China and Mexico in a flexible way, which can hardly be dealt with in an already complex general equilibrium model.

Another feature of this model is that it can additively decompose the GDP growth rate into the contribution by each country's demand growth. For example, if we feed the growth rates of domestic demand in China, $\hat{q}^f_{China}$, in Eq. (3), leaving all others remain zero, we can obtain the induced GDP growth by $\hat{q}^f_{China}$ in each country. Similarly, we obtain the model-implied aggregate GDP growths by country, when the demand growths in all countries are fed into the model. Hence, we can evaluate the relative contribution of Chinese domestic market to the aggregate GDP growth for each country. As Bems et al. (2010) states, this decomposition exercise cannot be reliable if the induced aggregate GDP growth rates do not match the real data. We find, however, that our estimates fit reasonably well to the real GDP growth rates.[7]

[6] Estimation results are available up on requests.

[7] Eaton et al. (2016, pp. 3402) conduct an accounting exercise in which they decompose output, GDP, and trade in each country into the contribution of six exogenous shocks: "(i) to the cost of trade in each manufacturing

2.2 Data

Two main data sources are exploited in our analyses throughout the paper. One is the CEIC China Premium Database from which we draw national accounts and sector level price data. The other is the OECD Inter-Country Input-Output Table (henceforth, ICIO Table) with which we construct the elasticity matrix, Z, and real growth rates of domestic demand, $\hat{q}_j^f$ for all $j \in N$, in Eq. (3).

Although several institutions and projects provide international input-output (IO) tables nowadays, the ICIO Table has notable advantages.[8] First, it covers 62 trading countries (including the rest of the world).[9] This coverage is among the widest in international IO tables. Importantly, the database includes most major Asian countries nearby China. Given the fact that GVCs are heavily concentrated within Asia and are not truly global (Los et al., 2015), more Asian countries in the sample would help improving the accuracy of our estimation. Second, the table has 34 sectors classified according to the International Standard Industrial Classification (ISIC) revision 3, among which 16 are manufacturing sectors as listed in Table A1. In particular, the durable sectors are more disaggregated in the ICIO table than in others, which is also conducive for the accuracy of the estimation.

Perhaps, the most advantageous feature of the ICIO Table is that, unlike others, it explicitly accounts for the prevalence of processing trade in China and Mexico emphasized in Koopman et al. (2012, 2014). As for China, specifically, it differentiates the input structures of tradable sectors in three types: production for domestic sales, ordinary exports, and processing exports. Similarly, Mexican manufacturing sectors are distinguished into production for global manufacturing (known as Maquiladoras) and for non-global manufacturing. We will explain further in the next sections about how input structures are different among these types as well as why the differences matter in our analysis.

That said, to reflect such different input structures within the same sectors in China and Mexico in the estimation model, we technically assume that China can be divided into three regions by the type of input structures. region 1 is assumed to produce services only, while regions 2, 3, and 4 to produce goods only for domestic sales, for ordinary exports and for processing exports, respectively. Also, region 1 has all final demands in China and there are no final exports between regions within China. We deal with Mexico in the same way. This trick in our empirical implementation is virtually equivalent to have 67 countries in the sample with three countries only specialized in specific productions but no consumption or investment.

sector between each pair of trading partners; (ii) to productivity in each sector; (iii) to the efficiency of investment in each type of capital; (iv) to aggregate demand; (v) to the demand for nondurable manufactures; and (vi) to employment."

[8] Popular databases of international IO tables include the World Input Output Database (WIOD), Asian International Input-Output Tables by IDE-JETRO, and the Eora MRIO database.

[9] The country list is available from http://www.oecd.org/sti/ind/TiVA_2015_Country_Region_List.pdf. Note that Hong Kong is included in the list as a separate country from China. The mainland China, Hong Kong, and Macao have their own statistical systems and legal provisions. China's national accounts data, thus, do not include Hong Kong and Macao, except for the area of the national territory and forest resources.

We also need to mention about two caveats of the ICIO Tables. First, the ICIO Tables are published only for years 1995, 2000, 2005, and 2008 through 2011. Hence, we can only evaluate the China's contributions to other countries' annual growths for the 2009–2011 period. Second, the ICIO Tables in themselves are estimated data using several national IO tables. Since most countries report their IO tables only once in a few years, the ICIO tables have to interpolate or extrapolate values to produce data for certain years. This may lead to inaccurate values in the tables and thus cause inaccurate estimation results. To minimize this issue, national accounts or IO tables in some major countries including China, US, Japan, and Korea are used as supplementary datasets where necessary.

3 Structural Changes in Chinese Economy

3.1 Demand in Domestic Market

China's domestic market had been rapidly grown between 1995 and 2011. The share of its domestic demand in world's GDP was only 2.4% in 1995, but rose up to 10.1% in 2011 to become the second largest market in the world, followed by the US.[10] Figure 1 shows the annual growth rates of China's domestic demand over the period where the size is measured by the sum of final consumption expenditure (or shortly consumption) and gross capital formulation (or shortly investment). Thus, the growth of domestic market can be decomposed into the growths of consumption and investment. We observe that, whereas the consumption growth is relatively stable ranging between 4% and 6% in most years of the period, the investment growth is more volatile and mounting over time in general. Naturally, a larger part of the variation in domestic demand growths are accounted for by the growth pattern of investment. Notably, the investment in China hit the highest growth rate at 8.1% in 2009 contributing more than 60% of the domestic demand growth, despite the worldwide economic hardship.[11] This leads to the highest growth rate of domestic demand in the same year at 13.4%.

We also compare the growth pattern of domestic market with the GDP growth. In the expenditure approach, GDP is calculated by the sum of domestic demand and net exports. Hence, by definition, the difference between in the two growth rates should be equal to the growth rate of net exports. The contribution of net exports to the aggregate GDP growth is positive only in mid-1990s and mid-2000s, although Chinese trade surpluses had been continuously escalated. The small or even negative contribution of net exports to GDP growths in China over the sample period (except 1997) reasserts that China is basically a large country

[10] The shares of the US domestic market in the world's GDP are 25.3% in 1995 and 22.2% in 2011, respectively. Source: CEIC China Premium Database and World Bank national accounts data.

[11] The annual worldwide GDP growth rate records -1.7% in 2009, which is the unique year of negative growth since 1951 (source: The Maddison-Project and World Bank national accounts data).

where most of its growth are sourced from domestic demand. 2009 is the year in which the role of domestic demand is highlighted.

Although the consumption vs. investment dichotomy does help us understanding the structure of Chinese domestic market, what is more relevant to our study is the demands for individual products constituting the domestic market and their growth patterns. To see those, specifically, the entire domestic market in China is first classified into four product groups: durables, nondurables, utilities and construction, and services, and then the four groups are further classified into the 17 products for later use. Let the former (product group) category be referred to as level 1 classification and the latter one be referred as level 2 classification. See Table A1 for the detail classifications.

Figure 2 shows the time trend of group-specific demands in China from 1995 to 2011. In order to compare the group demands over time, constant 1995 prices have been applied at the product level and then the product level real values are aggregated up to the group level. The growth is the fastest in durables, followed by utilities and construction, services, and nondurables. Interestingly, in 1995, the demand for nondurables was 2.1 trillion yuan and was twice that for durables (0.9 trillion yuan). The more than elevenfold upsurge in the demand for durables over the sample period is in striking contrast to the two and a half fold demand increase for nondurables. Utilities and construction shows relatively faster growth pattern around the period of global financial crisis, while the demand for services rises quite constantly throughout the whole period.

The widening difference in the growth patterns between durables and nondurables particularly makes the structural change in China's domestic market apparent. Although it could be attributed partly to the strong deflation in durables over the long time, the structural change toward the higher demand for durables is a quite natural phenomenon in the process of Chinese industrialization. Indeed, a very similar pattern is observed even in the annual growth rates of domestic demand deflated by previous year's prices. Figure 3 decomposes the growth rates of aggregate domestic demand into the contributions of each product groups. To do so, the 17 product level growth rates are first weighted by the previous year's (nominal) demands and summed up to the group level.[12] We can only show the growth rates over the last three consecutive years due to the data limitation, but at least for that period, the demand growth for durables are the highest, utilities and construction the next, and services and nondurables are the lowest on average.

Thus far, we have confirmed that Chinese domestic market had a rapid expansion largely driven by the demand for durables over the 1995–2011 period, which made it possible to sus-

[12] In fact, the weighted sum of the product demand growth rates are greater by about 0.2% and 0.3% in 2010 and 2011, respectively, than the aggregate demand growth rates appeared in Figure 1. Perhaps, this is partly due to the mis-measurement of the final demand in the ICIO Tables or partly because the deflators at the product level vs. aggregate level are not exactly the same. In any case, we prefer the national accounts and adjust prices of 'other services' in China in order to match the aggregate growth rates of domestic demand. Although this adjustment is ad hoc, it barely affects other countries' production and trade.

tain the high economic growth in China even during the 2008–2009 crisis when its exports growth is hampered. Given that durables generally involves long production stages that have been gradually fragmented across borders and thereby amplifies the volume of international trade, the high, sustained growth in durables demand in China must have progressive influences on other countries.

3.2 Structural Trend in Intermediate vs. Final Imports

Investigating the structures of both intermediate and final good imports in China is crucial in our study. Demand for a final good can be met by either producing the good domestically or importing it from a foreign country, and in both cases the demand can create productions in all countries through the international input-output networks, which is captured by Z in our analytical model. Hence, the bilateral trade relationship among all countries matter theoretically, but clearly more weights are on the direct trade relationship with China.

Let's first look at the structure of Chinese import by end use type and by trading partner including the world as in Figure 4. All products are classified in accordance with the Broad Economic Categories (BEC) by United Nation Statistics Division.[13] Among the five categories in the figure, raw materials, parts & components, and half-finished goods are regarded as intermediate inputs, whereas capital and consumer goods are final products in our context. Namely, the figure indicates that Chinese imports mainly consist of intermediate goods. Moreover, the share of intermediate goods in total imports (from the world) rises by 9.9%p from 68.6% in 1995 to 78.5% in 2010. Even for Korea and Malaysia in which the intermediate import shares fall, we still observe that the shares are way higher than the final import shares.[14]

The trend in Figure 4 implies that the final imports are not the main channel through which Chinese domestic demand creates the production and value-added in foreign countries, because if they were the main channel, a unit increase in Chinese demand would have weaker impact on other countries in 2010 than in 1995, but as we will see in the next section, our estimates for the magnitude of impact of the unit demand change show the opposite result. We can also guess from Figure 4 that more goods for domestic sales would be now produced within China rather than imported.

That said, we turn to the structure of intermediate imports used in productions within China. A central key to understand China's production is the regime of processing trade. Backed by the strategical promotion as a core industrialization policy, processing trade is now prevalent in China. Typical processing exporters import parts and components from abroad with tariff exemptions, assemble or process, and then export them to third countries. Most inputs of a processed good are imported by the system's nature, even though domestic inputs

[13] Source: http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=10

[14] The case for Taiwan is not directly available from the UN Comtrade Database. Instead, based on the OECD ICIO Tables, the intermediate import share in the total imports from Taiwan rises from 71.8% in 1995 to 78.5% in 2010.

are increasingly used in effort toward higher domestic value-added (Kee and Tang, 2016). Thus, the input structure of production for processing exports (PRO) is largely different from that for domestic sales (DOM) and ordinary exports (PRO).[15]

Figure 5 shows examples of the differences appearing in petrochemical sector and computers & electronic equipment sector, respectively. The figures inform that the input structures in PRO show the opposite time trend from those in DOM and NPR: Most inputs in PRO are imported–especially from Korea, Japan and Taiwan–through all the years, but the ratio of domestic inputs are increasing over time. On the other hand, inputs in DOM and NPR are mainly sourced domestically, but increasing portions of imported inputs are used arguably due to China's deeper globalization: firms in China have more access to global market to source inputs even for domestic sales. Though not shown to save spaces, these contrasting patterns are common in all manufacturing sectors in China. Thus, we expect that the impact of China's domestic demand on other countries would increase along with the increasing import shares in DOM, yet the impact might be over-estimated without distinguishing the input structures by its purpose.

One thing that makes our analysis complicated is that, even though some products are supposedly exported to foreign countries under their special tax treaties, such as value-added tax exemption, a substantial portion is indeed re-imported back to China for domestic sales. According to UN Comtrade database, the share of re-imports in the total Chinese imports is as large as 7.7% in 2010.[16] This is possible because of the unique customs system in China under which Hong Kong and Macao are treated as separate trading partner countries: the goods once exported to Hong Kong can be re-imported back to China as long as the import duties are paid when they re-enter.[17] Besides, the duties can be exempted if some values are added in Hong Kong, since the Closer Economic Partnership Arrangement (CEPA) between China and Hong Kong in 2003.

This fact implies that even the input structures in PRO and NPR are not irrelevant to China's domestic demand and the trade relationships between China and Hong Kong needs to be explicitly accounted for to obtain appropriate estimates for the impact of the domestic demand. The ICIO Table does capture this relationship and we exploit the relationship in our estimation.

[15] Recent studies investigate the determinants of regime choice between ordinary exports vs. processing exports, such as credit constraints (Manova and Yu, 2016), tariffs and domestic market size (Brandt and Morrow, 2017).

[16] Although the re-imported products may be exported again to third countries, we suspect that many of them are sold in the domestic market.

[17] This round-trip pattern of trade is often referred to as "one-day trips" to Hong Kong. See, for example, Chang (2012) in *Forbes*.

4 Estimation Results

4.1 Impact of China's Domestic Market Expansion

We first present a unit impact of China's domestic market growths, which is represented by the elasticity Z. In our estimation, the original 34 sectors in the ICIO Tables are aggregated up to 17 sectors (or products) following level 2 classification. This aggregation simplifies the calculation without much loss of accuracy and allows us to concisely present the estimation results. It also eases our data collections especially for prices, since they are not usually as disaggregated as the 34 sector classification. After all, the actual estimation involves 67 countries or regions and 17 sectors, which generates the square matrix Z of dimension 1139 by 1139.

Table 1 reports the elasticity of GDP in each country with respect to (10 times) China's domestic demand by product group for years 1995 and 2010. Namely, the first two columns in the table show how much of GDP in the listed countries would have grown if Chinese domestic demand for nondurables had risen at equal rate by 10% for the two different years. From column (3) to column (8) are the corresponding elasticities to the 10% demand increases for durables, utilities & construction, and services in China, respectively. The last two columns are sums up all the values for the corresponding years, which are equal to the GDP growth rates in response to the uniform 10% Chinese demand growths for all products. As mentioned, the estimated elasticity of GDP in the responding countries is the weighted averages of the elasticities of value-added in all sectors with the weight being the sectoral value-added. We present 20 major countries out of 62 sample countries to save space. The listed countries are ranked by the magnitude of the elasticity in 2010 in the last column.[18]

The results present two major findings. Firstly, the impact from a 10% increase in China's domestic demand becomes unilaterally more severe across all countries in 2010 than in 1995, regardless of product group. Secondly, the size of impact varies significantly for each product group. In case of Malaysia, for instance, the 10% increase in China's demand for durable goods would hike up Malaysia's GDP by 0.31% in 2010, roughly 11 times higher than in 1995. This magnitude would be followed by the elasticities for services, utilities & construction, and nondurables, which is contrary to the pattern in 1995 when the largest impact was from the demand for nondurables. Similar patterns are observed in Korea and Taiwan, which are the top 3 countries in terms of the induced GDP growth rates. All of these countries are the newly developed economies by specializing in heavy and chemical productions including electronics and petrochemical goods.

As already emphasized, the root of the above two findings lay in the fact that GVCs involving China have become more active in recent years, but particularly in the durable sectors. An expansion in a GVC amplifies the impact of one country's demand on others' produc-

[18] For the rest of the countries, the results are available upon request.

tion through tighter input-output relationships. Moreover, the durable sectors, among others, tend to create a larger spillover effect and brings about more stimuli to international trade than other sectors as it engages with a broader range of sectors and the production process is longer. Therefore, a 10% increase in China's durables demand may have a larger impact on productions, exports, and GDPs in other countries.

To confirm the idea above, Figure 6 illustrates the GDP growth rates driven by the 10% increase in Chinese domestic demand for all products in years between 1995 and 2010. Combined with the last two columns in Table 1, the figure indicates that the deeper integration of China into the world induces stronger impacts of its domestic market on other countries. This pattern is also in line with the finding in the literature that deeper vertical linkages cause higher business cycle co-movements across countries through intermediate trade (e.g., di Giovanni and Levchenko, 2010; Johnson, 2014). During the crisis in 2008–2009, however, the integration process was deteriorated which in turn weakened the impacts on some countries like Japan and Vietnam.

As an interesting comparison, we document in Table 2 the elasticity of GDP with respect to a 10% increase in domestic demand in the US. The list of countries in the table is the same, except that the US in Table 1 is replaced by China in Table 2. As we can expect, the biggest beneficiaries from the uniform growths in the US domestic demand are Canada and Mexico, arguably owing to the North American Free Trade Agreement (NAFTA) activated in 1994. However, the magnitudes in all five columns for the two countries had fallen in 2010 from those in 1995. Instead, some other countries like China and Vietnam received more influences from the same growth of demand change. This implies that the global supply chains of the US is diversified from its closest neighbors to distant countries, whereas the overall degree of integration is largely unchanged. The finding for Mexico is particularly consistent with the studies on the competition between China and Mexico in the same position along the GVCs (Hanson, 2010; Utar and Ruiz, 2013, among others).

There are two more interesting differences between the elasticities in Tables 1 and 2. One is that the demand for services, rather than durables, in the US has the biggest influences among the four product groups. This result comes mainly from the fact that the domestic demand for services takes almost two thirds of the total final demand (in nominal values), whereas the demand for durables takes only about 12% as of 2010 in the US. In contrast, the service demands in China are only 35%, whilst durable demands account for 21% of the total demand for the same year. Thus, the two countries exhibit quite different structures of domestic demand, which are also reflected in the estimated elasticities.

The other difference is that the overall unit impact of the US domestic demand on the rest of the world is greater than that of China in most countries. This means that the US is still the most integrated through trade with the rest of the world even in 2010, despite the fast catch-up by China. Note, however, that this by itself does not mean that the domestic demand in the US is larger contributor to, say, Vietnam's GDP growth than that in China, because the

US domestic demand growths are much lower compared to the Chinese demand growths in any given year in our sample period. For example, the aggregate US demand growth in 2011 is only 1.6% according to the US national accounts, but the demand growth in China is 10.3%, more than 6 times higher than that in the US.

4.2 Contribution to the Annual GDP Growth Rates

We first estimate the actual contribution of China's demand changes to the annual GDP growth rates in other countries. This is done by feeding the actual growth rates of Chinese domestic demand in Eq. (3), leaving the demand growths in other countries remain zero. All growth rates are measured in real terms at the previous year's prices. Therefore, the demand growth rates this year are pre-multiplied by the previous year's elasticity matrix Z to provide our estimates. Table 3 presents the estimated results for the same selected 20 countries. The first three columns in the table show the estimates for the induced annual GDP growth rates in years 2009 through 2011. The values in the very last column are the averages of estimates over the three years, which in turn are decomposed into the contributions by each product group demand in China and shown in column (4) through (7). The countries are listed in order of the size of estimates in the last column.

We find that the magnitudes of the impacts in Table 3 are ordered similar to Table 1, but there are substantial gaps between the estimated impacts and the elasticities, especially for the top 3 beneficiaries of Chinese domestic demand. To understand these gaps, note that the estimates for year 2011 in column (3) are comparable to the values in parentheses, which are the hypothetical estimates as if China's domestic demand by product rose uniformly by the actual aggregate growth rates in 2011, that is, 10.3%. For example, Korea's GDP would increase approximately 0.63% (=0.61×1.03 where 0.61 comes from the last column in Table 1) if China's product-level domestic demand rose equally by 10.3%. In reality, however, the growth in domestic demand differs by product, and durables, which have the largest impact on Korea as proven in Table 1, showed the highest growth. Therefore, the durable-led domestic demand growth in China increases Korea's GDP by 0.84%, 0.21%p higher than 0.63%. Both Taiwan and Malaysia show similar patterns with Korea in terms of impacts of the disproportionate demand growths in China. The last five columns from (4) to (8) simply confirm that the mechanism is at work for all three years: when the averages of the induced growth rates are decomposed, the contribution of the durable demand growths in China is much bigger than those of other product groups. That said, Table 3 suggests that the growth of Chinese domestic demand over the 2009–2011 period had increased the annual GDP growths in Korea, Malaysia, and Taiwan by close to 1%p, whereas the NAFTA and EU countries had typically benefited from less than or equal to 0.1%p.

Table 4 highlights the contribution of Chinese domestic demand to the annual GDP growth in the 20 countries and China itself by comparing it to the contribution of the US. The results

indicate that the roles of China and the US on the GDPs in other countries are sharply contrasted in 2009. As already emphasized in Bems et al. (2013), the great trade collapse in 2009 is largely attributed to the negative shock in the final demand, particularly for durables, in advanced countries like the US. We consistently observe the same negative sign in the US demand-driven GDP growth rates. Moreover, the magnitudes of the impact are sizable to the NAFTA and even some Asian countries. Chinese domestic demand growth, meanwhile, played the role of absorbing the negative demand shocks especially for its neighbors. China's domestic market not only contributed to the recovery in adjacent countries in subsequent years, but it also induced higher growth rates than the US market even for the remote EU countries such as France, Germany, and Italy.

Table 4 also shows the estimates for the induced GDP growth rates by the final demands in all countries in the sample (i.e., column named as "World") so that we can gauge the share of China's contribution. Note that all the values in the ICIO Table are reported in current US dollar terms, so we need to convert them into real values in local currencies when calculating the real growth rates of demand at the product level, $\hat{q}_j^f$ for all $j \in N$. This job requires the exchange rates against the dollar and product-level price data in each country, which is not easy to collect. We deal with this problem as follows. First, the growth rates of domestic demand in the US, Japan and Korea by product are estimated directly using the data from the national IO tables and output price indices. For the rest of the economies, rather than trying to obtain the product-level price data, the aggregate price data, with nominal exchange rates, drawn from the Penn World Table (PWT) 9.0 have been applied.[19]

Finally, the column named as "Real" provides the actual GDP growth rates in the corresponding years so as to be compared to the estimates in the "World" column. Figure 7 visualizes the the estimated and the actual GDP growth rates for easier comparison. The comparison suggests that our estimates for the annual GDP growth rates in the listed countries fit the real data reasonably well, even though we use price data with less accuracy. Given the suggestion, we can roughly conclude that, for instance, about 40% of GDP growth in Taiwan and about 20% of GDP growths in Malaysia and Korea in 2011 can be attributed to China's domestic demand expansion.

4.3 Further Discussion

So far, we have examined the role of China's domestic market over the 1995–2011 period. During this period, we have only observed the sustained high growths in Chinese domestic market and ever integrated world economy in general, in which case the impact of Chinese demand growth could only be larger. Unfortunately, however, the two forces appear to have been gradually languished more recently: the overall growth in China's domestic market has

[19]Specifically, we use *PL_DA* variable in PWT 9.0 which measures the real domestic absorption (i.e., real consumption plus investment) at current PPPs (in million 2011 US$) divided by nominal exchange rates against US$. See Feenstra et al. (2015) for more explanation about the variable.

slowed down and at the same time the global trade has been stagnated since 2012. How would these changes in the last few years affect the role of China's domestic market on other countries and how long would these changes continue in the future?

This question is beyond the scope of the analysis in this paper, but at least we would like to briefly touch this issue based on our findings so far, since it matters for policy implications. First of all, clearly, the overall growth slowdown in China's domestic market would weaken the magnitude of the impact on the rest of the world, but as we know, if the growth slowdown is accompanied with a structural change, the degree to which the impact is weakened across countries and sectors would not be proportional.

To provide a clue to this question, Figure 8 plots the relationship between real GDP per capita and the secondary sector's share in the aggregate economy in China and selected more advanced countries. The figure suggests that, as long as it follows the same development trajectory shown in other advanced countries, the share of the secondary sector in China will keep steadily falling. As a matter of fact, according to the National Bureau of Statistics of China, the growth rate in the tertiary sector has outpaced the secondary sector's growth rate since 2014. This structural change in the production side signals that China is also likely to be experiencing a concurrent compositional change in the domestic market, i.e., from durable-led growth to servitization.[20] In this case, the amplification mechanism would work to the opposite direction to significantly reduce China's role for the rest of the world.

A similar argument applies to the global trade slowdown. If Chinese imports fell by an equal rate across sectors and end use types, the elasticity of GDP to final demand in China would barely change. However, for the recent years, China has been trying to improve their domestic value-added share in the total exports, which then unevenly attenuate the influences of China on other countries.

5 Concluding Remarks

This paper has investigated on through what mechanism and to what extent China's domestic market had influenced the rest of the world from 1995 to 2011 with more focus on the last three years. During this period, China experienced two aspects of structural change: (i) a rapid domestic market expansion mainly led by the disproportionate demand growth towards durables, and (ii) increasing usage of imported intermediate inputs in the productions for domestic sales. These two changes in China jointly made the impact of its domestic demand growths on the growth of other countries considerably bigger in the later years. As a consequence, over the 2009–2011 period, Chinese domestic market played a major role in mitigating negative demand shocks and helping subsequent recoveries in all countries, but more

[20] Since the services sector involves only a small amount of transactions across borders while most of its products are consumed in the domestic market, it is expected that the GDP growth rates will be similar for both sides of production and domestic demand.

for its Asian neighbors. Thus, we highlight this role of China as a world market rather than as a world factory in which case China is typically considered as a disrupting competitor.

Continued research in the future is warranted. As mentioned in the previous section, Chinese current growth slowdown and structural changes are one of major concerns to both researchers and policymakers, and we need better answers to the question of how such changes in China would affect other countries through which channels. In terms of methodology, our input-output framework by Bems et al. (2010, 2011) can provide a useful view at macro-level, but more micro-level studies could supplement the findings in this paper with more detailed evidences.

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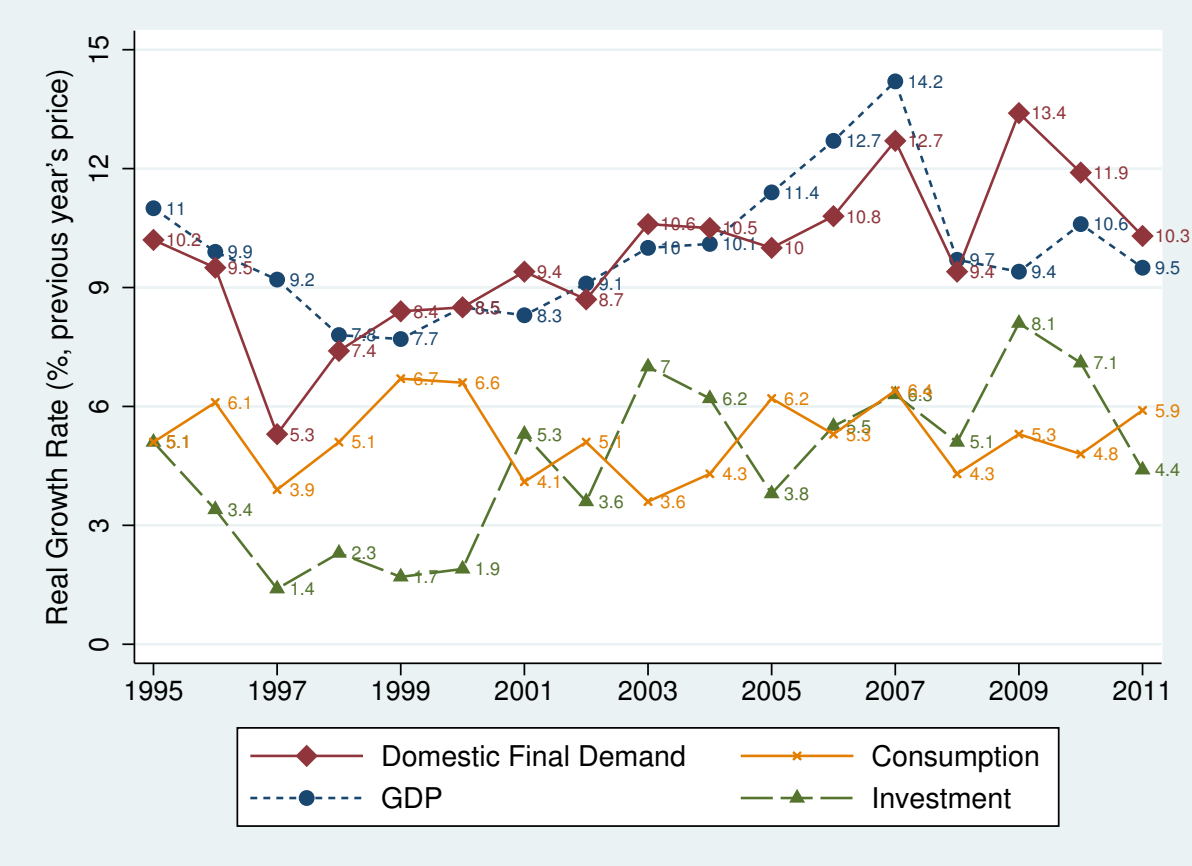
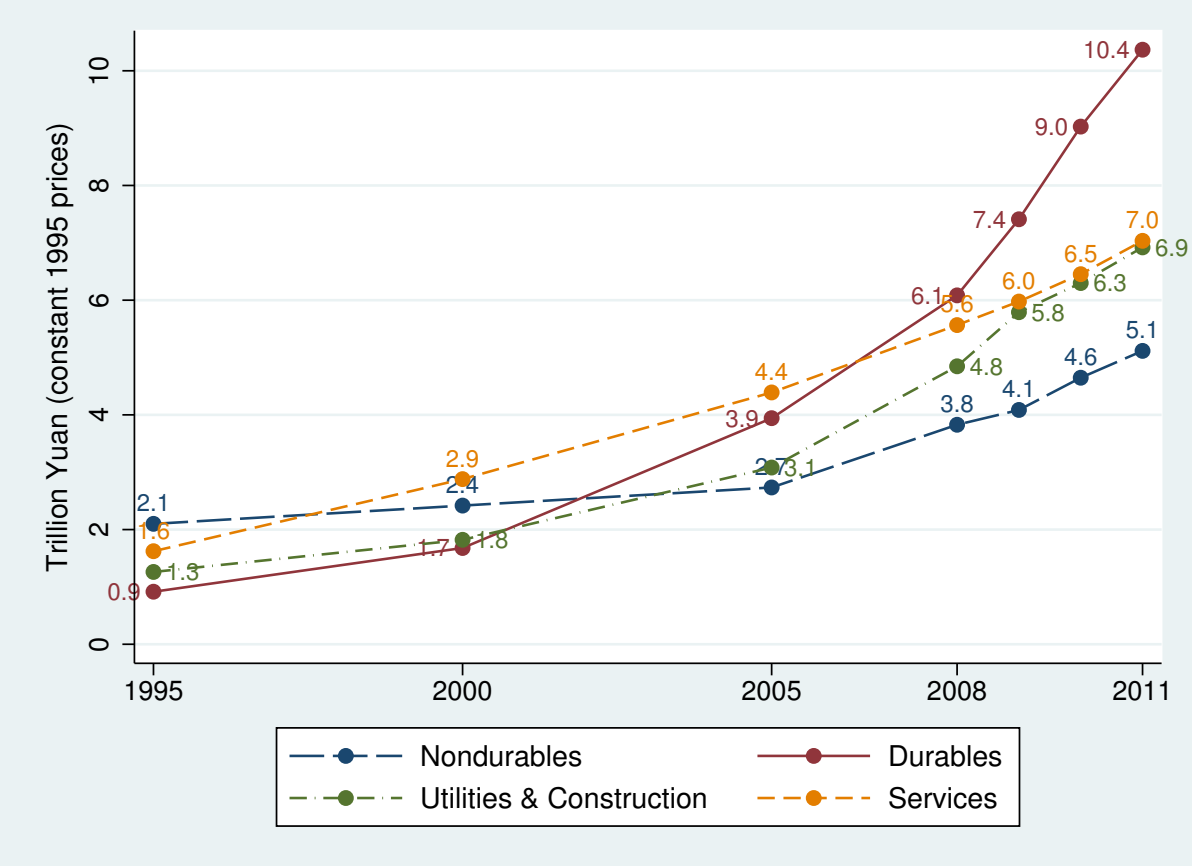
Figure 1: Growth Rates of Aggregate Domestic Demand vs. GDP in China



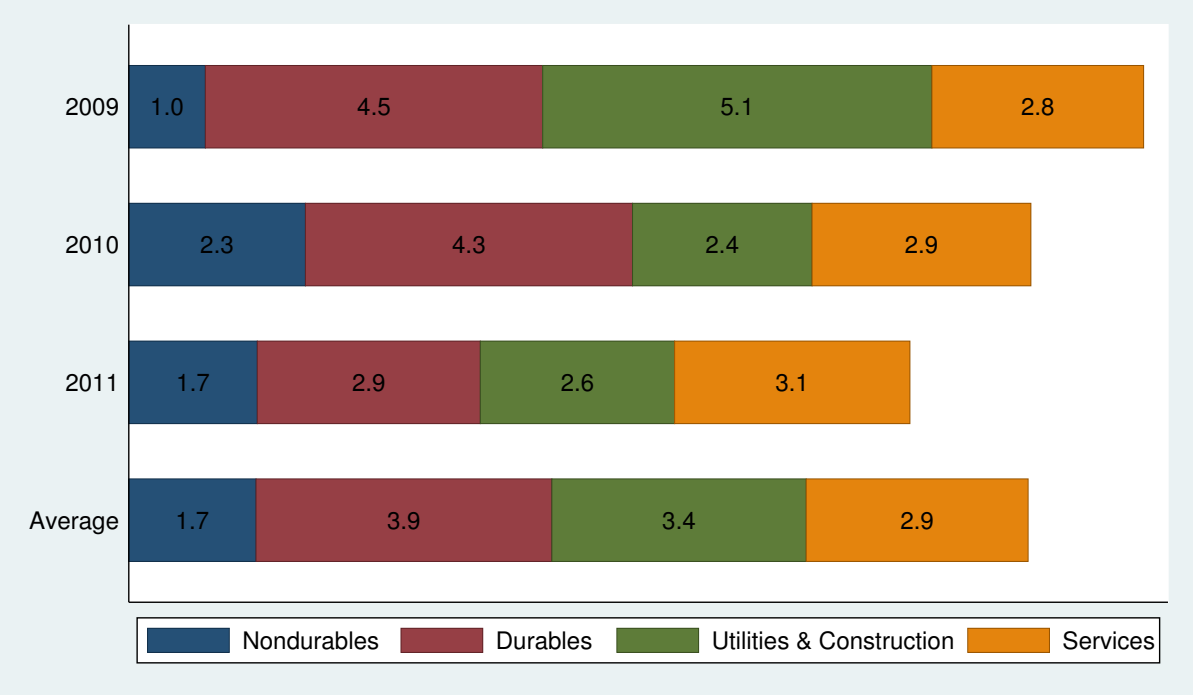
Source: The CEIC China Premium Database

Figure 2: Trends in China's Domestic Demand by Product Group (Constant 1995 Prices)



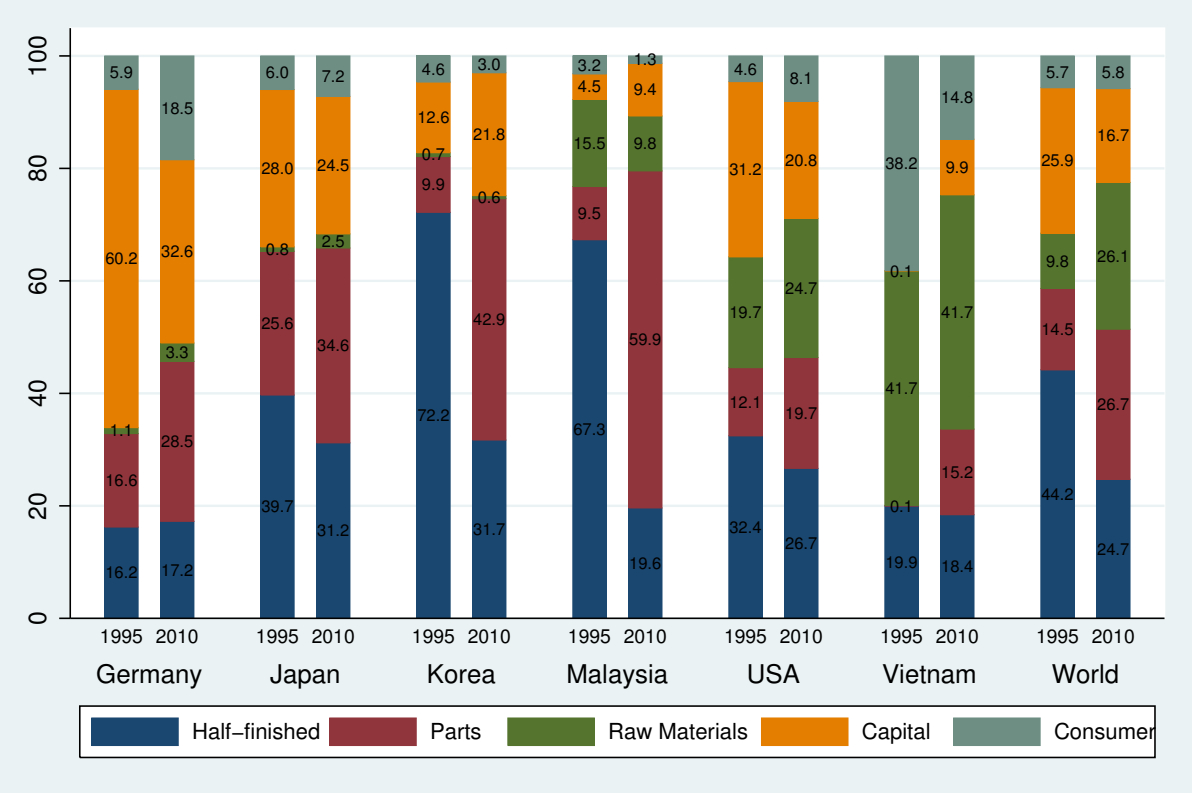
Note: Chinese domestic final demands are obtained from the ICIO Tables, which then converted to real values using exchange rate and price data from the CEIC China Premium Database.

Figure 3: Growth Rates of China's Domestic Demand by Product Group



Note: Chinese domestic final demands are obtained from the ICIO Tables except 2007 values. The 2007 values are drawn China's IO table for that year. Final demands are then converted to real values using exchange rate and price data from the CEIC China Premium Database.

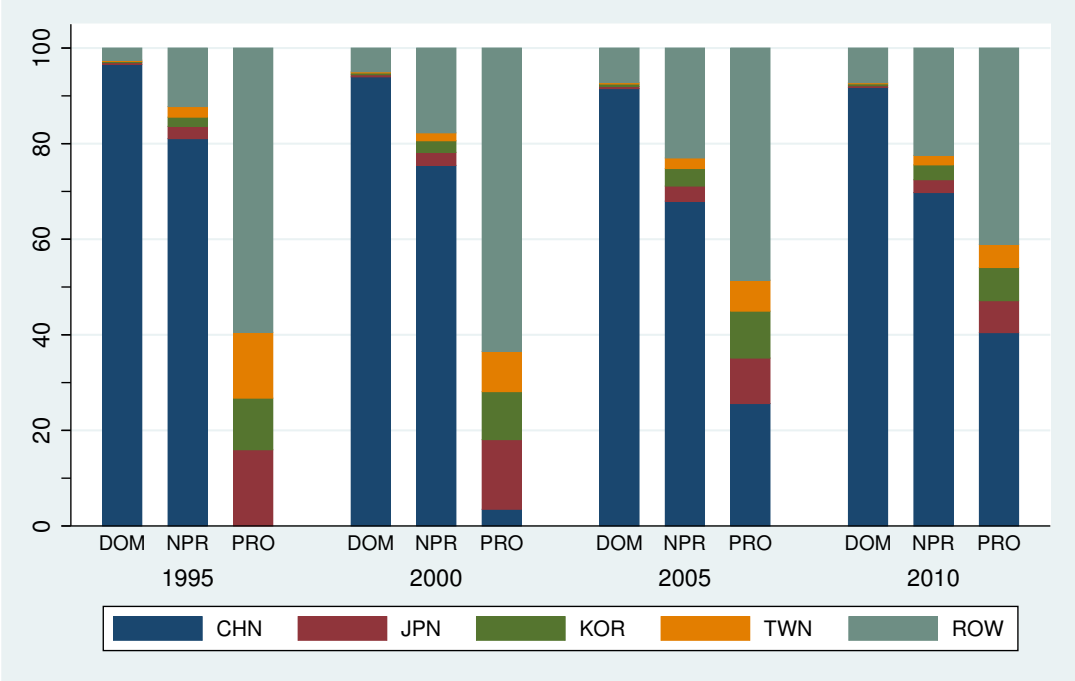
Figure 4: Composition of Chinese Imports by End Use Type



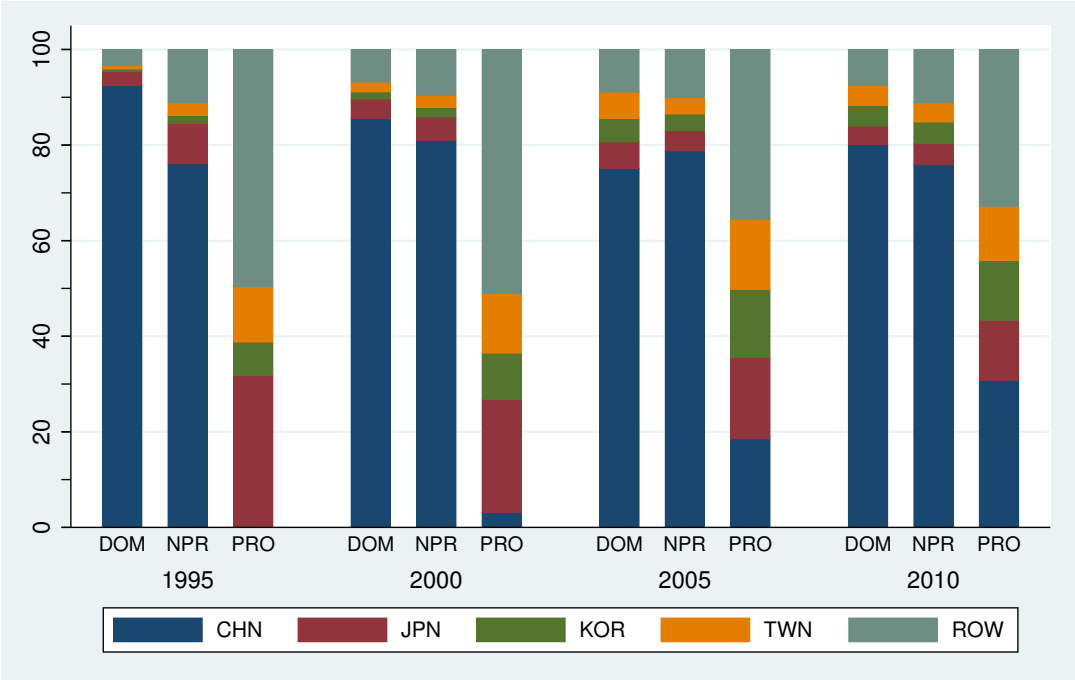
Source: UN Comtrade Database.

Figure 5: Input Structure of Production for Domestic Sales (DOM), Ordinary Exports (NPR), and Processing Exports (PRO)

(a) Petrochemical Products

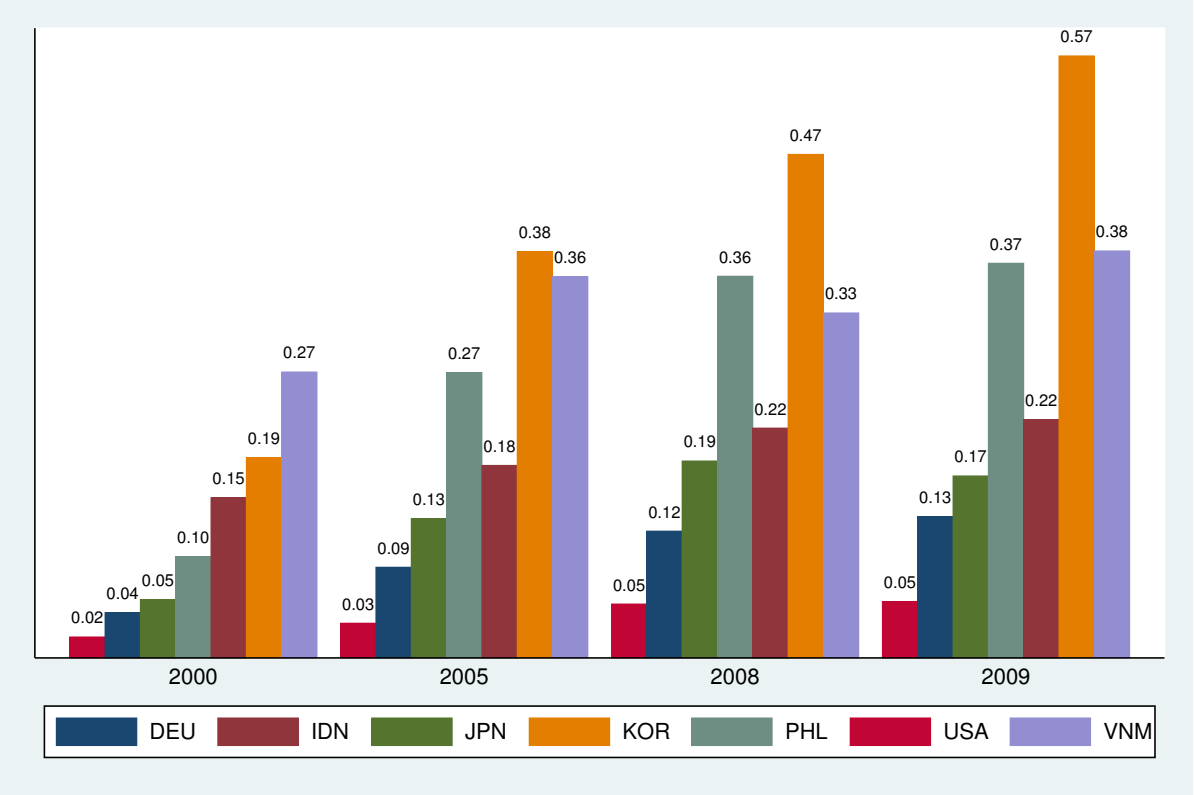


(b) Computers & Electronic equipment



Source: OECD Inter-Country Input-Output Tables

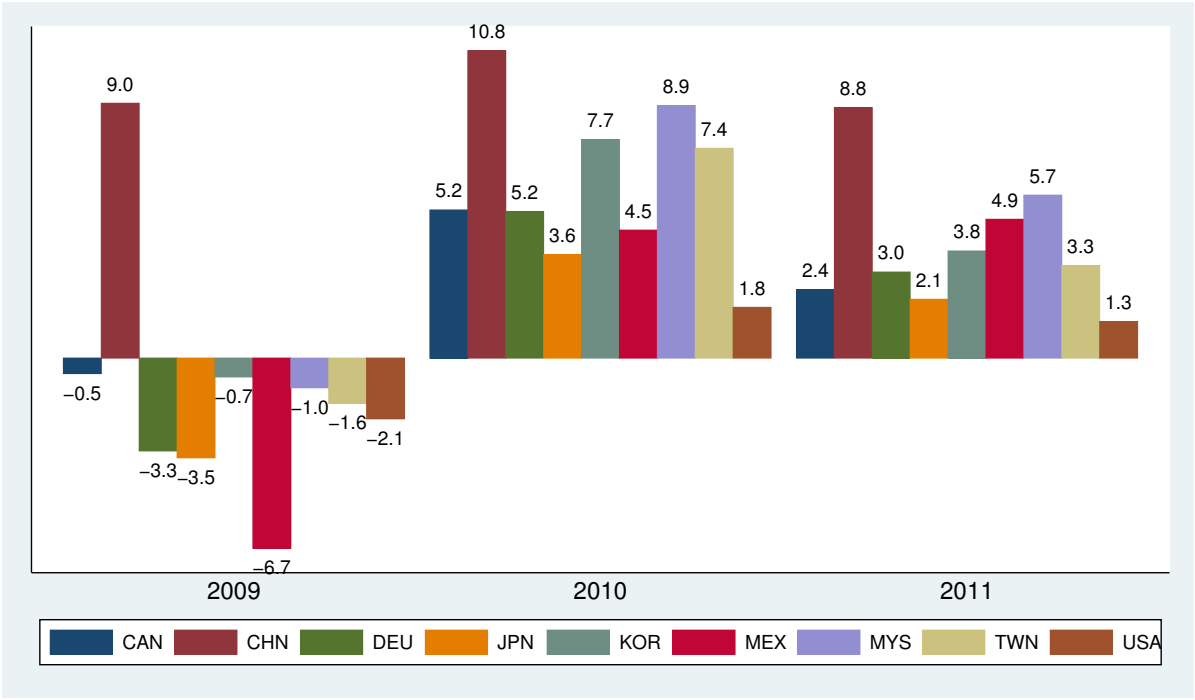
Figure 6: Elasticity of GDP to China's Domestic Demand for All Products



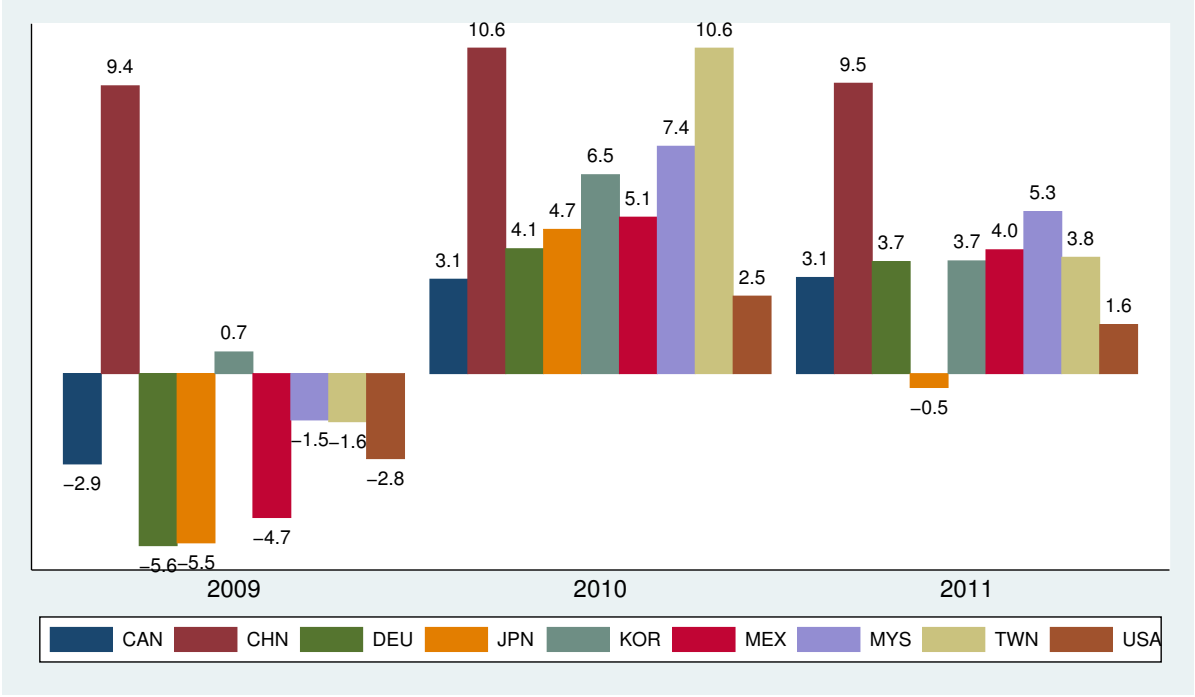
Notes: The values are the GDP growth rates induced by the 10% increases of China's domestic demand for all products.

Figure 7: Comparison between Estimated vs. Actual GDP Growth Rates

(a) Estimated GDP Growth Rates

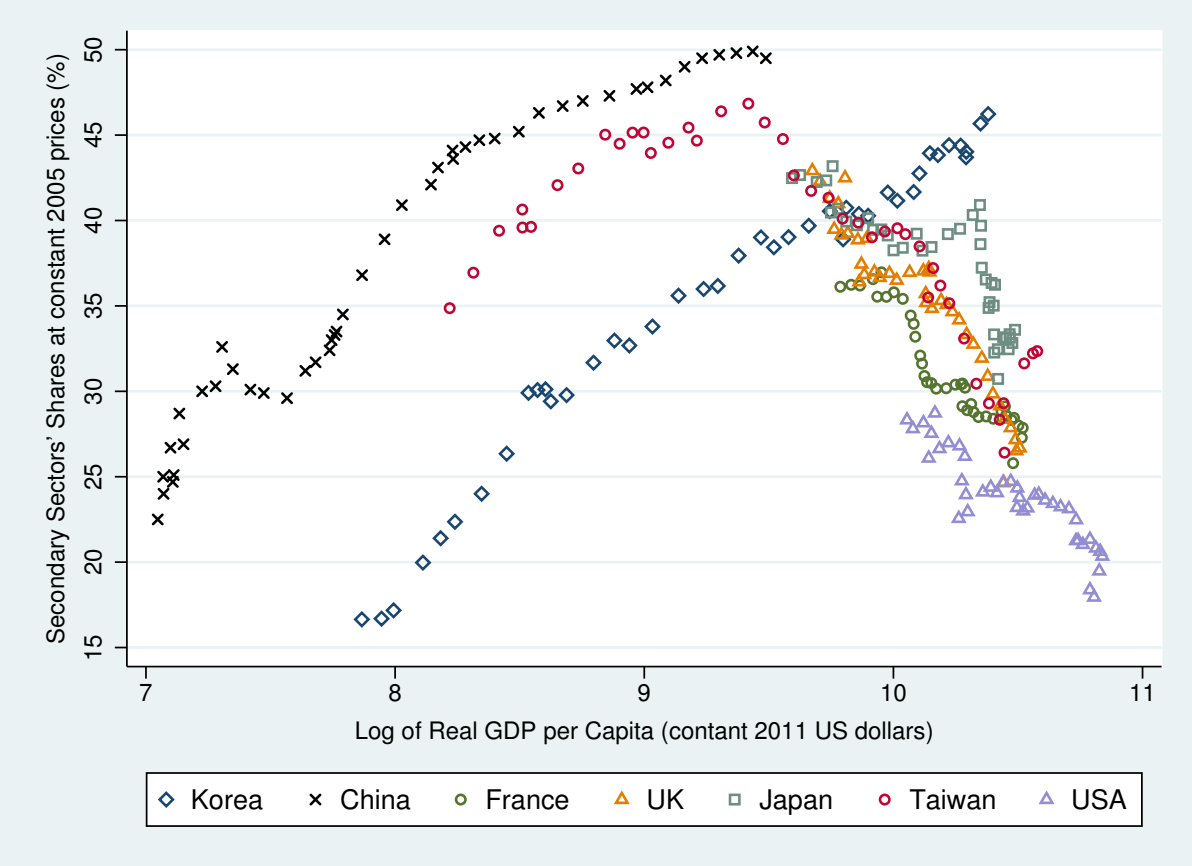


(b) Actual GDP Growth Rates



Sources: (a) author's calculation. (b) China: the CEIC China Premium, Taiwan: National Statistics, Republic of China, all other countries: World Development Indicator

Figure 8: Share of the Secondary Industry in GDP



Sources: China: the CEIC China Premium, all other countries: The Madison Project database for GDP per capita and GGDC 10-Sector database for the 2nd industry shares.
Notes: The secondary sector includes manufacturing and utilities & construction. The sample period ranges from 1970 to 2015 for China. For all other countries, the different sample periods between 1970 and 2012 are applied.

Table 1: Elasticity of GDP to China's Domestic Demand by Product Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Nondurables		Durables		Util & Cons.		Services		All Products	
Country	1995	2010	1995	2010	1995	2010	1995	2010	1995	2010
Taiwan	0.05	0.09	0.07	0.52	0.02	0.13	0.04	0.26	0.18	1.00
Malaysia	0.06	0.17	0.02	0.31	0.01	0.12	0.03	0.23	0.12	0.83
Korea	0.03	0.06	0.03	0.32	0.01	0.09	0.02	0.13	0.09	0.61
Chile	0.01	0.07	0.01	0.19	0.01	0.17	0.02	0.09	0.05	0.52
Vietnam	0.05	0.11	0.01	0.11	0.01	0.07	0.02	0.13	0.10	0.42
Australia	0.02	0.09	0.01	0.11	0.01	0.10	0.01	0.10	0.05	0.40
Philippines	0.01	0.04	0.01	0.20	0.01	0.06	0.01	0.09	0.04	0.38
Indonesia	0.02	0.07	0.01	0.08	0.01	0.05	0.01	0.06	0.05	0.26
Japan	0.00	0.02	0.01	0.12	0.00	0.03	0.01	0.05	0.03	0.21
Russia	0.02	0.04	0.02	0.05	0.01	0.04	0.01	0.04	0.06	0.17
Germany	0.00	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.02	0.17
Brazil	0.01	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.14
India	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.04	0.01	0.13
Canada	0.01	0.02	0.01	0.03	0.00	0.02	0.01	0.02	0.03	0.08
UK	0.00	0.01	0.01	0.03	0.00	0.01	0.00	0.02	0.02	0.07
France	0.00	0.01	0.01	0.03	0.00	0.01	0.00	0.01	0.01	0.07
US	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.02	0.01	0.07
Italy	0.00	0.01	0.01	0.03	0.00	0.01	0.00	0.01	0.02	0.07
Mexico	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.01	0.05
Spain	0.00	0.01	0.01	0.02	0.00	0.01	0.00	0.01	0.01	0.04

Table 2: Elasticity of GDP to the US Domestic Demand by Product Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Nondurables		Durables		Util & Cons.		Services		All Products	
Country	1995	2010	1995	2010	1995	2010	1995	2010	1995	2010
Canada	0.37	0.35	0.51	0.26	0.17	0.11	0.67	0.61	1.73	1.34
Mexico	0.27	0.27	0.40	0.38	0.13	0.11	0.53	0.50	1.33	1.25
Vietnam	0.06	0.31	0.03	0.13	0.01	0.03	0.09	0.36	0.18	0.83
Taiwan	0.17	0.10	0.32	0.32	0.07	0.04	0.35	0.34	0.90	0.79
Malaysia	0.14	0.13	0.33	0.25	0.06	0.03	0.34	0.32	0.87	0.73
Korea	0.11	0.07	0.19	0.24	0.03	0.03	0.21	0.24	0.55	0.58
Chile	0.10	0.13	0.07	0.12	0.03	0.04	0.17	0.19	0.37	0.47
Philippines	0.16	0.10	0.18	0.14	0.03	0.02	0.34	0.20	0.71	0.46
UK	0.06	0.07	0.09	0.06	0.03	0.02	0.19	0.29	0.36	0.45
China	0.08	0.08	0.07	0.13	0.02	0.02	0.13	0.18	0.30	0.41
Germany	0.03	0.05	0.07	0.11	0.02	0.02	0.09	0.15	0.21	0.32
India	0.07	0.06	0.04	0.07	0.01	0.01	0.10	0.18	0.22	0.32
Indonesia	0.13	0.10	0.07	0.06	0.03	0.01	0.15	0.11	0.37	0.28
Russia	0.05	0.09	0.07	0.04	0.02	0.03	0.09	0.13	0.23	0.28
Japan	0.02	0.03	0.11	0.12	0.02	0.01	0.10	0.12	0.25	0.27
France	0.03	0.04	0.05	0.05	0.01	0.01	0.08	0.11	0.17	0.21
Italy	0.06	0.05	0.06	0.05	0.02	0.01	0.11	0.10	0.25	0.21
Australia	0.05	0.04	0.04	0.04	0.01	0.01	0.09	0.09	0.19	0.19
Brazil	0.04	0.05	0.03	0.03	0.01	0.01	0.07	0.08	0.15	0.17
Spain	0.03	0.03	0.03	0.03	0.01	0.01	0.06	0.10	0.12	0.17

Table 3: Estimated GDP Growth Rates Induced by China's Domestic Demand

Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Estimated Growth Rates			3-Years Average				
	2009	2010	2011 (equal 10.3%)	NDR	DUR	U&C	SVC	All
Taiwan	0.87	1.33	1.42 (1.03)	0.08	0.80	0.15	0.18	1.21
Malaysia	0.66	1.09	1.04 (0.85)	0.17	0.47	0.12	0.17	0.93
Korea	0.60	0.87	0.84 (0.63)	0.06	0.51	0.11	0.10	0.77
Chile	0.45	0.62	0.58 (0.53)	0.07	0.27	0.16	0.06	0.55
Philippines	0.37	0.57	0.54 (0.44)	0.03	0.33	0.06	0.07	0.49
Vietnam	0.39	0.49	0.47 (0.41)	0.10	0.18	0.08	0.09	0.45
Australia	0.37	0.42	0.44 (0.39)	0.07	0.17	0.10	0.07	0.41
Indonesia	0.27	0.31	0.29 (0.27)	0.07	0.12	0.06	0.05	0.29
Japan	0.27	0.27	0.28 (0.22)	0.02	0.19	0.04	0.03	0.28
Germany	0.22	0.22	0.21 (0.18)	0.01	0.16	0.03	0.02	0.22
Russia	0.19	0.21	0.19 (0.17)	0.03	0.09	0.05	0.03	0.20
Brazil	0.14	0.16	0.14 (0.14)	0.04	0.05	0.03	0.02	0.15
India	0.13	0.14	0.14 (0.13)	0.02	0.06	0.03	0.03	0.14
Canada	0.09	0.11	0.10 (0.09)	0.02	0.05	0.02	0.01	0.10
France	0.09	0.08	0.08 (0.07)	0.01	0.05	0.01	0.01	0.09
UK	0.07	0.08	0.09 (0.07)	0.01	0.05	0.01	0.01	0.08
Italy	0.08	0.08	0.08 (0.07)	0.01	0.05	0.01	0.01	0.08
US	0.06	0.08	0.08 (0.07)	0.01	0.04	0.01	0.01	0.07
Mexico	0.04	0.06	0.06 (0.06)	0.01	0.03	0.01	0.01	0.05
Spain	0.05	0.04	0.05 (0.05)	0.01	0.03	0.01	0.01	0.05

Notes: NDR: Nondurables, DUR: Durables, U&C: Utilities & Construction, SVC: Services.

Table 4: Estimated GDP Growth Rates Induced by the Final Demand in the World

	2009				2010				2011			
Country	China	US	World	Real	China	US	World	Real	China	US	World	Real
Australia	0.37	-0.11	2.1	1.8	0.42	0.07	5.1	2.0	0.44	0.03	5.7	2.4
Brazil	0.14	-0.14	1.5	-0.1	0.16	0.07	8.0	7.5	0.14	0.02	3.7	3.9
Canada	0.09	-0.84	-0.6	-2.9	0.11	0.59	5.3	3.1	0.10	0.19	2.4	3.1
Chile	0.45	-0.29	-3.4	-1.0	0.62	0.20	11.2	5.8	0.58	0.07	8.4	5.8
China	10.4	-0.39	9.0	9.4	9.52	0.24	10.8	10.6	8.17	0.08	8.8	9.5
France	0.09	-0.12	-1.6	-2.9	0.08	0.08	3.6	2.0	0.08	0.03	1.7	2.1
Germany	0.22	-0.29	-3.3	-5.6	0.22	0.23	5.2	4.1	0.21	0.09	3.0	3.7
India	0.13	-0.16	7.0	8.5	0.14	0.13	9.6	10.3	0.14	0.05	6.8	6.6
Indonesia	0.27	-0.17	0.3	4.6	0.31	0.12	8.3	6.2	0.29	0.02	7.5	6.2
Italy	0.08	-0.16	-3.3	-5.5	0.08	0.10	1.6	1.7	0.08	0.04	-0.3	0.6
Japan	0.27	-0.35	-4.0	-5.5	0.27	0.24	3.6	4.7	0.28	0.10	1.1	-0.5
Korea	0.60	-0.52	-0.6	0.7	0.87	0.51	7.7	6.5	0.84	0.17	3.8	3.7
Malaysia	0.66	-0.51	-0.9	-1.5	1.09	0.46	8.9	7.4	1.04	0.13	5.7	5.3
Mexico	0.04	-0.88	-6.7	-4.7	0.06	0.82	4.6	5.1	0.06	0.29	4.9	4.0
Philippines	0.37	-0.32	1.4	1.1	0.57	0.27	7.3	7.6	0.54	0.07	4.6	3.7
Russia	0.19	-0.10	-6.1	-7.8	0.21	0.06	6.1	4.5	0.19	0.00	4.7	4.3
Spain	0.05	-0.08	-4.5	-3.6	0.04	0.06	-0.8	0.0	0.05	0.03	-2.0	-1.0
Taiwan	0.87	-0.61	-1.5	-1.6	1.33	0.54	7.5	10.6	1.42	0.18	3.3	3.8
UK	0.07	-0.19	-3.5	-4.2	0.08	0.16	5.0	1.5	0.09	0.07	-0.1	2.0
US	0.06	-2.70	-2.5	-2.8	0.08	1.96	2.4	2.5	0.08	1.69	1.6	1.6
Vietnam	0.39	-0.41	2.2	5.4	0.49	0.29	6.0	6.4	0.47	0.06	5.2	6.2

Table A1: Sector Classification in the ICIO Table and This Study

ICIO Table		Our Classification	
Sector Code	Sector Name	Level 2	Level 1
C01T05AGR	Agriculture, Foresty & Fishing	AGR.MIN	Nondurables
C10T14MIN	Mining		
C15T16FOD	Food	FOD	
C17T19TEX	Textiles	TEX	
C20WOD	Wood	WOD.PAP	
C21T22PAP	Paper & Publishing		
C23PET	Petroleum	PET.CHM	
C24CHM	Chemicals		
C25RBP	Rubber & Plastic		
C26NMM	Non-metallic Mineral	MET.MEQ	Durables
C27MET	Basic Metals		
C28FBM	Fabricated Metals		
C29MEQ	Machinery & Equipment, nec		
C30.32.33CEQ	Computer & Electronic Equipment	CEQ	
C31ELQ	Electrical Equipment	ELQ	
C34MTR	Automobile	MTR	
C35TRQ	Other Transport Equipment	OTM	
C36T37OTM	Manufacturing, nec		
C40T41EGW	Utilities	EGW.CON	Utilities & Construction
C45CON	Construction		
C50T52WRT	Wholesale & Retail Trade	WRT.HTR	Services
C55HTR	Hotels & Restaurants		
C60T63TRN	Transport Service	TRN.PTL	
C64PTL	Post & Telecommunication		
C65T67FIN	Finance & Insurance	FIN	
C70REA	Real Estate	REA	
C71RMQ	Renting	BZS	
C72ITS	Information Technology Service		
C73T74BZS	Business services		
C75GOV	Government Service	OTS	
C80EDU	Education		
C85HTH	Health and social work		
C90T93OTS	Community Service		
C95PVH	Private service		

Source: OECD Inter-Country Input-Output Table