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Different Types of Firms, Products, and Directions of Trade: The Case of the People's Republic of China

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Abstract

Using highly disaggregated, Harmonized System (HS) 8-digit, product-category level data collected by the People's Republic of China's (PRC) Customs Office for 2000 and 2008, we perform an in-depth anatomy of the PRC's trade in manufactured goods. First, we distinguish between foreign firms and domestic firms, with the latter further divided into private firms and public firms. Second, we distinguish products as either final goods or intermediate goods. Third, we look at not only the PRC's exports but also its imports, and test for the relative importance of the extensive margin—number of goods—versus the intensive margin—the amount traded per good. Fourth, we estimate gravity equations from the perspective of dynamics utilizing a dynamic adjustment model. Overall, our analysis yields a number of new stylized facts and generates some interesting puzzles about the PRC's exports and imports.

Keywords: People's Republic of China, intermediate goods, fragmentation, foreign enterprises, firm heterogeneity

JEL Classification: F14, F21, F23

1. Introduction

The focus of research on international trade has recently shifted from industries and countries to firms and products.¹ It is now a stylized fact that exporting firms are larger, more productive, more skill and capital-intensive, and pay higher wages than non-exporting firms (Bernard and Jensen 1995; Bernard et al. 2007).

The seminal theoretical study of Melitz (2003) assumes that there is a competitive fringe of firms that are producing horizontally differentiated varieties within the industry under monopolistic competition and enter the export market by paying a fixed entry cost. In this model, each firm produces only one good that is purchased by consumers (final good) and all firms are domestic ones. The Melitz (2003) model has been expanded in many directions. For example, Bernard et al. (2011a) generalize Melitz's (2003) framework to develop a model of a multi-product, multi-destination firm. But in their model, firms are still producing only final goods and there are no foreign-invested firms.

Thus, the firm heterogeneity theory of international trade and its empirical studies are still in their infancy and there are still a few major areas that require further development. First, almost all theoretical and empirical studies in this literature neglect the importance of ownership difference. They implicitly assume exporting firms are domestic or do not explicitly differentiate domestic firms from foreign affiliates (Lu et al. 2010). Foreign-invested firms enjoy, on average, higher productivity due to entry costs and pay higher wages, and often generate productivity spillovers to the host country. Thus, foreign firms are different from domestic firms in terms of business culture and behavior, as well as in productivity, structure of employment, and other dimensions.

A number of recent empirical studies use Chinese "micro-datasets" to investigate the consequences of firm ownership on size, productivity, capital- and skill-intensity, and wages. For example, Lu et al. (2010) compare foreign affiliate exporters with domestic exporters and find that foreign affiliate exporters are less productive than non-exporters, while domestic exporters are more productive than non-exporters. Manova and Zhang (2009) find that compared with private domestic firms, foreign-invested firms trade more and import more products from more source countries, but export fewer products to fewer destinations. Manova et al. (2011) show that foreign-owned firms and joint ventures perform better than private domestic firms. Du et al. (2012) find that exporting delivers significant productivity gains for domestic firms but not for foreign affiliates.

Second, the literature on firm heterogeneity in international trade tends to assume that while products are differentiated they are all final goods and, therefore, rules out the existence of intermediate goods. Intermediate goods (parts and components) are goods used as inputs in the production of other intermediate goods or final goods and, hence, purchased by other producers, while final goods (finished goods) are purchased by consumers. Using data from 10 Organisation for Economic Co-operation and Development (OECD) and four emerging countries, Hummels et al. (2001) find that vertical specialization accounts for about 20% of the exports of these countries, an increase of almost one-third between 1970 and 1990. There have also been many

¹ Bernard et al. (2011a) provide a comprehensive survey.

studies confirming the existence of a high level of trade in intermediate goods between East Asian countries, including Arndt and Kierzkowski 2001; Athukorala 2005, 2009, and 2010; Athukorala and Yamashita 2006 and 2008; Ando and Kimura 2003 and 2009; Kimura 2009; and Lee et al. 2011.

The presence of intermediate goods suggests the relevance of the theory of production networks, or production fragmentation, in which foreign direct investment (FDI) plays a major role. Foreign-invested firms trade more intensely in intermediate goods than domestic firms. The study by Goldberg et al. (2010) is of particular interest because it differentiates between final and intermediate products, unlike other empirical and theoretical studies on the trading behavior of heterogeneous firms. Goldberg et al. (2010) find that in the case of India's trade around two-thirds of the growth in imports of intermediate goods is accounted for by the extensive margin of newly imported products. They also find that industries that experienced greater tariff reductions in the early 1990s saw a larger increase in total value and a greater variety of imported intermediate inputs.

Third, while the early empirical literature on firm heterogeneity in international trade looks almost exclusively at firm export behavior, most recent work using firm-level trade transaction data has begun to examine firm import behavior as well (Bernard 2011b). For United States (US) manufacturing firms, Bernard et al. (2007) find that importers are similar to exporters in that they are bigger, more productive, pay higher wages, and are more skill- and capital-intensive than non-importers. However, the majority of studies on firm behavior in international trade only address exports, mainly due to the lack of relevant micro data on importing.

Fourth, much of the theoretical and empirical literature on heterogeneous firms and trade examines the cross-section distribution of trade across firms, products, and countries (Bernard et al. 2011a). Exceptions include Eaton et al. (2008); Eaton et al. (2011); Akhmetova (2011); Albornoz et al. (2011); Ruhl and Wills (2011); and Segura-Cayuela and Vilarrubia (2008). However, none of these studies examine trade dynamics in a gravity framework that highlights the importance of market size and trade costs in international trade. Baier et al. (2011) use gravity equations of intensive and extensive margins, and find that they are affected by economic integration. However, their study looks at total trade conducted by all firms irrespective of their ownership structure and types of goods.

The main purpose of this paper is to address a number of issues that have been largely neglected in the literature of firm heterogeneity in international trade. For this purpose, we use Chinese firm trade flows data collected by the People's Republic of China's (PRC) Customs Office for 2000 and 2008.² The database from the PRC Customs Office includes the f.o.b. value of both exports and imports of the PRC for 243 destination and source economies, and 7,526 different products at the 8-digit Harmonized System (HS) level. For each shipment, it also provides information on type and location of firm, transportation mode, and customs office.

² The data collected by the People's Republic of China Customs Office has also been used by Lu et al. (2010); Manova and Zhang (2009); Manova et al. (2011) and Du et al. (2012) in their studies for the differential behavior of foreign vs. domestic firms in international trade.

The use of the PRC's trade data is of particular interest. Since joining the World Trade Organization (WTO) in 2001, the PRC's international trade has expanded rapidly, largely due to its growing participation in international production networks. Lee et al. (2011) provide a comprehensive analysis of the extent of the PRC's trade in parts and components for 1992–2009 and assess its determinants using an augmented gravity model. This paper is an extension of Lee et al. (2011). Using the PRC Customs Statistics database and an augmented gravity model, we distinguish exporters and importers into different types of firms and investigate how they react to the various determinants of trade in parts and components, as compared to trade in final goods. Like our paper, Manova and Zhang (2009) also use trade data collected by the PRC Customs Office to analyze the PRC's trade pattern at the firm level while distinguishing between domestic firms and foreign firms. However, this paper differs from Manova and Zhang (2009) in that we look at product differences and perform econometric analysis.

Specifically, this paper contributes to the literature in four areas. First, we distinguish firms as either foreign firms or domestic firms, the latter being further divided into private firms and public firms. Second, we distinguish products as either final goods or intermediate goods. Third, we look at not only the PRC's exports but also its imports, and test for the relative importance of extensive margin—the number of goods—versus the intensive margin—the amount traded per good. Fourth, we estimate a gravity variable from the perspective of dynamics utilizing a dynamic adjustment model. Overall, our analysis yields a number of new stylized facts and generates some interesting puzzles about the PRC's exports and imports.

The paper is organized as follows. Section 2 examines the role of different types of firms and products in the PRC's exports and imports in 2000 and 2008. Section 3 presents the empirical framework we use to estimate trade in intermediate goods, as compared to trade in final goods, by different types of firms. Section 4 reports and discusses the empirical results. Section 5 summarizes the main findings and concludes the paper.

2. Descriptive Statistics

In this section, we provide some descriptive statistics pertaining to the role of different types of firms and products in the PRC's trade pattern.

2.1 Ownership Structure of the People's Republic of China's Firms

According to the Regulation of the PRC on the Management of Registration of Corporate Enterprises, Chinese firms are classified into two groups: (i) domestic firms in which the owners are solely Chinese legal entities or individuals and (ii) foreign-invested firms in which some or all investors are foreign legal entities or individuals. Domestic firms can be further categorized into two groups: (i) public firms and (ii) private firms.

Public firms are again categorized into two groups: (i) state-owned enterprises (SOEs) and (ii) collective-owned enterprises. SOE refers to a business entity whose entire assets are owned by the government. That is, SOEs are business entities established by central and local governments that appoint their management team. Collective-owned

enterprise refers to a business entity whose assets are owned collectively by a town or a group of people. Private firms are categorized into two types. A sole proprietorship company is solely invested by a natural person, whereas a joint-stock company is a company whose capital is divided into shares.

Foreign-invested firms can be categorized into three types: (i) Sino-foreign cooperative enterprises, (ii) Sino-foreign joint ventures, and (iii) foreign-funded firms. In Sino-foreign cooperative enterprises, the foreign party typically supplies all or most of the capital and technologies, while the Chinese party supplies land, factory buildings, and useful facilities. In Sino-foreign joint ventures, foreign companies or individuals and Chinese companies or individuals typically invest together, operate together, take risk according to the ratio of their capital, and jointly take responsibility for their losses and profits. Foreign-funded firms can be either wholly foreign-owned enterprises, which are exclusively invested in by foreign companies, or foreign-funded shareholding companies, which are shareholding companies partially funded by foreign companies or individuals. Figure 1 summarizes different types of firms in the PRC.

2.2 Relative Shares of the People's Republic of China's Trade by Different Types of Firms

The PRC's economy took off when it launched its economic reform and the Open Door Policy in 1978. FDI and international trade have since been the main drivers of the PRC's rapid economic growth. Deng Xiaoping's *Nanxun* speech in 1992 further promoted the PRC's economic reform program and accelerated FDI inflows and international trade.

Figures 2a and 2b illustrate the changing pattern of the PRC's exports and imports, respectively, in 1993–2010. During this period, the PRC's exports and imports grew steadily, with the exception of 2009 when world trade contracted in the wake of the global financial crisis. Since the PRC joined the WTO in November 2001, its trade has accelerated. The PRC's exports expanded 2.7 times from US\$92 billion in 1993 to US\$249 billion in 2000. By comparison, its exports increased 5.7 times from aUS\$249 billion in 2000 to US\$1,430 billion in 2008. During this period, the majority of the PRC's trade—both exports and imports—was carried out by foreign-invested firms, resulting from the massive FDI inflows into the PRC.

This study focuses on trade data for the years 2000 and 2008, noting that the former is the year before the PRC joined the WTO and the latter is the year before global trade collapsed in the wake of the global financial crisis.

Table 1 summarizes the relative shares of different firms in the PRC's exports and imports of different kinds of products. All goods are categorized into non-manufactured goods (HS 01–27) and manufactured goods (HS 28–92), which are further categorized into final goods and intermediate goods (parts and components). Our classification of intermediate goods follows Athukorala (2010) in which a total of 525 6-digit HS codes for manufactured goods (HS 28–96) were identified as intermediate goods. One difference is that we exclude the seventeen 6-digit HS codes in HS 93-96 that are classified as "Others."

As seen in Figure 2, foreign firms accounted for the majority of the PRC's trade in 2008. Foreign firms accounted for about 55% of both total exports and imports in 2008, up from 48% and 52%, respectively, in 2000. Foreign firms play a bigger role in the manufactured goods trade than in the trade for non-manufactured goods. In 2008, foreign firms accounted for 56.6% of the PRC's manufactured exports and 69.4% of the PRC's manufactured imports. Within the manufactured goods trade, foreign firms play an even bigger role in the intermediate goods trade. In 2008, foreign firms were responsible for 69.6% of the PRC's total intermediate exports and 76.9% of total intermediate imports. To summarize, foreign-invested firms dominate the PRC's trade in manufactured goods—both exports and imports—particularly in trade in intermediate goods.

Among the PRC's domestic firms, public and private firms accounted for roughly the same share (22%) of total exports, but the role of public firms is three times bigger than the role of private firms (33.8% vs. 11.0%) in the PRC's total imports. The parts and components trade shows a similar pattern. Public enterprises and private firms each accounted for about 15% of total exports of intermediate products in 2008, while for imports public enterprises accounted for a bigger share (15.5% vs. 7.6%).

However, the share of private firms is expected to increase very rapidly in the export and import of all kinds of products. Between 2000 and 2008, private firms' share of exports rose from 1.0% to 22.8%, and their share of imports from 0.6% to 11.0%, while public firms' shares of both exports and imports declined sharply.³

Not only imports, but also exports, of parts and components increased during 2000–2008. Indeed, the value of the PRC's exports of intermediate goods is greater than that of the PRC's imports of intermediate goods (US\$242.9 billion vs. US\$191.8 billion).

2.3 Destination and Source Countries of the People's Republic of China's Trade in Parts and Components

Table 2 shows the shares of major partners for the PRC's trade in parts and components for different types of firms. As noted earlier, foreign-invested firms took the lion's share of the PRC's global exports and imports of parts and components. Another notable aspect of the PRC's trade in intermediate products is that Hong Kong, China was the major destination for the PRC's exports of intermediate goods in 2008, accounting for 22.2%, followed by the European Union (EU)-15 countries and the North American Free Trade Area (NAFTA), which accounted for 17.7% and 17.4%, respectively.⁴ In contrast, Japan was the largest source of the PRC's imports of intermediate goods in 2008, accounting for 21.6%. The EU-15 and ASEAN-6 are also major sources of the PRC's imports of intermediate goods, accounting for 16.1% and 13.6%, respectively, in 2008.

³ In 2003, the People's Republic of China began accelerating the reform of SOEs. This policy led to small SOEs facing market competition and the most inefficient ones went bankrupt. Meanwhile, the number of private enterprises has increased rapidly since 2003.

⁴ This is consistent with Feenstra and Hanson (2004) who found that Hong Kong, China distributes a large fraction of the PRC's exports.

Table 3 shows that the PRC's trade in parts and components is highly concentrated in general machinery (HS 84) and electric machinery (HS 85).

2.4 Extensive and Intensive Margins

A key implication of the Melitz (2003) model is that the extensive margin of the number of exporting firms should increase with the size of the destination market, since in larger markets firms with lower productivity can generate sufficient variable profits to cover the fixed costs of exporting. Bernard et al. (2009b) show that in the case of the US, while the majority of the variation in flows across countries can be explained by the extensive margins of the number of firms and products, year-on-year changes in trade are mostly driven by the intensive margin of trade within continuing firm–product–country trade relationships.

Most researchers have examined "firm" extensive margins of trade, but recent researchers have also examined "goods" extensive margins and "country" extensive margins of trade. This section first examines the PRC's goods extensive and intensive margins and then country extensive and intensive margins.

Aggregate bilateral exports (or imports) between any two countries (T_{ij}) can be decomposed into the "product" extensive margin of the number of product observations with positive exports (N_{ij}) and the goods intensive margin of average product exports conditional on positive trade ($A_{ij} = T_{ij}/N_{ij}$):

$$T_{ij} = N_{ij}A_{ij}, \quad A_{ij} = T_{ij}/N_{ij}$$

Thus, the PRC's total world (T) exports and imports can be decomposed into the goods extensive margin of the number of product observations with positive exports (N) and the goods intensive margin of average product exports conditional on positive trade ($A = T/N$):

$$T = NA, \quad A = T/N$$

Tables 4a and 4b summarize the goods extensive and intensive margins of the PRC's total world exports and imports, respectively, by different types of firms. The goods extensive margin of exports (imports) is defined as the number of HS 8-digit classification codes with positive exports (imports).⁵ As seen in panel B of the tables, the goods extensive margin increased between 2000 and 2008 for both exports and imports of final goods, irrespective of the types of firms. In particular, that of private firms increased by over 100% for both exports and imports. In contrast, for both exports and imports of intermediate goods, the goods extensive margin of domestic public firms and

⁵ Hummels and Klenow (2005) define each good as a 6-digit SITC category to decompose total trade into the goods margin of trade. In contrast, Hillberry and McDaniel (2002) and Kehoe and Ruhl (2009) decompose post-NAFTA trade among the participating members into goods extensive and intensive margins using 4-digit SITC data. In their gravity study on the relationship between economic integration agreements and the margins of international trade, Baier et al. (2011) also use SITC 4-digit classification to decompose bilateral trade among 149 countries. In contrast, each good is defined in this paper as an 8-digit HS category, the most disaggregated category compared with other studies.

foreign-invested firms fell during the period, while that of private firms rose by over 50%. In 2008, the goods extensive margin was similar among the three types of firms for both exports and imports of both final and intermediate goods.

Panel C of Tables 4a and 4b also reports the goods intensive margin, which is defined as the amount of total exports divided by the goods extensive margin. The goods intensive margin grew exceptionally fast between 2000 and 2008, for both exports and imports, irrespective of the type of firm. In particular, the goods extensive margin of domestic private firms rose by over 10,000% and 5,000% for exports and imports, respectively. Nonetheless, in 2008 the goods intensive margin was still the largest for foreign-invested firms for both exports and imports of final and intermediate goods.

The PRC's total exports (or imports) against the world (T) can also be decomposed into the country extensive margin of the number of partner countries with positive exports (M) and the country intensive margin of average exports to a partner country conditional on positive trade ($B = T/M$):

$$T = MB, B = T/M$$

Tables 5a and 5b (Panel B) report the country extensive and intensive margins of the PRC's exports and imports by different types of firms. The extensive country margin increased for both exports and imports, irrespective of types of goods and firms. In particular, the country extensive margin increased most rapidly for imports of intermediate goods by private firms.

Comparing Tables 1, 4a and 4b, and 5a and 5b, increases in the PRC's trade (both exports and imports) of manufactured goods between 2000 and 2008 were driven by increases in the intensive margin of trade for a given good (goods intensive margin) and for a given country (country intensive margin), and by the extensive margin of trade of the number of goods (goods extensive margin), but not by the extensive margin of the number of countries (country extensive margin).

In 2008, the country extensive margin of imports (the number of source countries) was greater for foreign-invested firms than for domestic public or private firms, and the country intensive margin of imports (the average imported value from a given country) was also greater for foreign firms than for domestic firms. This is consistent with Manova and Zhang (2009), who found that import product intensity and the number of source countries increase with foreign ownership. On the other hand, the country extensive margin of exports does not appear to be greater for foreign firms than for domestic firms, while the country intensive margin of exports is greater for foreign firms.

3. Empirical Models of the Parts and Components Trade by Different Types of Firms

In this section, we present the empirical framework used to estimate trade in intermediate goods.

3.1 The Basic Model

As noted in the Introduction, we use the gravity equation to assess how the three different types firms (foreign, domestic private, and domestic public) behave differently with respect to choosing their trading partners depending on different product types. Since Tinbergen (1962) and Pöyhönen (1963), the simple gravity equation—in which the volume of trade between two countries is proportional to the product of their masses, or gross domestic products (GDPs), and inversely related to the distance between them—has proved empirically highly successful. Recently, with renewed interest among economists in geography, the model has again become widely used in the literature. Indeed, many researchers have shown that the gravity equation can be derived from many different models of international trade (Helpman and Krugman 1985).

Trade will be greater between country pairs that are far from the rest of the world than it will be between country pairs that are close to the rest of the world. Thus, the standard gravity equation drawn from theory can take the following form:

$$\text{LnT}_{ijt} = \alpha + \beta_1 \text{LnGDP}_{it} + \beta_2 \text{LnGDP}_{jt} + \beta_3 \text{LnDIST}_{ijt} + \beta_4 \text{LnREMOT}_{it} + \beta_5 \text{LnREMOT}_{jt} + \varepsilon_{ijt}, \quad (1)$$

where

LnT_{ij}	= log of export flows from country i to country j (or imports flows to country i from country j) at time t ,
LnGDP_i	= log of GDP of country i at time t ,
LnGDP_j	= log of GDP of country j at time t ,
LnDIST_{ij}	= log of geographical distance between country i and country j ,
LnREMOT_i	= log of remoteness of country i at time t , = $\log(1/\sum_k(\text{GDP}_k/\text{GDP}_w)/\text{DISTANCE}_{ik})$ where GDP_w = world GDP,
LnREMOT_j	= log of remoteness of country j at time t , = $\log(1/\sum_k(\text{GDP}_k/\text{GDP}_w)/\text{DISTANCE}_{jk})$,
ε_{ij}	= random disturbance term.

Because country i stands for only one country (the PRC) and we take only 2 years, variables for country i are removed from the gravity equation. Therefore, Equation (1) becomes

$$\text{LnT}_{jt} = \alpha + \beta_1 \text{LnGDP}_{jt} + \beta_2 \text{LnDIST}_{jt} + \beta_3 \text{LnREMOT}_{jt} + \varepsilon_{jt}, \quad (2)$$

where

LnT_j	= log of export flows from the PRC to country j (or imports flows to the PRC from country j) at time t ,
LnDIST_{ij}	= log of geographical distance between the PRC and country j .

In the equation above, we include dummy variables for island and landlocked countries.⁶ Taking note of the debate about the role of the WTO (Rose 2004 and 2005, Subramanian and Wei 2003), we include a dummy variable for WTO member countries. We also include a dummy variable for the PRC's bilateral FTA partners. Lastly, we include a dummy variable for Hong Kong, China and Taipei, China, with which the PRC shares a number of commonalities such as language and culture, and maintains a special relationship. Thus, our augmented gravity equation is:

$$\ln T_{jt} = \alpha + \beta_1 \ln \text{GDP}_{jt} + \beta_2 \ln \text{DIST}_j + \beta_3 \ln \text{REMOTE}_{jt} + \beta_4 \text{ISLAND}_j + \beta_5 \text{LANDLOCKED}_j + \beta_6 \text{RTA}_{jt} + \beta_7 \text{WTO}_{jt} + \beta_8 \text{HT}_t + \varepsilon_t + \varepsilon_{jt}, \quad (3)$$

where

ISLAND _j	= 1 if country <i>j</i> is an island country, = 0 otherwise,
LANDLOCKED _j	= 1 if country <i>j</i> is a landlocked country, = 0 otherwise,
RTA _{jt}	= 1 if country <i>j</i> is the PRC's RTA partner at time <i>t</i> , = 0 otherwise,
WTO _{jt}	= 1 if country <i>j</i> is a WTO member at time <i>t</i> , = 0 otherwise,
HT _t	= 1 if country <i>j</i> is Hong Kong, China or Taipei, China, = 0 otherwise,
ε _t	= year dummy.

Among the explanatory variables, GDP (US dollars), GDP per capita, population, and area (square kilometers) are taken from the World Bank's World Development Indicators (WDI) Online. Geographical distance is taken from *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII) website. The distances are weighted distances, which use city-level data to assess the geographic distribution of population inside each nation. The remoteness index is also calculated by using the weighted distances. The variables indicating whether the country is landlocked or an island are also taken from CEPII's website. Lastly, information on WTO membership is taken from the website of the WTO and information on the PRC's regional trade agreements (RTAs) is from the PRC's official website, the PRC's Free Trade Agreement Network.

As discussed above, the PRC's aggregate bilateral trade with a country (T_j) can be decomposed into the goods extensive margin of the number of product observations with positive exports (N_j) and the goods intensive margin of average product exports conditional on positive trade ($A_j = T_j/N_j$):

$$T_j = N_j A_j, \quad A_j = T_j / N_j$$

⁶ It is also customary to include a dummy variable for country pairs sharing a land border. The PRC shares borders with a number of countries and, hence, we included a dummy variable for these border-sharing countries but found no significant results.

Therefore, the log of the extensive margin (N_j) and the log of the intensive margin (A_j) will also be regressed, alternatively, against the regressors in the gravity equation presented in Equation (3).

Our benchmark model of the gravity equation is static with a year dummy, as our data are based on 2 years—2000 and 2008—and country fixed effects cannot be estimated. Accordingly, in the next stage we estimate the so-called partial-adjustment model.

3.2 Partial-Adjustment Model

The partial-adjustment model is useful because it can estimate not only the long-run factors, but also the short-run factors, influencing changes in trade between 2000 and 2008.⁷ Suppose that the desired level of LnT_j at time t is LnT_{jt}^* ; then, the relationship between the actual and the desired level of LnT_j may be specified as

$$\Delta \text{LnT}_j = \delta(\text{LnT}_{jt}^* - \text{LnT}_{jt-1}), \quad (4)$$

where $\Delta \text{LnT}_{jt} = \text{LnT}_{jt} - \text{LnT}_{jt-1}$ and δ is the rate of adjustment bounded by zero and one. Because LnT_{jt}^* is not observed, several formulations are possible. One formulation assumes that LnT_{jt}^* is determined by the level forms of the determinants of LnT_j in period $t-1$, as well as the difference forms, which incorporate changes in the long-run extent of LnT_j between periods $t-1$ and t . Thus, the equation for changes in LnT_{ij} is

$$\Delta \text{LnT}_j = -\delta \text{LnT}_{jt-1} + \lambda_1 X_{jt-1} + \lambda_2 (X_{jt} - X_{jt-1}), \quad (5)$$

where X is a vector of explanatory variables.

If the coefficients in Equation (5) are invariant to the choice of time period, which obtains at equilibrium with constant coefficients, and if the errors between t and $t-1$ are not correlated, then the λ coefficient on each level variable divided by the rate of adjustment parameter (δ) equals the corresponding long-run coefficient (β). The λ coefficients on the first-difference variables represent the short-run adjustments to contemporaneous changes in the determinants of LnT_j .

In our gravity equation, the distance variable and dummies for landlocked and island countries are time-invariant and hence enter only as "level" variables. On the other hand, the PRC did not have any RTA partner in 2000 and hence the RTA dummy variable enters only as a "difference" variable. Specifically, we estimate the following equation:

$$\begin{aligned} \Delta \text{LnT}_j = & -\delta \text{LnT}_{jt-1} + \beta_1 \text{LnGDP}_{jt-1} + \beta_2 \text{LnDIST}_j + \beta_3 \text{LnREMOTE}_{jt-1} + \beta_4 \text{ISLAND}_j \\ & + \beta_5 \text{LANDLOCKED}_j + \beta_6 \text{WTO}_{jt-1} + \beta_7 \text{HT}_j + \beta_8 \Delta \text{LnGDP}_j + \beta_9 \Delta \text{LnREMOTE}_j \\ & + \beta_{10} \Delta \text{RTA}_j + \beta_{11} \Delta \text{WTO} + \varepsilon_j, \end{aligned} \quad (6)$$

⁷ The partial-adjustment model can be found elsewhere, such as in Curry and George (1983); Stone and Lee (1995); and Lee et al. (2008).

where

$$\begin{aligned}
 t-1 &= 2000, \\
 t &= 2008, \\
 \Delta \text{LnGDP}_j &= \text{LnGDP}_{jt} - \text{LnGDP}_{jt-1}, \\
 \Delta \text{LnREMOTE}_j &= \text{LnREMOTE}_{jt} - \text{LnREMOTE}_{jt-1}, \\
 \Delta \text{RTA}_j &= \text{RTA}_{jt} - \text{RTA}_{jt-1}, \\
 \Delta \text{WTO}_j &= \text{WTO}_{jt} - \text{WTO}_{jt-1}.
 \end{aligned}$$

Thus, we can distinguish the short-run contemporaneous effect from the long-run steady-state effect. Another advantage of this model is that by first-differencing the dependent variable and the time-variant explanatory variables, this methodology also accounts for unobserved country-fixed effects as well as observed country-fixed effects.

Equation (6) will also be estimated for the changes in the goods extensive margin (N_j) and in the goods intensive margin (A_j), alternatively.

4. Empirical Results

In this section, we report and discuss the main empirical results.

4.1 The Basic Model

Table 6 shows our benchmark regression results of the static gravity model in which the dependent variable is the value of export flows to each destination country for each category of products (final products and intermediate inputs) from the three different types of firms (public, private, and foreign).

The gravity model works well for all equations, as indicated by the large size of R^2 . All three types of firms in the PRC export more to larger countries and less to countries that are farther away, irrespective of the types of products. A noticeable difference among the firms is that foreign-invested firms appear to be more responsive to the size of destination economies and their distance from the PRC in their exports of intermediate goods. This finding is consistent with Yi (2003), which shows that when various stages of production are spread across different countries, changes in trade costs can have a magnified impact on trade flows, because they are incurred each time that the good is traded back and forth between countries. If so, trade in intermediate goods, especially by foreign-invested firms, which are more likely to be involved in production fragmentation, would be more sensitive to geographic distance.

We also find that foreign-invested firms export less to countries that are farther away from most other countries in the world. All three types of firms export less to landlocked countries, while only domestic firms export less to island countries.

We have two variables related to trade liberalization: (i) WTO dummy variable and (ii) RTA dummy variable. Foreign-invested firms in the PRC export more of both final and intermediate goods to WTO member countries. Domestic private firms export more final goods to WTO member countries. However, the PRC's free trade agreements do not

have a significant effect. This is not surprising because in our sample there was no RTA partner of the PRC in 2000 and only few countries became the PRC's RTA partner between 2000 and 2008.⁸ However, one should not place too much confidence in such estimates because without taking full advantage of the panel data with country-pair fixed effects (partner country effects in our case) or with first differences, our regression cannot accurately estimate the precise impact of a free trade agreement, as explained by Baier and Bergstrand (2007) and Baier et al. (2011). Hong Kong, China and Taipei, China are found to be the special trading partners with respect to the PRC's exports, except for exports of intermediate products by foreign-invested firms. In particular, domestic private firms are found to have the strongest trade ties with these two economies.

Table 7 reports the same benchmark regression results with the dependent variable replaced with the log of the goods extensive margin of the PRC's exports, defined as the number of HS-8 classifications that enter with positive value of export flows to each country for each category product. Table 8 reports the results when the dependent variable is the log of the goods intensive margin, defined as the average value of export flows per HS-8 classification with a positive export value.

For both extensive and intensive margins of trade, the GDP of partners is positive and significant. Thus, the PRC imports more from large economies because it imports (i) larger quantities of a given good (intensive margin) and (ii) a wider set of goods (extensive margin). Our finding is consistent with Eaton et al. (2004 and 2011), which show that the number of firms and products selling to a market increases with market size, and with Bernard et al. (2011b) which show that the average exports per firm and product increases with market size.

For both extensive and intensive margins, the distance variable is significant and negative. However, the absolute size of these coefficients is smaller for extensive margins than for intensive margins, irrespective of the types of goods and the types of firms. This is somewhat surprising since the well-known negative effect of distance on aggregate bilateral trade is largely accounted for by the extensive margin of the number of heterogeneous firms and products participating in trade rather than the intensive margin of the amount of trade per firm and product (Bernard et al. 2011b).

The extensive margin has a significant positive relationship with the WTO membership dummy in most equations, while the intensive margin has a significant positive relationship only for exports of intermediates products from foreign-invested firms. On the other hand, the RTA dummy variable is not significantly positive.

Table 9 reports the results when the dependent variable is total imports. The results are qualitatively similar, but the (absolute) sizes of the GDP and distance variables are larger in the import equations than in the export equations reported in Table 5.

⁸ In our sample, ASEAN (July 2005), Pakistan (July 2007), Chile (October 2006), and New Zealand (October 2008) are the only economies that became RTA partners with the PRC between 2000 and 2008. Dates in parenthesis are the dates when the agreement entered into force.

Tables 10 and 11 report the results when the dependent variable is the goods extensive margin of imports and the goods intensive margin of imports, respectively. For both extensive and intensive margins of trade, the GDP of partners is positive and significant. Thus, the PRC imports more from large economies not only because large economies export larger quantities of a given good (intensive margin), but also because they export a wider set of goods (extensive margin).

The absolute size of the estimates for the distance variable is greater for the extensive margin than for the intensive margin for final goods imports, but vice versa for intermediate goods imports. In addition, Chinese firms (both domestic and foreign) import greater varieties of both final and intermediate goods from WTO members, and import greater average values of intermediate goods only. In contrast, the RTA dummy variable is not positively significant.

4.2 Partial-Adjustment Model

Table 12 presents ordinary least squares estimates of the partial-adjustment model in Equation (6) when the dependent variable is the first difference in the log of total value of exports for each category of products. As noted above, the partial-adjustment model allows us to distinguish the short-run contemporaneous effect from the long-run steady-state effect, and to account for unobserved country-fixed effects as well as observed country-fixed effects, by first-differencing the dependent variable and the time-variant explanatory variables.

The adjustment rate, which is the coefficient of the lagged value of exports (LnT_{t-1}), is the largest in absolute terms for the equations for exports by private firms for both types of goods, suggesting that between 2000 and 2008, private firms, as compared to public firms or foreign-invested firms, increased their exports more rapidly to the destinations to which they exported less in 2000.

The coefficients of the levels and difference-form variables of the log of GDP of partner economies have the expected positive signs and are significant at the 1% level. The log of distance has the expected negative sign and is highly significant in all of the equations, irrespective of the types of goods and firms. In terms of the size of the coefficient estimates, changes in exports of intermediate goods by foreign-invested firms are most responsive to geographical distance.

Interestingly, the WTO membership status of trading partners does not seem to have contributed to an increase in exports of both final goods and intermediate goods, except for exports of intermediate goods by foreign-invested firms, which has a positive and significant coefficient for the level form of the WTO dummy (economies that were already members of the WTO as of 2000), but has a negative and significant coefficient for the difference form of the WTO dummy (economies that joined the WTO between 2000 and 2008). Also, only private firms increased their exports of intermediate goods to the PRC's new RTA partners.

Table 13 reports the results when the dependent variable is the first difference in the log of the goods extensive margin of the PRC's exports for different types of goods traded

by different types of firms. Surprisingly, the sign on the log of GDP of partner economies and on the first difference of GDP of partner economies is negative and significant in equations for intermediate goods exported by public firms and by foreign firms. None of the other equations carry a positive sign for the GDP of partner economies. It is puzzling that the PRC's public firms and foreign firms did not export a larger number of intermediate goods to the fast-growing economies.

The distance variable is also puzzling. None of the equations carry a negative sign for the distance variable. In fact, for exports of intermediate goods, the distance variable is significant and positive, implying that the PRC's public firms and foreign firms export a larger number of intermediate goods to the more distant economies.

The RTA dummy variable is positive and significant for exports of final goods, but not for exports of intermediate goods. In contrast, the WTO dummy variable (both level and difference) is positive and significant in some equations for exports of intermediate goods, but not for exports of final goods. These two findings deserve further investigation.

Table 14 reports the results when the dependent variable is the first difference in the log of the goods intensive margin of the PRC's exports. The estimated coefficients for the GDP of partners and the distance variable are positive and negative, respectively, and both are significant. Therefore, the positive coefficient for the GDP of partners and the negative coefficient for the distance variable for the total value of exports, as reported in Table 12, are solely due to changes in intensive margin rather than extensive margin.

Tables 15, 16, and 17 report the results when the dependent variable is the first difference in the log of total imports, the goods extensive margin of imports, and the intensive product margin of imports, respectively. The results are qualitatively similar, but the (absolute) size of the estimated coefficients for the GDP and distance variables are larger in these import equations than in the export equations reported in Tables 12, 13, and 14.

4.3 Summary of Puzzles from the Gravity Equations

Table 18 summarizes the estimated coefficients for partner economies' GDP in the various gravity equations reported in Tables 6–17. Table 19 also summarizes the estimated coefficients for the geographic distances between the PRC and its partner economies in the various gravity equations reported in Tables 6–17.

As summarized in Table 18, in the years 2000 and 2008 the PRC traded a greater number of goods and a greater amount per good with bigger economies. This finding is consistent with previous studies (Hummels and Klenow 2005). Also, between 2000 and 2008, the PRC traded greater amounts per given good with bigger economies, irrespective of the direction of trade, type of good, or type of firm. It is puzzling, however, to find that during this period, public firms and foreign firms reduced their exports of intermediate goods to countries whose economies were larger in 2000 and to countries whose economies grew faster.

As summarized in Table 19, in 2000 and 2008 the PRC traded fewer number of goods and a smaller amount per given good with more distant countries, a finding consistent with previous research. Between 2000 and 2008, the PRC reduced the amount per given good in its exports (imports) to (from) more distant countries, irrespective of the direction of trade and types of goods and firms. However, it is puzzling to find that during this period, public firms and foreign firms increased their exports of intermediate goods to more distant countries. During this period, those firms also increased their imports of intermediate goods from more distant countries.

To sum up, unlike the static gravity equations, the dynamic gravity equations in the partial-adjustment model yield some puzzling results for both GDP and distance when the dependent variable is the goods extensive margin (number of products) of exports.

5. Concluding Observations

The PRC's phenomenal rise as a global economic heavyweight has been driven by its integration into the world economy. In particular, the explosive growth of its trade and exports since its market-oriented reforms of 1978 contributed to sustained rapid growth. The primary catalyst behind the PRC's export-oriented industrialization was FDI, which provided the capital and technology that built up a globally competitive manufacturing base within a short period of time. Multinational corporations (MNCs) typically locate different parts of their production processes in different countries, and account for a large part of the global parts and components trade. The PRC is still in the midst of a transition toward a market economy in which a large mass of public firms coexist with a growing mass of private firms. In short, the PRC's exports and imports are heterogeneous in terms of both trading firms and traded products. Therefore, a thorough analysis of the PRC's trade would be incomplete without taking into account firm and product heterogeneity.

At the same time, the focus of research on international trade has recently shifted from industries and countries to firms and products. This mirrors the stylized fact that firm and product heterogeneity are important dimensions of international trade. For example, exporting firms are larger, more productive, more skill- and capital-intensive, and pay higher wages than non-exporting firms. Nevertheless, the emerging literature on the implications of firm and product heterogeneity is still in its infancy and suffers from a number of shortcomings. First, almost all theoretical and empirical studies in the literature neglect ownership differences among firms. Second, the literature on firm heterogeneity in international trade assumes that all goods are final goods and rules out the existence of intermediate goods that are used in the production of other goods. Third, previous studies look primarily at firm export behavior rather than firm import behavior. Fourth, the literature tends to ignore the dynamics of firm trade behavior over time.

The central objective of our paper is to address the above issues that have largely been neglected in the literature on firm heterogeneity in trade. First, we distinguish firms into foreign firms and domestic firms, and the latter are further divided into private firms and public firms. Second, we distinguish products into final goods and intermediate goods.

Third, we look at not only the PRC's exports but also its imports, and test for the relative importance of extensive margin (number of goods) versus the intensive margin (amount traded per good). Fourth, we estimate gravity equations from the perspective of dynamics utilizing a dynamic adjustment model. Using highly disaggregated, HS 8-digit, product-category level data collected by the PRC Customs Office for 2000 and 2008, we perform an in-depth anatomy of the PRC's trade in manufactured goods. We estimate static gravity models with which we explain value of trade, extensive margins and intensive margins with a number of control variables, as well as a partial-adjustment model to capture dynamic trade behavior.

Our in-depth empirical analysis of the PRC's trade, which takes into account firm and product heterogeneity, yields a number of interesting findings and generates some puzzles. For example, foreign firms dominate the PRC's trade in manufactured goods, especially its trade in intermediate goods. In 2008, while the goods extensive margin (number of goods traded) was similar among the three types of firms for both exports and imports of both final and intermediate goods, the goods intensive margin was higher for foreign firms in exports and imports of both types of goods. The PRC exports more to large economies not only because large economies import larger quantities of a given good (intensive margin) but also because they import a wider range of goods. Unlike the static gravity model, the dynamic gravity model based on partial adjustment yields some counterintuitive results that are at odds with previous studies. For example, public firms and foreign firms increased their exports (imports) of intermediate goods to (from) more distant countries.

To conclude, we hope that our attempt to address the major shortcomings in the current literature on firm heterogeneity in trade through empirical analysis of Chinese trade micro-data will contribute to the further development of this emerging literature as well as deepen our understanding of the PRC's trade pattern. Upon closer reflection, these shortcomings have a special resonance for the PRC. For one, given the PRC's central role in East Asian production networks and the significant position that MNCs have in these networks, failure to distinguish between final and intermediate goods will compromise any analysis of the PRC's trade. There are a number of promising directions for future research. Resolving the puzzles thrown by the results of our dynamic gravity equations, for GDP and distance, is one such direction. At a broader level, extending the type of analysis we carried out here to other countries where data are available, for example by applying a dynamic gravity model based on partial adjustment, will enrich our understanding of how firm and product heterogeneity influences international trade.

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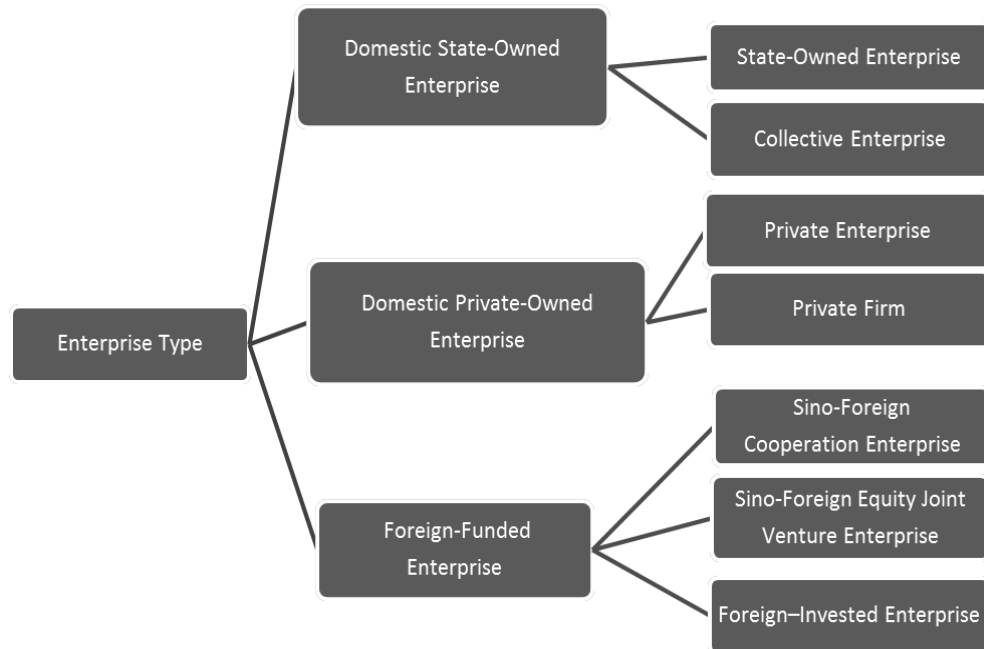
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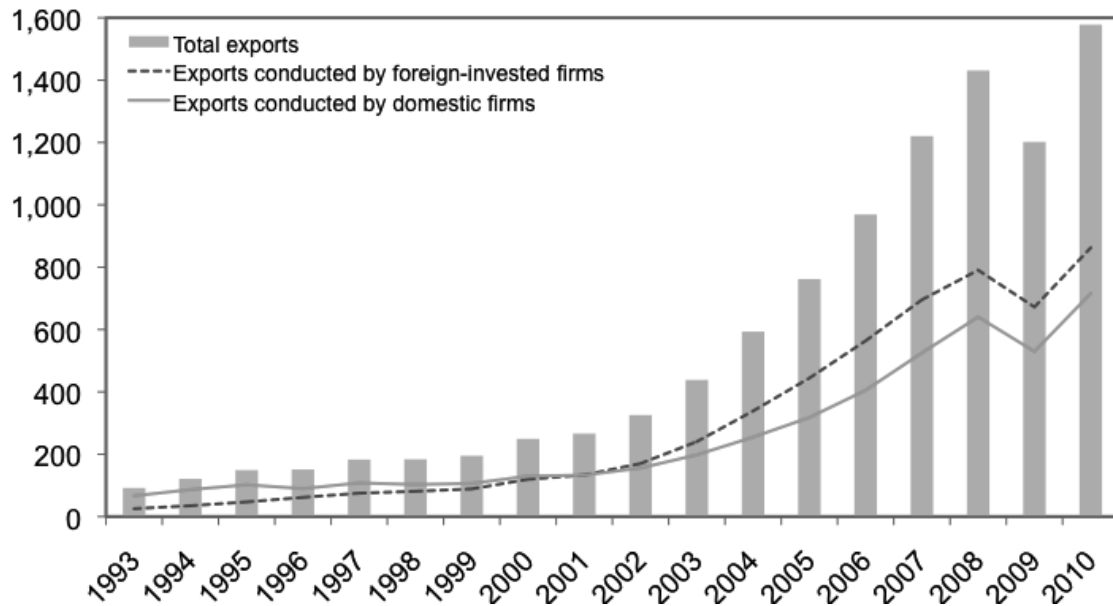
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Figure 1: Ownership Types of Firms in the People's Republic of China



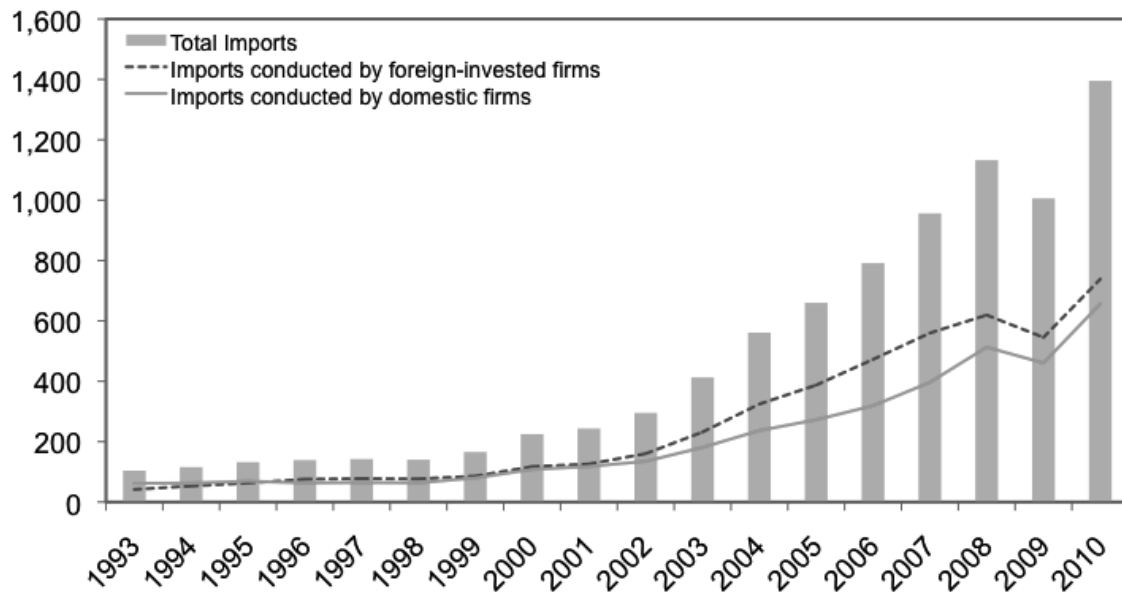
Source: Author's compilation.

Figure 2A: Trend of the People's Republic of China's Exports Shares Conducted by Domestic and Foreign-invested Firms (billion \$)



Source: People's Republic of China Statistical Yearbook 2010.

Figure 2B: Trend of the People's Republic of China Imports Shares Conducted by Domestic and Foreign-invested Firms (billion \$)



Source: People's Republic of China Statistical Yearbook 2010.

Table 1: The People's Republic of China's Exports and Imports of Different Types of Products by Different Types of Firms

Item	Exports				Imports			
	2000	%	2008	%	2000	%	2008	%
All Goods	249.2	100.0	1,428.0	100.0	225.1	100.0	1,132.0	100.0
Domestic public firms	127.0	51.0	311.9	21.8	105.1	46.7	382.6	33.8
Domestic private firms	2.4	1.0	325.7	22.8	1.4	0.6	124.8	11.0
Foreign-invested firms	119.5	48.0	790.6	55.4	117.3	52.1	619.2	54.7
Non-manufactured Goods	24.0	100.0	75.2	100.0	33.9	100.0	312.1	100.0
Domestic public firms	16.0	66.7	31.0	41.3	27.4	80.7	230.1	73.7
Domestic private firms	0.3	1.3	17.8	23.6	0.2	0.5	29.1	9.3
Foreign-invested firms	7.4	30.7	26.4	35.1	6.3	18.6	52.8	16.9
Manufactured Goods	206.9	100.0	1,269.0	100.0	188.5	100.0	812.2	100.0
Domestic public firms	101.3	49.0	267.0	21.0	76.8	40.7	151.9	18.7
Domestic private firms	1.8	0.9	282.6	22.3	1.2	0.6	95.2	11.7
Foreign-invested firms	103.8	50.2	718.8	56.6	110.1	58.4	564.0	69.4
Final Goods	153.7	100.0	1,026.1	100.0	119.9	100.0	620.4	100.0
Domestic public firms	87.7	57.0	230.9	22.5	57.5	48.0	122.3	19.7
Domestic private firms	1.6	1.1	244.8	23.9	1.0	0.8	80.7	13.0
Foreign-invested firms	64.5	41.9	549.8	53.6	61.1	50.9	416.5	67.1
Parts and Components	53.2	100.0	242.9	100.0	68.6	100.0	191.8	100.0
Domestic public firms	13.7	25.7	36.1	14.8	19.3	28.1	29.7	15.5
Domestic private firms	0.2	0.4	37.8	15.6	0.2	0.3	14.6	7.6
Foreign-invested firms	39.4	74.0	169.0	69.6	49.0	71.5	147.5	76.9

Source: People's Republic of China Customs Office.

Table 2: Major Partners for and Players of the People's Republic of China's Exports and Imports of Intermediate Goods

Partner Country/Region	Exports				Imports			
	2000		2008		2000		2008	
	Value	Share (%)	Value	Share (%)	Value	Share (%)	Value	Share (%)
World	532.0	100.0	2,429.0	100.0	685.7	100.0	1,918.0	100.0
Domestic public firms	136.5	25.7	360.6	14.8	192.7	28.1	296.5	15.5
Domestic private firms	1.9	0.4	378.3	15.6	1.8	0.3	145.7	7.6
Foreign-invested firms	393.5	74.0	1,690.0	69.6	490.0	71.5	1,475.0	76.9
Japan	71.3	13.4	227.2	9.4	171.5	25.0	414.6	21.6
Domestic public firms	13.6	19.1	19.0	8.4	40.2	23.4	64.1	15.5
Domestic private firms	0.1	0.1	13.1	5.7	0.4	0.2	20.2	4.9
Foreign-invested firms	57.6	80.8	195.1	85.9	130.8	76.3	330.2	79.6
Republic of Korea	22.6	4.2	102.1	4.2	62.0	9.0	189.4	9.9
Domestic public firms	3.0	13.1	7.6	7.4	13.2	21.4	15.0	7.9
Domestic private firms	0.0	0.1	12.2	12.0	0.1	0.2	10.3	5.5
Foreign-invested firms	19.6	86.7	82.2	80.5	48.4	78.1	164.0	86.6
Hong Kong, China	123.3	23.2	540.0	22.2	37.5	5.5	17.5	0.9
Domestic public firms	30.0	24.4	53.8	10.0	10.4	27.7	1.8	10.1
Domestic private firms	0.4	0.3	37.7	7.0	0.2	0.4	1.1	6.5
Foreign-invested firms	92.9	75.3	448.4	83.0	26.9	71.8	14.6	83.4
Taipei, China	15.3	2.9	67.1	2.8	82.3	12.0	162.2	8.5
Domestic public firms	4.4	28.7	7.5	11.1	22.9	27.8	10.4	6.4
Domestic private firms	0.1	0.4	5.8	8.7	0.2	0.3	11.6	7.1
Foreign-invested firms	10.8	70.7	53.8	80.2	58.9	71.6	139.7	86.1
ASEAN-6	51.7	9.7	201.7	8.3	84.3	12.3	261.8	13.6
Domestic public firms	10.4	20.1	36.2	18.0	20.2	23.9	22.2	8.5
Domestic private firms	0.2	0.5	35.1	17.4	0.2	0.3	18.6	7.1
Foreign-invested firms	41.1	79.5	130.3	64.6	63.8	75.7	220.9	84.4
EU-15	94.3	17.7	429.5	17.7	120.5	17.6	309.1	16.1
Domestic public firms	22.1	21.5	58.4	10.7	34.9	27.6	90.0	26.0
Domestic private firms	0.2	0.2	75.8	13.8	0.2	0.2	31.9	9.2
Foreign-invested firms	71.9	70.0	295.2	53.9	85.2	67.2	187.0	54.0
NAFTA	109.9	20.7	422.0	17.4	78.2	11.4	139.0	7.2
Domestic public firms	30.4	27.6	57.7	11.8	30.5	38.7	39.2	27.2
Domestic private firms	0.4	0.4	59.8	12.3	0.3	0.4	15.4	10.7
Foreign-invested firms	79.1	71.9	304.4	62.4	47.2	60.0	83.9	58.2
Others	43.6	8.2	439.4	18.1	49.4	7.2	424.4	22.1

ASEAN = Association of Southeast Asian Nations; EU = European Union.

Notes: Others include unknown countries, United Nations (UN), and other international organizations. ASEAN-6 are the six original ASEAN member countries (i.e., excluding Cambodia, Lao People's Democratic Republic, Myanmar, and Viet Nam). EU-15 comprises the original 15 members of the EU.

Source: People's Republic of China Customs Office.

Table 3: The People's Republic of China's Parts and Components Trade at the 2-Digit HS Code Level (million \$)

Item	Exports						Imports					
	2000			2008			2000			2008		
	Public	Private	Foreign	Public	Private	Foreign	Public	Private	Foreign	Public	Private	Foreign
HS28-38: chemical products	20.7	0.0	66.2	294.3	52.4	1,726.0	9.8	0.0	354.2	59.9	71.6	1,535.0
HS39-40: plastics and rubber	102.3	2.7	182.8	202.2	434.7	777.5	119.1	1.2	400.6	258.0	147.1	1,372.0
HS47-49: wood pulp products	21.6	0.0	27.1	49.9	40.4	188.1	57.1	0.2	143.6	31.0	19.8	231.6
HS50-63: textiles and textile articles	60.8	0.7	79.2	121.1	251.8	355.0	85.3	0.6	192.9	93.3	44.9	561.3
HS64-67: footwear	71.4	1.4	44.5	65.1	99.5	88.8	11.8	0.0	14.5	5.3	1.4	12.7
HS68-70: articles of stone, plaster, and cement	40.7	1.5	146.2	78.9	210.1	703.4	28.2	0.3	110.2	40.2	32.0	950.4
HS72-83: base metals	294.4	18.7	150.7	588.8	944.2	1,166.0	124.6	1.3	323.1	501.5	264.2	1,742.0
HS84: general machinery	4,972.0	47.9	14,970.0	15,470.0	14,870.0	76,840.0	6,765.0	92.4	9,436.0	71,670.0	6,972.0	13,640.0
HS85: electric machinery	6,562.0	90.7	21,380.0	14,510.0	14,910.0	73,780.0	10,730.0	67.4	33,960.0	10,360.0	6,067.0	73,480.0
HS86-87: vehicles and railway	948.3	23.8	965.4	3,518.0	5,400.0	7,825.0	597.8	8.3	1,839.0	2,684.0	381.5	8,517.0
HS88-89: aircraft and ships	80.9	0.3	290.0	342.5	12.4	833.8	533.9	0.0	236.5	568.2	14.8	644.5
HS90-92: precision machinery	477.1	4.0	1,042.0	825.9	597.1	4,688.0	501.7	4.0	1,933.0	1,399.0	554.3	7,447.0
Total parts and components	13,652.1	191.7	39,344.1	36,066.8	37,822.6	----	19,564.3	175.6	48,943.6	87,670.6	14,570.6	----

---- = No data; HS = Harmonized Systems.

Source: People's Republic of China Customs Office.

Table 4A: Goods Extensive and Intensive Margins of the People's Republic of China's Exports (million \$)

Item	Total Exports			Goods Extensive Margin			Goods Intensive Margin		
				Number of Exporting Products			Average Exports of Each Product		
	2000	2008	Change (%)	2000	2008	Change (%)	2000	2008	Change (%)
Manufactured Goods	206,892	1,268,510	513.1	5,403	5,896	9.1	38.3	215.4	462.2
Domestic public firms	101,268	266,963	163.6	5,329	5,649	6.0	19.0	47.3	148.8
Domestic private firms	1,836	282,586	15,290.6	2,744	5,683	107.1	0.7	49.8	7,326.3
Foreign-invested firms	103,752	718,803	592.8	4,600	5,444	18.3	22.6	132.1	485.6
Final Goods	153,690	1,025,620	567.3	4,598	5,135	11.7	33.4	200.0	497.9
Domestic public firms	87,615	230,902	163.5	4,533	4,899	8.1	19.3	47.1	144.1
Domestic private firms	1,644	244,761	14,784.6	2,300	4,938	114.7	45.0	49.7	10.3
Foreign-invested firms	64,404	549,829	753.7	3,799	4,705	23.8	17.0	116.9	589.0
Parts and Components	53,202	242,890	356.5	805	761	-5.5	66.1	319.3	383.2
Domestic public firms	13,653	36,061	164.1	796	750	-5.8	17.2	48.1	179.7
Domestic private firms	192	37,825	19,631.3	444	745	67.8	0.4	50.7	11,633.2
Foreign-invested firms	39,348	168,974	329.4	801	739	-7.7	49.1	228.7	366.1

Notes: Number of exporting products is the number of HS 8-digit classified items. Average exports of each product is the total exports divided by the number of exporting products.
Source: People's Republic of China Customs Office.

Table 4B: Goods Extensive and Intensive Margins of the People's Republic of China's Imports by Different Types of Firms (million \$)

Item	Total Imports			Goods Extensive Margin			Goods Intensive Margin		
				Number of Importing Products			Average Imports of Each Product		
	2000	2008	Change (%)	2000	2008	Change (%)	2000	2008	Change (%)
Manufactured Goods	188,503	812,164	330.8	5,473	5,912	8.0	34.5	137.3	297.7
Domestic public firms	76,776	151,912	97.9	5,349	5,520	3.2	14.4	27.5	91.8
Domestic private firms	1,186	95,230	7,932.5	2,340	5,534	136.5	0.5	17.2	3,282.7
Foreign-invested firms	110,105	563,952	412.2	5,250	5,676	8.1	21.0	99.4	374.2
Final Goods	119,934	620,315	417.2	4,660	5,150	10.5	25.8	120.4	366.0
Domestic public firms	57,508	122,265	112.6	4,538	4,768	5.1	12.7	25.7	102.6
Domestic private firms	1,010	80,659	7,886.4	1,852	4,792	158.7	0.5	16.8	2,972.0
Foreign-invested firms	61,107	416,458	581.5	4,454	4,928	10.6	13.7	84.6	517.9
Parts and Components	68,569	191,850	179.8	813	762	-6.3	84.4	252.0	198.6
Domestic public firms	19,268	29,647	53.9	811	752	-7.3	23.8	39.4	65.4
Domestic private firms	176	14,571	8,198.2	488	742	52.0	0.4	19.7	5,355.8
Foreign-invested firms	48,997	147,495	201.0	796	748	-6.0	61.6	196.5	219.3

Notes: Number of importing products is the number of HS 8-digit classified items. Average imports of each product is the total imports divided by the number of importing products.

Source: People's Republic of China Customs Office.

Table 5A: Country Extensive and Intensive Margins of the People's Republic of China's Exports by Different Types of Firms (million \$)

Item	Total Exports			Country Extensive Margin			Country Intensive Margin		
				Number of Destination Countries			Average Exports to Each Country		
	2000	2008	Change (%)	2000	2008	Change (%)	2000	2008	Change (%)
Manufactured Goods	206,892	1,268,510	513.1	220	232	5.5	940.4	5,467.7	481.4
Domestic public firms	101,268	266,963	163.6	220	227	3.2	460.3	1,176.0	155.5
Domestic private firms	1,836	282,586	---	170	228	34.1	10.8	1,239.4	11,375.5
Foreign-invested firms	103,752	718,803	592.8	213	229	7.5	487.1	3,138.9	544.4
Final Goods	153,690	1,025,620	567.3	219	232	5.9	701.8	4,420.8	529.9
Domestic public firms	87,615	230,902	163.5	218	226	3.7	401.9	1,021.7	154.2
Domestic private firms	1,644	244,761	---	169	228	34.9	9.7	1,073.5	10,932.9
Foreign-invested firms	64,404	549,829	753.7	212	228	7.5	303.8	2,411.5	693.8
Parts and Components	53,202	242,890	356.5	209	229	9.6	254.6	1,060.7	316.7
Domestic public firms	13,653	36,061	164.1	204	220	7.8	66.9	163.9	144.9
Domestic private firms	192	37,825	---	120	225	87.5	1.6	168.1	10,423.3
Foreign-invested firms	39,348	168,974	329.4	176	220	25.0	223.6	768.1	243.5

--- = No data.

Notes: Number of countries is the number of countries to which the People's Republic of China exported in 2000 and 2008. Average exports to each country is the total exports divided by the number of exporting countries.

Source: People's Republic of China Customs Office.

Table 5B: Country Extensive and Intensive Margins of the People's Republic of China's Imports by Different Types of Firms (million \$)

Item	Total Imports			Country Extensive Margin			Country Intensive Margin		
				Number of Source Countries			Average Imports from Each Country		
	2000	2008	Change (%)	2000	2008	Change (%)	2000	2008	Change (%)
Manufactured Goods	188,503	812,164	330.8	184	217	17.9	1,024.5	3,742.7	265.3
Domestic public firms	76,776	151,912	97.9	172	182	5.8	446.4	834.7	87.0
Domestic private firms	1,186	95,230	7,932.5	85	189	122.4	13.9	503.9	3,512.5
Foreign-invested firms	110,105	563,952	412.2	157	211	34.4	701.3	2,672.8	281.1
Final Goods	119,934	620,315	417.2	181	213	17.7	662.6	2,912.3	339.5
Domestic public firms	57,508	122,265	112.6	169	179	5.9	340.3	683.0	100.7
Domestic private firms	1,010	80,659	7,886.4	80	183	128.8	12.6	440.8	3,391.3
Foreign-invested firms	61,107	416,458	581.5	153	204	33.3	399.4	2,041.5	411.1
Parts and Components	68,569	191,850	179.8	129	193	49.6	531.5	994.0	87.0
Domestic public firms	19,268	29,647	53.9	109	123	12.8	176.8	241.0	36.4
Domestic private firms	176	14,571	8,198.2	50	144	188.0	3.5	101.2	2,781.3
Foreign-invested firms	48,997	147,495	201.0	108	182	68.5	453.7	810.4	78.6

Notes: Number of countries is the number of countries from which the People's Republic of China imported. Average imports from each each country is the total imports divided by the number of importing countries.
Source: People's Republic of China Customs Office.

Table 6: Determinants of Total Value of Exports—Basic Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
GDP of partners (log)	0.661*** (0.062)	0.621*** (0.059)	0.625*** (0.060)	0.827*** (0.074)	0.643*** (0.061)	0.614*** (0.059)	0.615*** (0.060)	0.789*** (0.073)	0.830*** (0.073)	0.717*** (0.067)	0.711*** (0.073)	1.046*** (0.102)
Distance (log)	-1.241*** (0.235)	-1.164*** (0.217)	-1.145*** (0.236)	-1.255*** (0.292)	-1.194*** (0.229)	-1.144*** (0.215)	-1.141*** (0.233)	-1.125*** (0.279)	-1.464*** (0.288)	-1.280*** (0.255)	-1.085*** (0.270)	-1.677*** (0.361)
Remoteness (log)	-0.286 (0.238)	-0.013 (0.231)	-0.038 (0.223)	-0.659** (0.292)	-0.227 (0.236)	0.017 (0.233)	-0.023 (0.222)	-0.573** (0.282)	-0.513* (0.293)	-0.156 (0.260)	-0.031 (0.258)	-1.183*** (0.362)
Island countries	-0.595** (0.244)	-0.751*** (0.242)	-0.571** (0.237)	-0.332 (0.319)	-0.602** (0.241)	-0.727*** (0.243)	-0.543** (0.236)	-0.233 (0.291)	-0.649** (0.295)	-1.119*** (0.280)	-0.945*** (0.302)	0.004 (0.357)
Landlocked countries	-1.045*** (0.287)	-0.894*** (0.277)	-1.167*** (0.303)	-1.648*** (0.329)	-1.033*** (0.283)	-0.918*** (0.279)	-1.137*** (0.303)	-1.626*** (0.319)	-1.070*** (0.344)	-0.955*** (0.318)	-1.338*** (0.336)	-1.382*** (0.406)
RTA partners	0.130 (0.460)	0.091 (0.453)	-0.039 (0.457)	0.182 (0.468)	0.121 (0.449)	0.091 (0.448)	-0.039 (0.453)	0.213 (0.441)	0.179 (0.556)	0.102 (0.560)	0.109 (0.506)	0.557 (0.590)
WTO membership	0.319 (0.219)	0.361 (0.239)	0.415* (0.249)	0.659** (0.304)	0.297 (0.220)	0.381 (0.246)	0.425* (0.247)	0.454* (0.266)	0.600** (0.248)	0.316 (0.238)	0.294 (0.301)	0.872*** (0.333)
Hong Kong, China and Taipei, China	0.718** (0.338)	0.738** (0.318)	1.564*** (0.564)	0.891* (0.500)	0.719** (0.303)	0.719** (0.299)	1.526*** (0.556)	0.900** (0.419)	0.978 (0.639)	0.971* (0.546)	1.690*** (0.628)	1.310 (0.850)
2008 year dummy	3.047*** (0.214)	2.187*** (0.213)	6.181*** (0.232)	3.676*** (0.256)	3.079*** (0.213)	2.171*** (0.213)	6.138*** (0.231)	3.769*** (0.248)	3.201*** (0.247)	2.330*** (0.226)	6.260*** (0.301)	3.085*** (0.304)
Constant	15.843*** (4.409)	13.385*** (4.181)	9.321** (4.183)	13.098** (5.303)	15.218*** (4.344)	13.011*** (4.161)	9.291** (4.118)	11.999** (5.191)	13.103** (5.374)	10.911** (4.774)	4.439 (4.850)	13.849** (6.906)
Number of observations	282	282	269	281	282	282	269	280	282	279	239	269
R ²	0.704	0.641	0.812	0.723	0.699	0.632	0.810	0.728	0.706	0.661	0.786	0.688

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.
Source: Author's compilation.

Table 7: Determinants of Total Number of Exported Products—Basic Model

Item	All Manufactured Goods			Final Goods			Parts and Components					
	All Firms	Public	Private	All Firms	Public	Private	All Firms	Public	Private	Foreign		
GDP of partners (log)	0.229*** (0.025)	0.265*** (0.026)	0.310*** (0.043)	0.421*** (0.040)	0.226*** (0.024)	0.267*** (0.026)	0.303*** (0.041)	0.413*** (0.040)	0.251*** (0.030)	0.206*** (0.027)	0.270*** (0.039)	0.424*** (0.043)
Distance (log)	-0.425*** (0.089)	-0.454*** (0.092)	-0.627*** (0.164)	-0.565*** (0.156)	-0.436*** (0.087)	-0.464*** (0.091)	-0.622*** (0.160)	-0.541*** (0.153)	-0.381*** (0.105)	-0.318*** (0.101)	-0.515*** (0.139)	-0.539*** (0.156)
Remoteness (log)	-0.060 (0.097)	-0.019 (0.102)	-0.098 (0.157)	-0.406*** (0.157)	-0.052 (0.095)	-0.029 (0.100)	-0.088 (0.152)	-0.394** (0.153)	-0.107 (0.119)	-0.019 (0.112)	-0.061 (0.143)	-0.448*** (0.161)
Island countries	-0.164 (0.104)	-0.222** (0.110)	-0.111 (0.159)	-0.105 (0.173)	-0.152 (0.101)	-0.205* (0.108)	-0.098 (0.153)	-0.033 (0.164)	-0.268* (0.139)	-0.471*** (0.142)	-0.253 (0.164)	-0.033 (0.172)
Landlocked countries	-0.603*** (0.133)	-0.607*** (0.136)	-0.992*** (0.211)	-1.135*** (0.194)	-0.620*** (0.130)	-0.622*** (0.133)	-0.981*** (0.205)	-1.149*** (0.192)	-0.529*** (0.164)	-0.576*** (0.161)	-0.703*** (0.189)	-0.874*** (0.200)
RTA partners	0.006 (0.131)	0.031 (0.193)	-0.103 (0.187)	0.153 (0.176)	0.012 (0.130)	0.046 (0.199)	-0.082 (0.180)	0.175 (0.169)	-0.044 (0.148)	-0.058 (0.170)	0.016 (0.188)	0.245 (0.177)
WTO membership	0.232** (0.105)	0.249** (0.114)	0.358** (0.179)	0.535*** (0.173)	0.222** (0.102)	0.246** (0.112)	0.349** (0.173)	0.463*** (0.161)	0.322** (0.141)	0.220* (0.130)	0.156 (0.156)	0.364** (0.169)
Hong Kong, China and Taipei, China	0.436** (0.186)	0.482*** (0.161)	0.559* (0.328)	0.875*** (0.335)	0.424** (0.173)	0.481*** (0.148)	0.509* (0.307)	0.840*** (0.299)	0.522* (0.278)	0.347 (0.265)	0.483* (0.247)	0.970** (0.383)
2008 year dummy	1.081*** (0.091)	0.718*** (0.096)	3.844*** (0.158)	1.904*** (0.145)	1.079*** (0.089)	0.795*** (0.094)	3.807*** (0.153)	1.877*** (0.142)	1.167*** (0.118)	-0.058 (0.106)	3.261*** (0.159)	1.706*** (0.149)
Constant	5.093*** (1.735)	4.032** (1.834)	2.263 (2.895)	2.840 (2.847)	5.025*** (1.701)	4.001** (1.810)	2.162 (2.813)	2.605 (2.808)	2.531 (2.084)	2.415 (1.858)	0.692 (2.491)	1.416 (2.914)
Number of observations	282	282	269	281	282	282	269	280	282	279	239	269
R ²	0.614	0.587	0.785	0.689	0.625	0.608	0.791	0.691	0.520	0.415	0.760	0.647

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.
Source: Author's compilation.

Table 8: Determinants of Average Value of Exports—Basic Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
GDP of partners (log)	0.433*** (0.044)	0.356*** (0.039)	0.315*** (0.032)	0.406*** (0.043)	0.416*** (0.043)	0.347*** (0.039)	0.311*** (0.032)	0.376*** (0.042)	0.579*** (0.051)	0.510*** (0.047)	0.441*** (0.043)	0.623*** (0.067)
Distance (log)	-0.816*** (0.169)	-0.710*** (0.143)	-0.518*** (0.122)	-0.691*** (0.169)	-0.759*** (0.164)	-0.681*** (0.142)	-0.519*** (0.121)	-0.584*** (0.160)	-1.083*** (0.216)	-0.961*** (0.187)	-0.570*** (0.162)	-1.137*** (0.240)
Remoteness (log)	-0.226 (0.160)	0.007 (0.147)	0.060 (0.116)	-0.253 (0.170)	-0.175 (0.159)	0.046 (0.152)	0.065 (0.117)	-0.179 (0.164)	-0.407** (0.206)	-0.137 (0.176)	0.030 (0.158)	-0.735*** (0.238)
Island countries	-0.431** (0.169)	-0.528*** (0.160)	-0.460*** (0.166)	-0.226 (0.186)	-0.450*** (0.168)	-0.522*** (0.163)	-0.445*** (0.167)	-0.200 (0.167)	-0.381* (0.203)	-0.647*** (0.185)	-0.691*** (0.199)	0.037 (0.246)
Landlocked countries	-0.442** (0.186)	-0.287* (0.171)	-0.175 (0.179)	-0.513*** (0.186)	-0.414** (0.184)	-0.296* (0.177)	-0.156 (0.182)	-0.476*** (0.177)	-0.541** (0.222)	-0.380* (0.205)	-0.635*** (0.207)	-0.508* (0.280)
RTA partners	0.124 (0.368)	0.061 (0.286)	0.063 (0.343)	0.029 (0.366)	0.109 (0.352)	0.045 (0.276)	0.044 (0.341)	0.037 (0.337)	0.223 (0.485)	0.160 (0.467)	0.092 (0.375)	0.312 (0.522)
WTO membership	0.087 (0.166)	0.112 (0.162)	0.056 (0.153)	0.124 (0.188)	0.074 (0.168)	0.135 (0.168)	0.077 (0.155)	-0.009 (0.168)	0.277* (0.159)	0.096 (0.160)	0.138 (0.195)	0.508** (0.239)
Hong Kong, China and Taipei, China	0.282 (0.220)	0.256 (0.202)	1.005** (0.393)	0.017 (0.254)	0.295 (0.188)	0.239 (0.192)	1.017** (0.438)	0.060 (0.192)	0.456 (0.489)	0.624 (0.452)	1.207*** (0.426)	0.340 (0.578)
2008 year dummy	1.966*** (0.148)	1.468*** (0.137)	2.337*** (0.135)	1.772*** (0.149)	2.000*** (0.148)	1.376*** (0.139)	2.331*** (0.135)	1.892*** (0.143)	2.034*** (0.168)	2.388*** (0.155)	2.999*** (0.193)	1.379*** (0.206)
Constant	10.750*** (2.987)	9.354*** (2.602)	7.057*** (1.926)	10.258*** (2.938)	10.194*** (2.933)	9.010*** (2.600)	7.129*** (1.924)	9.395*** (2.849)	10.572*** (3.763)	8.496*** (3.290)	3.747 (2.771)	12.433*** (4.431)
Number of observations	282	282	269	281	282	282	269	280	282	279	239	269
R ²	0.677	0.603	0.654	0.634	0.667	0.571	0.647	0.638	0.710	0.719	0.691	0.614

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 9: Determinants of Total Value of Imports—Basic Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
GDP of partners (log)	0.996*** (0.103)	0.992*** (0.107)	0.916*** (0.110)	1.120*** (0.110)	0.988*** (0.106)	0.941*** (0.108)	0.859*** (0.111)	1.089*** (0.113)	1.396*** (0.134)	1.386*** (0.173)	1.153*** (0.151)	1.401*** (0.134)
Distance (log)	-2.154*** (0.342)	-2.303*** (0.354)	-1.912*** (0.310)	-1.919*** (0.379)	-2.122*** (0.340)	-2.310*** (0.356)	-1.859*** (0.310)	-1.923*** (0.365)	-2.566*** (0.515)	-2.719*** (0.576)	-3.140*** (0.493)	-2.647*** (0.521)
Remoteness (log)	-0.597 (0.402)	-0.341 (0.422)	0.367 (0.409)	-0.756* (0.413)	-0.435 (0.406)	-0.155 (0.428)	0.697* (0.416)	-0.469 (0.415)	-2.944*** (0.514)	-2.716*** (0.568)	-2.528*** (0.486)	-2.546*** (0.511)
Island countries	-0.291 (0.441)	-0.424 (0.475)	-0.877* (0.527)	0.007 (0.471)	-0.387 (0.452)	-0.422 (0.489)	-1.001* (0.578)	-0.259 (0.477)	1.412** (0.711)	1.091 (0.863)	0.232 (0.664)	1.284* (0.671)
Landlocked countries	-0.671 (0.481)	-0.439 (0.556)	-0.284 (0.635)	-1.219** (0.545)	-0.758 (0.533)	-0.424 (0.567)	-0.050 (0.544)	-1.235** (0.558)	-1.083* (0.584)	-0.434 (0.742)	-2.073*** (0.760)	-0.970 (0.615)
RTA partners	0.631 (0.881)	0.426 (0.910)	0.469 (0.733)	0.768 (1.017)	0.697 (0.871)	0.428 (0.917)	0.328 (0.734)	0.738 (1.008)	1.006 (1.348)	0.436 (1.672)	0.914 (1.183)	0.752 (1.345)
WTO membership	0.709 (0.465)	0.634 (0.560)	0.640 (0.530)	0.814 (0.506)	0.465 (0.473)	0.487 (0.621)	0.537 (0.557)	0.840 (0.523)	1.798*** (0.627)	1.864*** (0.703)	2.401*** (0.743)	2.283*** (0.617)
Hong Kong, China and Taipei, China	0.573 (0.643)	0.444 (0.683)	-0.287 (0.459)	0.890 (0.775)	0.625 (0.687)	0.497 (0.703)	-0.276 (0.469)	0.883 (0.782)	0.660 (1.120)	-1.045 (1.558)	-0.545 (1.195)	0.665 (1.089)
2008 year dummy	2.750*** (0.369)	2.174*** (0.417)	5.303*** (0.510)	2.574*** (0.404)	2.805*** (0.380)	2.188*** (0.432)	5.361*** (0.540)	2.627*** (0.412)	2.218*** (0.551)	1.540** (0.612)	4.176*** (0.706)	1.847*** (0.588)
Constant	16.048** (6.833)	14.575** (6.928)	3.535 (6.040)	11.239 (7.159)	14.528** (6.873)	14.282** (6.969)	1.664 (5.897)	9.363 (7.179)	25.150*** (8.978)	23.876** (10.241)	28.514*** (8.774)	21.897** (8.842)
Number of observations	266	256	201	253	265	251	196	247	231	183	150	208
R ²	0.565	0.494	0.548	0.579	0.536	0.455	0.543	0.565	0.618	0.554	0.627	0.623

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.
Source: Author's compilation.

Table 10: Determinants of Total Number of Imported Products—Basic Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
GDP of partners (log)	0.611*** (0.055)	0.672*** (0.058)	0.586*** (0.061)	0.646*** (0.061)	0.619*** (0.056)	0.651*** (0.059)	0.560*** (0.059)	0.650*** (0.062)	0.557*** (0.054)	0.595*** (0.072)	0.494*** (0.071)	0.563*** (0.059)
Distance (log)	-1.157*** (0.196)	-1.283*** (0.208)	-1.183*** (0.211)	-1.109*** (0.221)	-1.226*** (0.198)	-1.347*** (0.208)	-1.211*** (0.204)	-1.216*** (0.218)	-0.758*** (0.193)	-0.967*** (0.218)	-1.011*** (0.214)	-0.830*** (0.205)
Remoteness (log)	-1.068*** (0.228)	-0.904*** (0.242)	-0.940*** (0.202)	-1.154*** (0.248)	-0.951*** (0.234)	-0.727*** (0.246)	-0.804*** (0.199)	-1.021*** (0.250)	-1.298*** (0.210)	-1.170*** (0.233)	-1.011*** (0.202)	-1.152*** (0.227)
Island countries	0.311 (0.228)	0.205 (0.242)	0.234 (0.257)	0.430 (0.270)	0.291 (0.227)	0.192 (0.249)	0.175 (0.253)	0.331 (0.263)	0.436 (0.270)	0.319 (0.319)	0.193 (0.300)	0.557*** (0.279)
Landlocked countries	-0.637*** (0.209)	-0.615** (0.252)	-0.598*** (0.227)	-0.927*** (0.251)	-0.631*** (0.219)	-0.550** (0.255)	-0.564** (0.227)	-0.945*** (0.259)	-0.713*** (0.230)	-0.505* (0.300)	-0.897*** (0.292)	-0.663*** (0.263)
RTA partners	0.287 (0.389)	0.112 (0.437)	0.342 (0.436)	0.200 (0.451)	0.257 (0.396)	0.082 (0.434)	0.271 (0.435)	0.168 (0.458)	0.434 (0.389)	0.198 (0.448)	0.492 (0.429)	0.207 (0.429)
WTO membership	0.655*** (0.197)	0.617*** (0.211)	0.686*** (0.205)	0.832*** (0.224)	0.677*** (0.208)	0.660*** (0.232)	0.720*** (0.217)	0.858*** (0.230)	0.612*** (0.198)	0.730*** (0.230)	0.903*** (0.284)	1.035*** (0.247)
Hong Kong, China and Taipei, China	0.821*** (0.298)	0.674** (0.328)	0.102 (0.352)	0.932*** (0.345)	0.821*** (0.300)	0.656** (0.302)	0.139 (0.329)	0.917*** (0.335)	0.711*** (0.271)	0.354 (0.357)	0.059 (0.294)	0.410 (0.426)
2008 year dummy	1.418*** (0.189)	0.893*** (0.202)	2.857*** (0.262)	1.439*** (0.221)	1.384*** (0.195)	0.855*** (0.209)	2.796*** (0.262)	1.338*** (0.224)	1.059*** (0.207)	0.534** (0.240)	1.964*** (0.321)	0.955*** (0.246)
Constant	8.043** (3.986)	5.922 (4.211)	5.641 (3.866)	6.802 (4.355)	7.225* (4.036)	5.253 (4.209)	5.183 (3.733)	6.347 (4.381)	6.431* (3.682)	5.975 (4.274)	6.113 (3.942)	5.046 (3.904)
Number of observations	265	256	201	253	264	251	196	249	230	183	150	208
R ²	0.710	0.695	0.726	0.679	0.700	0.666	0.715	0.682	0.669	0.622	0.616	0.625

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 11: Determinants of Average Value of Imports—Basic Model

Item	All Manufactured Goods			Final Goods			Parts and Components					
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
GDP of partners (log)	0.383*** (0.066)	0.320*** (0.066)	0.331*** (0.074)	0.474*** (0.068)	0.368*** (0.068)	0.289*** (0.067)	0.298*** (0.077)	0.440*** (0.071)	0.835*** (0.088)	0.791*** (0.110)	0.659*** (0.094)	0.838*** (0.084)
Distance (log)	-0.995*** (0.208)	-1.020*** (0.225)	-0.730*** (0.204)	-0.810*** (0.212)	-0.895*** (0.209)	-0.963*** (0.229)	-0.648*** (0.216)	-0.715*** (0.206)	-1.733*** (0.356)	-1.752*** (0.381)	-2.128*** (0.345)	-1.817*** (0.353)
Remoteness (log)	0.473** (0.239)	0.563** (0.255)	1.308*** (0.304)	0.398* (0.224)	0.517** (0.240)	0.572** (0.258)	1.501*** (0.307)	0.567** (0.224)	-1.724*** (0.337)	-1.546*** (0.373)	-1.518*** (0.334)	-1.393*** (0.323)
Island countries	-0.609* (0.345)	-0.629* (0.374)	-1.110** (0.431)	-0.423 (0.332)	-0.684* (0.353)	-0.614 (0.379)	-1.177** (0.480)	-0.593* (0.341)	1.050** (0.491)	0.772 (0.587)	0.039 (0.445)	0.727 (0.456)
Landlocked countries	-0.041 (0.373)	0.176 (0.425)	0.314 (0.535)	-0.292 (0.404)	-0.132 (0.410)	0.125 (0.430)	0.514 (0.445)	-0.279 (0.403)	-0.322 (0.429)	0.071 (0.560)	-1.176** (0.589)	-0.307 (0.458)
RTA partners	0.345 (0.614)	0.314 (0.707)	0.128 (0.470)	0.567 (0.693)	0.441 (0.615)	0.346 (0.720)	0.057 (0.494)	0.564 (0.682)	0.629 (0.999)	0.238 (1.302)	0.422 (0.787)	0.544 (0.935)
WTO membership	0.058 (0.368)	0.017 (0.460)	-0.046 (0.455)	-0.019 (0.378)	-0.209 (0.372)	-0.174 (0.500)	-0.183 (0.478)	-0.029 (0.383)	1.137** (0.473)	1.134** (0.538)	1.499*** (0.554)	1.247*** (0.440)
Hong Kong, China and Taipei, China	-0.253 (0.504)	-0.230 (0.625)	-0.390 (0.401)	-0.042 (0.617)	-0.200 (0.534)	-0.159 (0.634)	-0.415 (0.439)	-0.026 (0.590)	0.023 (0.909)	-1.398 (1.255)	-0.603 (0.942)	0.255 (0.776)
2008 year dummy	1.323*** (0.262)	1.281*** (0.300)	2.446*** (0.339)	1.134*** (0.260)	1.414*** (0.271)	1.333*** (0.309)	2.565*** (0.365)	1.316*** (0.264)	1.212*** (0.383)	1.006** (0.419)	2.211*** (0.454)	0.892** (0.386)
Constant	8.036** (3.563)	8.654** (3.672)	-2.107 (3.651)	4.437 (3.460)	7.328** (3.629)	9.029** (3.744)	-3.519 (3.690)	2.907 (3.493)	18.772*** (5.780)	17.900*** (6.395)	22.401*** (5.507)	16.851*** (5.433)
Number of observations	265	256	201	253	264	251	196	247	230	183	150	208
R ²	0.263	0.194	0.289	0.299	0.236	0.174	0.317	0.277	0.536	0.455	0.542	0.560

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.
Source: Author's compilation.

Table 12: Determinants of Total Value of Exports—Partial Adjustment Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
Lag dependant variable	-0.429*** (0.059)	-0.516*** (0.059)	-0.664*** (0.063)	-0.519*** (0.060)	-0.427*** (0.058)	-0.522*** (0.058)	-0.663*** (0.063)	-0.482*** (0.060)	-0.612*** (0.061)	-0.575*** (0.086)	-0.797*** (0.067)	-0.669*** (0.076)
Lag GDP of partners (log)	0.307*** (0.064)	0.337*** (0.059)	0.425*** (0.055)	0.435*** (0.078)	0.302*** (0.062)	0.340*** (0.058)	0.417*** (0.054)	0.394*** (0.075)	0.542*** (0.083)	0.440*** (0.090)	0.543*** (0.068)	0.800*** (0.122)
Distance (log)	-0.411*** (0.124)	-0.401*** (0.124)	-0.604*** (0.211)	-0.365*** (0.123)	-0.413*** (0.121)	-0.388*** (0.122)	-0.608*** (0.213)	-0.370*** (0.124)	-0.664*** (0.180)	-0.614*** (0.203)	-0.536*** (0.145)	-0.746*** (0.198)
Lag Remoteness (log)	0.135 (0.128)	0.432*** (0.153)	0.382** (0.161)	-0.076 (0.164)	0.155 (0.127)	0.516*** (0.164)	0.415** (0.162)	-0.083 (0.151)	-0.034 (0.203)	0.121 (0.193)	0.242 (0.182)	-0.197 (0.285)
Island countries	-0.480*** (0.149)	-0.633*** (0.200)	-0.818*** (0.196)	-0.360** (0.168)	-0.493*** (0.149)	-0.639*** (0.206)	-0.804*** (0.196)	-0.459*** (0.158)	-0.572*** (0.200)	-0.896*** (0.231)	-0.883*** (0.257)	-0.418 (0.307)
Landlocked countries	0.231 (0.214)	0.147 (0.202)	-0.247 (0.337)	-0.069 (0.224)	0.207 (0.208)	0.092 (0.209)	-0.272 (0.345)	-0.057 (0.220)	0.004 (0.279)	0.157 (0.285)	-0.358 (0.360)	-0.266 (0.356)
Lag WTO membership	-0.031 (0.168)	-0.088 (0.202)	-0.141 (0.236)	-0.287 (0.233)	-0.062 (0.166)	-0.125 (0.205)	-0.164 (0.243)	-0.252 (0.233)	0.145 (0.203)	-0.104 (0.228)	-0.150 (0.258)	0.658* (0.399)
Hong Kong, China and Taipei,China	0.740*** (0.244)	0.647** (0.299)	0.257 (0.222)	0.615** (0.297)	0.730*** (0.237)	0.623** (0.269)	0.252 (0.211)	0.631** (0.268)	0.773** (0.381)	0.920 (0.622)	0.315 (0.419)	0.897* (0.528)
Δ GDP of partners (log)	0.278*** (0.059)	0.320*** (0.054)	0.430*** (0.053)	0.426*** (0.066)	0.271*** (0.058)	0.326*** (0.053)	0.426*** (0.053)	0.380*** (0.063)	0.497*** (0.069)	0.400*** (0.072)	0.494*** (0.064)	0.722*** (0.148)
Δ Remoteness (log)	-1.834*** (0.700)	-2.088** (0.915)	-1.655* (0.887)	-1.699* (0.902)	-1.860*** (0.704)	-2.150** (0.945)	-1.451 (0.897)	-1.863** (0.886)	-1.788* (1.039)	-1.814 (1.164)	-1.688* (0.951)	-1.584 (1.442)
Δ RTA partners	0.032 (0.186)	0.053 (0.228)	-0.027 (0.230)	0.085 (0.184)	0.092 (0.187)	0.073 (0.219)	-0.053 (0.233)	0.139 (0.192)	-0.095 (0.341)	-0.125 (0.404)	0.291** (0.148)	-0.056 (0.338)
Δ WTO membership	-0.472 (0.417)	-0.245 (0.340)	-0.473 (0.314)	-0.204 (0.511)	-0.504 (0.411)	-0.203 (0.330)	-0.469 (0.309)	-0.312 (0.513)	-0.368 (0.385)	-0.613 (0.449)	-0.242 (0.239)	-0.715** (0.346)
Constant	5.623*** (1.881)	2.937 (1.978)	7.423*** (2.341)	5.496*** (2.006)	5.553*** (1.873)	2.093 (2.011)	7.299*** (2.350)	5.960*** (1.992)	5.654** (2.600)	4.905* (2.863)	5.548** (2.377)	1.190 (3.593)
Number of observations	141	141	128	140	141	141	128	139	141	138	98	128
R ²	0.534	0.590	0.642	0.647	0.533	0.593	0.634	0.602	0.599	0.509	0.799	0.569

Notes: Numbers shown in parentheses are robust standard errors. ***, **, *, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 13: Determinants of Total Number of Exported Products—Partial Adjustment Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
Lag dependant variable	-0.082 (0.169)	-0.140 (0.112)	-0.031 (0.113)	0.079 (0.130)	-0.116 (0.172)	-0.184 (0.121)	-0.063 (0.113)	0.161 (0.111)	0.065 (0.125)	-0.104 (0.111)	-0.307** (0.156)	0.078 (0.209)
Lag GDP of partners (log)	-0.259*** (0.080)	-0.127* (0.071)	0.020 (0.077)	-0.092 (0.111)	-0.230*** (0.080)	-0.101 (0.072)	0.032 (0.075)	-0.101 (0.102)	-0.502*** (0.083)	-0.364*** (0.074)	-0.039 (0.077)	-0.394** (0.156)
Distance (log)	0.322* (0.173)	0.194 (0.149)	-0.115 (0.169)	0.339** (0.167)	0.212 (0.172)	0.135 (0.151)	-0.140 (0.172)	0.196 (0.166)	0.718*** (0.206)	0.542*** (0.181)	-0.120 (0.158)	0.758*** (0.244)
Lag Remoteness (log)	0.022 (0.198)	-0.020 (0.183)	-0.242 (0.209)	-0.175 (0.264)	-0.043 (0.193)	-0.027 (0.183)	-0.211 (0.210)	-0.290 (0.248)	0.100 (0.269)	-0.056 (0.222)	-0.364 (0.284)	0.376 (0.366)
Island countries	0.109 (0.200)	0.101 (0.182)	-0.045 (0.287)	0.020 (0.260)	0.131 (0.197)	0.101 (0.185)	-0.056 (0.289)	-0.066 (0.222)	-0.040 (0.266)	-0.051 (0.234)	0.093 (0.383)	-0.361 (0.352)
Landlocked countries	0.004 (0.239)	-0.129 (0.202)	-0.552* (0.311)	-0.198 (0.295)	-0.053 (0.235)	-0.169 (0.209)	-0.620** (0.305)	-0.150 (0.249)	-0.019 (0.286)	-0.195 (0.229)	-0.153 (0.438)	-0.731 (0.484)
Lag WTO membership	0.191 (0.262)	0.090 (0.220)	0.021 (0.285)	0.057 (0.326)	0.166 (0.261)	0.024 (0.225)	-0.035 (0.282)	0.181 (0.307)	0.169 (0.245)	0.194 (0.236)	0.485* (0.292)	0.201 (0.525)
Hong Kong, China and Taipei,China	0.431 (0.354)	0.475* (0.251)	-1.143* (0.626)	0.741*** (0.229)	0.401 (0.371)	0.494* (0.258)	-1.166 (0.713)	0.654** (0.275)	0.361 (0.348)	0.088 (0.211)	-1.707** (0.751)	0.778*** (0.256)
Δ GDP of partners (log)	-0.255*** (0.096)	-0.123 (0.089)	0.046 (0.078)	-0.094 (0.120)	-0.238** (0.096)	-0.100 (0.089)	0.062 (0.077)	-0.130 (0.115)	-0.457*** (0.098)	-0.347*** (0.092)	-0.054 (0.074)	-0.367** (0.173)
Δ Remoteness (log)	-1.623 (1.113)	-1.237 (0.912)	-0.330 (1.213)	-2.448* (1.254)	-1.322 (1.123)	-1.163 (0.933)	-0.048 (1.251)	-2.120* (1.200)	-3.499*** (1.315)	-2.591** (1.061)	-1.539 (1.371)	-5.203*** (1.940)
Δ RTA partners	0.345 (0.263)	0.390** (0.169)	0.528* (0.285)	0.541* (0.295)	0.471* (0.254)	0.487*** (0.183)	0.510* (0.302)	0.609** (0.251)	-0.219 (0.315)	-0.172 (0.211)	0.392 (0.288)	-0.013 (0.380)
Δ WTO membership	0.105 (0.382)	-0.052 (0.308)	-0.349 (0.336)	0.485* (0.295)	-0.019 (0.405)	-0.099 (0.323)	-0.392 (0.363)	0.236 (0.368)	0.786*** (0.238)	0.427*** (0.146)	1.061 (0.870)	0.820*** (0.237)
Constant	-1.438 (3.199)	-2.754 (2.846)	-0.671 (3.191)	-5.363 (4.208)	-0.500 (3.169)	-2.587 (2.856)	-1.006 (3.188)	-3.424 (4.043)	-2.246 (3.869)	-2.428 (3.393)	0.950 (3.451)	-8.015 (5.575)
Number of observations	141	141	128	140	141	141	128	139	141	138	98	128
R ²	0.427	0.262	0.097	0.077	0.387	0.234	0.101	0.115	0.593	0.611	0.251	0.293

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 14: Determinants of Average Value of Exports—Partial Adjustment Model

Item	All Manufactured Goods			Final Goods			Parts and Components					
	All Firms	Public	Private	All Firms	Public	Private	All Firms	Public	Private	Foreign		
Lag dependant variable	-0.355*** (0.063)	-0.472*** (0.065)	-0.670*** (0.095)	-0.515*** (0.091)	-0.373*** (0.064)	-0.497*** (0.065)	-0.667*** (0.092)	-0.493*** (0.089)	-0.578*** (0.084)	-0.515*** (0.094)	-0.857*** (0.085)	-0.759*** (0.092)
Lag GDP of partners (log)	0.245*** (0.045)	0.190*** (0.041)	0.386*** (0.043)	0.313*** (0.057)	0.245*** (0.045)	0.185*** (0.042)	0.371*** (0.043)	0.297*** (0.054)	0.465*** (0.075)	0.406*** (0.066)	0.512*** (0.053)	0.681*** (0.082)
Distance (log)	-0.359*** (0.091)	-0.321*** (0.091)	-0.546*** (0.150)	-0.256*** (0.121)	-0.378*** (0.090)	-0.312*** (0.093)	-0.531*** (0.150)	-0.274** (0.115)	-0.587*** (0.153)	-0.671*** (0.169)	-0.559*** (0.132)	-0.703*** (0.196)
Lag Remoteness (log)	0.174 (0.114)	0.393*** (0.133)	0.271** (0.132)	-0.024 (0.151)	0.172 (0.113)	0.479*** (0.147)	0.294** (0.134)	-0.043 (0.140)	0.086 (0.190)	0.003 (0.166)	0.276 (0.172)	-0.144 (0.229)
Island countries	-0.279** (0.131)	-0.333** (0.170)	-0.614*** (0.168)	-0.184 (0.153)	-0.294** (0.133)	-0.353** (0.177)	-0.598*** (0.169)	-0.258* (0.146)	-0.396** (0.168)	-0.532*** (0.199)	-0.752*** (0.219)	-0.293 (0.263)
Landlocked countries	0.266* (0.161)	0.215 (0.153)	-0.204 (0.270)	0.003 (0.190)	0.252 (0.158)	0.171 (0.165)	-0.188 (0.274)	0.022 (0.190)	0.009 (0.230)	0.052 (0.220)	-0.358 (0.296)	-0.054 (0.309)
Lag WTO membership	0.011 (0.143)	-0.047 (0.167)	-0.167 (0.197)	-0.179 (0.220)	-0.029 (0.144)	-0.100 (0.173)	-0.186 (0.201)	-0.144 (0.221)	0.177 (0.159)	0.090 (0.171)	-0.171 (0.193)	0.545** (0.257)
Hong Kong, China and Taipei,China	0.527** (0.226)	0.307 (0.252)	-0.068 (0.203)	0.361 (0.270)	0.493** (0.209)	0.250 (0.225)	-0.105 (0.195)	0.328 (0.226)	0.642 (0.413)	0.911 (0.565)	0.229 (0.430)	0.604 (0.489)
Δ GDP of partners (log)	0.226*** (0.043)	0.179*** (0.038)	0.390*** (0.036)	0.315*** (0.051)	0.221*** (0.043)	0.176*** (0.039)	0.377*** (0.036)	0.299*** (0.048)	0.445*** (0.076)	0.368*** (0.058)	0.485*** (0.058)	0.598*** (0.094)
Δ Remoteness (log)	-0.919 (0.640)	-1.091 (0.802)	-0.410 (0.756)	-0.682 (0.852)	-0.884 (0.641)	-1.124 (0.840)	-0.247 (0.762)	-0.778 (0.817)	-1.115 (0.935)	-0.497 (0.972)	-1.301 (0.889)	-0.070 (1.106)
Δ RTA partners	0.037 (0.154)	0.053 (0.159)	0.011 (0.207)	-0.023 (0.192)	0.099 (0.162)	0.065 (0.158)	-0.016 (0.209)	0.043 (0.205)	-0.154 (0.319)	-0.191 (0.377)	0.248* (0.151)	-0.197 (0.367)
Δ WTO membership	-0.382 (0.348)	-0.101 (0.311)	-0.353 (0.265)	-0.321 (0.290)	-0.413 (0.338)	-0.055 (0.300)	-0.338 (0.265)	-0.393 (0.278)	-0.340 (0.313)	-0.588 (0.441)	-0.229 (0.236)	-0.748** (0.353)
Constant	1.757 (1.507)	1.681 (1.635)	2.934 (2.184)	2.795 (1.827)	2.229 (1.495)	1.262 (1.693)	2.975 (2.169)	3.309** (1.685)	1.703 (2.392)	4.114 (2.581)	1.770 (2.241)	0.693 (2.812)
Number of observations	141	141	128	140	141	141	128	139	141	138	98	128
R ²	0.379	0.422	0.638	0.429	0.401	0.457	0.620	0.429	0.433	0.378	0.773	0.595

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 15: Determinants of Total Value of Imports—Partial Adjustment Model

Item	All Manufactured Goods				Final Goods				Parts and Components			
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
Lag dependant variable	-0.545*** (0.076)	-0.645*** (0.091)	-0.704*** (0.050)	-0.551*** (0.084)	-0.607*** (0.075)	-0.660*** (0.101)	-0.812*** (0.062)	-0.570*** (0.088)	-0.461*** (0.057)	-0.369*** (0.094)	-0.561*** (0.074)	-0.436*** (0.104)
Lag GDP of partners (log)	0.632*** (0.130)	0.725*** (0.170)	0.578*** (0.090)	0.860*** (0.156)	0.694*** (0.124)	0.727*** (0.183)	0.710*** (0.104)	0.934*** (0.161)	0.794*** (0.143)	0.686*** (0.207)	0.701*** (0.153)	0.755*** (0.225)
Distance (log)	-0.669** (0.270)	-0.758** (0.325)	-0.616*** (0.236)	-0.478 (0.292)	-0.773*** (0.261)	-0.867** (0.341)	-0.864*** (0.252)	-0.550* (0.289)	-1.073*** (0.326)	-0.216 (0.477)	-0.518** (0.260)	-1.040** (0.414)
Lag Remoteness (log)	0.042 (0.301)	0.243 (0.305)	-0.416* (0.247)	-0.411 (0.322)	0.079 (0.328)	0.364 (0.326)	-0.099 (0.248)	-0.275 (0.333)	-1.382*** (0.421)	-1.218** (0.490)	-1.096* (0.570)	-1.088* (0.588)
Island countries	-0.705** (0.352)	-0.814** (0.395)	0.059 (0.364)	0.131 (0.361)	-0.540 (0.437)	-0.633 (0.461)	-0.149 (0.358)	0.011 (0.356)	-0.066 (0.503)	-0.769 (0.759)	0.348 (0.534)	-0.292 (0.701)
Landlocked countries	0.184 (0.409)	1.071** (0.434)	-0.448 (0.414)	-0.075 (0.530)	0.170 (0.411)	0.950** (0.447)	-0.129 (0.504)	0.009 (0.561)	0.695 (0.516)	-0.427 (0.671)	0.459 (0.487)	0.703 (0.588)
Lag WTO membership	0.921** (0.451)	1.086 (0.768)	-0.297 (0.267)	0.517 (0.471)	0.890* (0.493)	1.180 (0.957)	-0.372 (0.302)	0.437 (0.520)	0.468 (0.462)	0.011 (0.940)	-0.259 (0.490)	1.199 (0.880)
Hong Kong, China and Taipei, China	0.831** (0.421)	0.801** (0.406)	-0.265 (0.278)	0.932 (1.011)	0.652 (0.425)	0.807* (0.471)	-0.655** (0.306)	0.697 (0.974)	1.550 (1.794)	-0.323 (dropped) (3.385)		1.984 (1.790)
Δ GDP of partners (log)	0.459*** (0.125)	0.651*** (0.155)	0.503*** (0.091)	0.607*** (0.142)	0.530*** (0.121)	0.657*** (0.165)	0.649*** (0.096)	0.662*** (0.147)	0.509*** (0.146)	0.514*** (0.176)	0.514*** (0.156)	0.427** (0.182)
Δ Remoteness (log)	2.525 (2.195)	1.366 (2.326)	2.431* (1.422)	3.315 (2.811)	2.964 (2.366)	0.894 (2.708)	3.887** (1.753)	5.138* (2.916)	0.454 (2.904)	-0.974 (3.052)	2.433 (2.655)	-0.431 (4.021)
Δ RTA partners	0.008 (0.355)	0.126 (0.418)	0.733* (0.405)	0.234 (0.430)	0.084 (0.392)	0.145 (0.444)	0.844* (0.498)	0.293 (0.456)	0.682 (0.763)	0.948 (1.072)	1.138* (0.600)	0.326 (0.733)
Δ WTO membership	-0.920 (0.567)	-1.110* (0.648)	0.447** (0.212)	-0.693 (0.745)	-0.929 (0.590)	-1.031 (0.662)	0.665*** (0.252)	-0.668 (0.745)	-1.732* (0.931)	-2.587* (1.557)	-2.238*** (0.622)	-2.065** (0.984)
Constant	1.154 (4.126)	-1.607 (4.349)	9.919*** (3.071)	-2.496 (5.301)	1.318 (4.323)	-1.698 (4.619)	7.630** (2.991)	-4.449 (5.710)	9.675* (5.567)	1.530 (5.926)	8.100 (5.298)	6.655 (6.164)
Number of observations	126	121	69	113	125	118	66	109	97	79	43	81
R ²	0.516	0.584	0.848	0.460	0.528	0.541	0.872	0.454	0.491	0.378	0.747	0.380

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 16: Determinants of Total Number of Imported Products—Partial Adjustment Model

Item	All Manufactured Goods						Final Goods						Parts and Components					
	All Firms	Public	Private	Foreign	All Firms	Foreign	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	
Lag dependant variable	-0.109 (0.188)	-0.303 (0.243)	-0.084 (0.266)	-0.042 (0.155)	0.014 (0.178)	-0.285 (0.235)	-0.290 (0.310)	0.020 (0.153)	-1.077*** (0.252)	-0.711*** (0.235)	-0.848*** (0.233)	-0.697*** (0.243)						
Lag GDP of partners (log)	0.394* (0.206)	0.681*** (0.246)	0.357 (0.304)	0.453** (0.202)	0.340* (0.201)	0.678*** (0.236)	0.452 (0.305)	0.487** (0.203)	0.575** (0.243)	0.397* (0.229)	0.637** (0.255)	0.352 (0.246)						
Distance (log)	0.064 (0.390)	-0.347 (0.443)	-0.048 (0.567)	0.128 (0.350)	-0.021 (0.390)	-0.492 (0.449)	-0.426 (0.615)	0.022 (0.359)	0.398 (0.435)	0.728* (0.410)	0.616 (0.606)	0.484 (0.390)						
Lag Remoteness (log)	-1.608*** (0.469)	-1.663*** (0.549)	-2.949*** (0.682)	-1.659*** (0.400)	-1.481*** (0.451)	-1.461*** (0.526)	-3.090*** (0.703)	-1.706*** (0.373)	-0.860 (0.578)	-0.344 (0.463)	-0.007 (0.607)	-0.305 (0.506)						
Island countries	0.724 (0.617)	0.637 (0.711)	2.378*** (0.835)	0.952* (0.539)	0.800 (0.633)	0.568 (0.724)	2.539*** (0.811)	1.142** (0.548)	-0.326 (0.601)	-0.567 (0.522)	1.065* (0.552)	-0.123 (0.593)						
Landlocked countries	-0.434 (0.471)	0.129 (0.551)	-2.050** (0.847)	-0.390 (0.405)	-0.409 (0.498)	0.164 (0.582)	-1.961* (1.065)	-0.206 (0.414)	-0.430 (0.733)	-0.842 (0.879)	1.299 (1.252)	1.056* (0.580)						
Lag WTO membership	1.018* (0.572)	1.245** (0.603)	1.322 (0.877)	1.054* (0.562)	1.338** (0.588)	1.661** (0.658)	1.626* (0.943)	0.998* (0.537)	0.153 (0.680)	-0.072 (0.813)	-1.110 (0.984)	0.226 (0.807)						
Hong Kong, China and Taipei, China	1.251 (0.893)	1.189 (1.301)	3.991*** (0.684)	1.546 (1.215)	1.075 (0.899)	0.996 (1.329)	4.244*** (0.789)	1.346 (1.196)	1.898*** (0.547)	1.628*** (0.313)	(dropped)	2.083 (1.848)						
Δ GDP of partners (log)	0.203 (0.172)	0.449* (0.246)	0.161 (0.275)	0.312* (0.170)	0.136 (0.176)	0.442* (0.244)	0.230 (0.276)	0.309* (0.177)	0.453* (0.242)	0.339 (0.238)	0.874*** (0.286)	0.314 (0.219)						
Δ Remoteness (log)	1.532 (3.212)	4.131 (3.833)	-3.509 (3.458)	0.363 (2.565)	1.970 (3.327)	4.816 (3.846)	-2.122 (3.463)	1.791 (2.648)	-4.045 (3.013)	-3.048 (2.719)	-2.704 (3.563)	-2.484 (3.177)						
Δ RTA partners	-0.295 (0.630)	-0.176 (0.893)	1.404 (0.975)	-0.578 (0.522)	-0.347 (0.655)	-0.211 (0.908)	0.498 (0.663)	-0.535 (0.564)	0.947 (0.650)	0.631 (0.438)	1.423* (0.771)	0.159 (0.726)						
Δ WTO membership	0.306 (1.347)	-0.586 (1.813)	-2.698*** (0.572)	-0.311 (0.927)	0.083 (1.413)	-0.769 (1.865)	-3.304*** (0.713)	-0.301 (1.076)	-0.437 (0.433)	-0.036 (0.489)	-2.762*** (0.572)	-2.522** (1.131)						
Constant	-4.185 (5.047)	-6.850 (6.015)	9.943 (8.182)	-6.225 (4.604)	-4.186 (5.155)	-7.914 (6.194)	12.297 (9.051)	-6.030 (4.709)	-13.981* (7.801)	-18.013*** (6.504)	-23.829*** (9.173)	-15.881** (6.838)						
Number of observations	125	121	69	113	124	118	66	109	96	79	43	81						
R ²	0.253	0.255	0.465	0.408	0.278	0.258	0.446	0.467	0.435	0.407	0.489	0.362						

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 17: Determinants of Average Value of Imports: Partial Adjustment Model

Item	All Manufactured Goods			Final Goods			Parts and Components					
	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign	All Firms	Public	Private	Foreign
Lag dependant variable	-0.533*** (0.101)	-0.662*** (0.095)	-0.672*** (0.093)	-0.593*** (0.121)	-0.639*** (0.100)	-0.696*** (0.094)	-0.815*** (0.097)	-0.636*** (0.123)	-0.476*** (0.062)	-0.433*** (0.101)	-0.498*** (0.105)	-0.539*** (0.104)
Lag GDP of partners (log)	0.339*** (0.096)	0.267** (0.107)	0.100 (0.117)	0.530*** (0.100)	0.356*** (0.096)	0.267** (0.114)	0.174 (0.123)	0.552*** (0.101)	0.585*** (0.093)	0.603*** (0.130)	0.547*** (0.130)	0.655*** (0.127)
Distance (log)	-0.391* (0.231)	-0.360 (0.262)	-0.408* (0.244)	-0.251 (0.246)	-0.403* (0.230)	-0.405 (0.268)	-0.517** (0.247)	-0.250 (0.239)	-1.009*** (0.301)	-0.186 (0.374)	-0.476** (0.222)	-1.098*** (0.363)
Lag Remoteness (log)	0.613** (0.303)	0.789** (0.309)	0.308 (0.339)	0.288 (0.301)	0.675** (0.322)	0.780** (0.333)	0.675** (0.323)	0.403 (0.317)	-0.764** (0.300)	-0.734** (0.372)	-0.817* (0.426)	-0.456 (0.423)
Island countries	-0.801** (0.363)	-0.861** (0.377)	-0.262 (0.445)	-0.039 (0.368)	-0.674 (0.436)	-0.710 (0.438)	-0.620 (0.433)	-0.173 (0.382)	-0.028 (0.390)	-0.535 (0.567)	0.661 (0.444)	-0.273 (0.551)
Landlocked countries	0.660 (0.413)	1.377*** (0.447)	-0.253 (0.499)	0.447 (0.497)	0.655* (0.393)	1.218*** (0.465)	0.088 (0.537)	0.471 (0.513)	1.082** (0.500)	0.066 (0.500)	0.290 (0.481)	1.067* (0.576)
Lag WTO membership	0.731* (0.444)	0.687 (0.742)	-0.518 (0.389)	0.266 (0.487)	0.531 (0.467)	0.645 (0.855)	-0.678 (0.459)	0.134 (0.507)	0.306 (0.390)	-0.471 (0.760)	-0.164 (0.439)	1.193* (0.687)
Hong Kong, China and Taipei, China	0.352 (0.443)	0.346 (0.826)	-1.557*** (0.354)	0.158 (0.594)	0.116 (0.492)	0.244 (0.896)	-2.109*** (0.365)	-0.115 (0.536)	1.004 (1.615)	-0.663 (dropped) (2.985)		0.920 (1.700)
Δ GDP of partners (log)	0.221** (0.100)	0.256** (0.105)	0.128 (0.103)	0.343*** (0.097)	0.250** (0.099)	0.254** (0.106)	0.199** (0.098)	0.360*** (0.100)	0.422*** (0.097)	0.491*** (0.125)	0.424*** (0.142)	0.436*** (0.116)
Δ Remoteness (log)	3.250* (1.942)	2.201 (2.021)	0.982 (1.907)	4.239* (2.347)	3.759* (2.135)	2.311 (2.224)	2.490 (2.036)	5.774** (2.412)	1.387 (2.072)	-0.399 (2.522)	1.583 (2.563)	1.395 (2.905)
Δ RTA partners	-0.188 (0.349)	0.072 (0.449)	0.107 (0.457)	0.161 (0.395)	-0.046 (0.398)	0.136 (0.487)	0.231 (0.537)	0.244 (0.422)	0.099 (0.760)	0.821 (0.980)	1.132** (0.488)	0.059 (0.637)
Δ WTO membership	-0.888 (0.801)	-0.942 (1.163)	0.532 (0.394)	-0.216 (0.788)	-0.831 (0.908)	-0.807 (1.225)	0.974** (0.432)	-0.117 (0.759)	-1.649* (0.864)	-2.016 (1.315)	-2.061*** (0.389)	-1.818* (0.954)
Constant	-2.488 (3.975)	-1.206 (4.157)	8.902** (3.979)	-4.932 (4.835)	-1.674 (4.229)	-0.226 (4.402)	6.725* (3.436)	-5.643 (5.103)	7.049* (4.275)	-1.334 (4.836)	4.594 (4.556)	3.321 (4.839)
Number of observations	125	121	69	113	124	118	66	109	96	79	43	81
R ²	0.408	0.505	0.677	0.410	0.462	0.498	0.754	0.438	0.476	0.400	0.681	0.431

Notes: Numbers shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

Table 18: Elasticities of Partner Economies' GDP on "Goods" Extensive Margin and Intensive Margin of the People's Republic of China's Trade

Item	Exports						Imports					
	Public	Private	Foreign	Public	Private	Foreign	Public	Private	Foreign	Public	Private	Foreign
	Final Goods			Intermediate Goods			Final Goods			Intermediate Goods		
Basic Model (dependent variable: log of exports [imports])												
Total value	-1.144***	-1.141***	-1.125***	-1.280***	-1.085***	-1.677***	-2.310***	-1.859***	-1.923***	-2.719***	-3.140***	-2.647***
Extensive margin	-0.464***	-0.622***	-0.541***	-0.318***	-0.515***	-0.539***	-1.347***	-1.211***	-1.216***	-0.967***	-1.011***	-0.830***
Intensive margin	-0.681***	-0.519***	-0.584***	-0.961***	-0.570***	-1.137***	-0.963***	-0.648***	-0.715***	-1.752***	-2.128***	-1.817***
Partial-adjustment Model (dependent variable: first difference of log of exports [imports])												
Total value	-0.388***	-0.608***	-0.370***	-0.614***	-0.536***	-0.746***	-0.867**	-0.864***	-0.550*	-0.216	-0.518**	-1.040**
Extensive margin	0.135	-0.140	0.196	0.542***	-0.120	0.758***	-0.492	-0.426	0.022	0.728*	0.616	0.484
Intensive margin	-0.312***	-0.531***	-0.274**	-0.671***	-0.559***	-0.703***	-0.405	-0.517**	-0.250	-0.186	-0.476**	-1.098***

Notes: Shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.
Source: Author's compilation.

Table 19: Elasticities of Distance on "Goods" Extensive Margin and Intensive Margin of the People's Republic of China's Trade

Item	Exports						Imports					
	Public		Private		Foreign		Public		Private		Foreign	
	Final Goods	Intermediate Goods	Final Goods	Intermediate Goods	Final Goods	Intermediate Goods	Final Goods	Intermediate Goods	Final Goods	Intermediate Goods	Final Goods	Intermediate Goods
Basic Model (dependent variable: log of exports [imports])												
Total value	0.614***	0.615***	0.789***	0.717***	1.046***	0.941***	0.859***	1.089***	1.386***	1.153***	1.401***	1.401***
Extensive margin	0.267***	0.303***	0.413***	0.206***	0.424***	0.651***	0.560***	0.650***	0.595***	0.494***	0.563***	0.563***
Intensive margin	0.347***	0.311***	0.376***	0.510***	0.623***	0.289***	0.298***	0.440***	0.791***	0.659***	0.838***	0.838***
Partial-adjustment Model (dependent variable: first difference of log of exports [imports])												
Total value (log of GDP)	0.340***	0.417***	0.394***	0.440***	0.543***	0.800***	0.727***	0.934***	0.686***	0.701***	0.755***	0.755***
Total value (difference of log of GDP)	0.326***	0.426***	0.380***	0.400***	0.494***	0.722***	0.657***	0.662***	0.514***	0.514***	0.427**	0.427**
Extensive margin (log of GDP)	-0.101	0.032	-0.101	-	-0.039	-0.394**	0.678***	0.452	0.487**	0.397*	0.637**	0.352
Extensive margin (difference of log of GDP)	-0.100	0.062	-0.130	0.364***	-	-0.367**	0.442*	0.230	0.309*	0.339	0.874***	0.314
Intensive margin (log of GDP)	0.185***	0.371***	0.297***	0.406***	0.512***	0.681***	0.267**	0.174	0.552***	0.603***	0.547***	0.655***
Intensive margin (difference of log of GDP)	0.176***	0.377***	0.299***	0.368***	0.485***	0.598***	0.254**	0.199**	0.360***	0.491***	0.424***	0.436***

Notes: Shown in parentheses are robust standard errors. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively. Source: Author's compilation.

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