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A Panel Data Analysis on China's Intra-Industry Trade in the Capital Goods Sector*

Abstract

This paper adopts the Hausman-Taylor 2SLS error components approach in estimating the determinants of China's Intra-Industry Trade (IIT) in the capital goods sector with its 26 partner countries. It disaggregates IIT into horizontal IIT (HIIT) and vertical IIT (VIIT). Capital goods final products and intermediates are separately estimated in order to reveal the differentiated trade patterns. It finds that economic similarity is very significantly negatively correlated with the intermediates IIT, but to a less extent correlated with the final products IIT. Factor endowment is of no significance in determining IIT in the intermediates, although it is significantly positively correlated with the final products IIT. Economic size is significantly negatively correlated with both final products and intermediates IIT. Distance is not yet dead in impacting the level of final products IIT, but of less importance in influencing the intermediates IIT. China is exchanging intermediates in a less intra-industry manner with ASEAN nations. However, because VIIT is dominating TIIT, no significant differences exist between the estimation results of TIIT and VIIT.

Keywords: Intra-Industry Trade, Panel Econometrics

JEL classification: F14; C33

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Eine Panel-Analyse des chinesischen Intraindustriellen Handels im Investitionsgütersektor

Zusammenfassung

Diese Studie verwendet die Methode der Hausman-Taylor-2SLS Fehler-Komponenten zur Schätzung der Determinanten von Chinas Intraindustriellem Handel (IIT) im Investitionsgütersektor mit seinen 26 Partnerländern. Sie disaggregiert IIT in horizontalen IIT (HIIT) und vertikalen IIT (VIIT). Investitionsgüter, Endprodukte und Halbfertigwaren werden separat geschätzt, um die Unterschiede des Handels zu interpretieren. Es zeigt sich, dass die wirtschaftliche Ähnlichkeit mit IIT-Halbfertigwaren signifikant negativ korreliert ist, aber bei IIT-Endprodukten keine Signifikanz besteht. Der Faktor Ausstattung weist keine Signifikanz bei der Bestimmung von IIT-Halbfertigwaren auf, obwohl er mit IIT-Endprodukten signifikant positiv korreliert ist. Wirtschaftsgröße ist sowohl mit IIT-Endprodukten als auch mit IIT-Halbfertigwaren signifikant negativ korreliert. Entfernung wirkt sich auf das Niveau von IIT-Endprodukten aus, hat aber einen geringeren Einfluss auf IIT-Halbfertigwaren. China hat im Bereich Halbfertigwaren relativ wenig intraindustriellen Handel mit ASEAN-Staaten. Da jedoch VIIT einen dominierenden Einfluss auf TIIT ausübt, bestehen keine bedeutenden Unterschiede zwischen den Schätzungsergebnissen von TIIT und VIIT.

Schlüsselworte: Intraindustrieller Handel, Panelökonometrie

JEL-Klassifikation: F14; C33

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1 Introduction

In the last decade the world merchandise trade saw a dramatic change marked by China's increasing importance in the capital goods trade. As the 2^{nd} largest manufactures exporter with 10.4% world market share in 2008, China ranks as the largest capital goods (BEC Rev. 3, Chapter 4) exporter with a total value of US$ 565 billion accounting for 16.9% of world total, and the 2^{nd} largest capital goods importer with a total value of US$ 446.1 billion accounting for 13.4% of world total. This phenomenon seems to be puzzling if China has been traditionally taken as a labour abundant country which is supposed to export less capital intensive products. Furthermore, China is not only a final products producer but also an intermediates exporter. For capital goods final products (BEC Rev.3, Chapter 4.1) alone, China is no question the largest exporter with 20.2% world market share and at the same time, the 2^{nd} largest final products importer accounting for 10.2% of world total. For capital goods intermediates (BEC Rev.3, Chapter 4.2), China is both the largest exporter and the largest importer. Its total export of capital goods intermediates mounted to US$ 201 billion and total import to US$ 265.4 billion. This phenomenon is the consequence of the growth of intra-industry trade, which is defined as the trade between nations in the simultaneous import and export of commodities classified in the same industry or product group. Thus, can IIT explain China's increasing importance in world trade? Which factors are fundamentally determinant?

Since the revelation of intra-industry trade (Balassa, 1986), extensive interest among academics has emerged at explaining the presence of IIT. Based on product differentiation Balassa (1986), Dixit and Stiglitz (1977) and Krugman (1981), incorporated factor endowments, decreasing costs and horizontal product differentiation in one model to explain country-specific factors of horizontal IIT (HIIT). Falvey (1981) and Falvey and Kierzkowski (1987) modelled vertical IIT (VIIT) which is two way exchange of quality differentiated products. Empirical studies of the determinants of IIT sought to offer explanations either on inter-industry characters with neglect of country characteristics (Greenaway and Milner, 1984), or on country specific characters with neglect of industry characteristics (Balassa and Bauwens, 1987; Greenaway and Milner, 1994). As most of the results found strong support of country characteristics being important determinants of the relative importance of IIT, recent studies focus more on country specific factors and disentangle HIIT and VIIT. However,

due to the increasing bilateral exchange of the intermediates, sectoral-bias generated through the exchange of the intermediates for the final goods

Empirically, recent studies adopted new development in panel econometric methods to solve the problem of endogenenous unobserved effects in the estimation of gravity models of international trade. Both the conventional cross-section estimation and a simple OLS estimation are not able to solve the bilateral unobserved heterogeneity. Panel econometric approach tends to be more plausible by including country-pair individual effects. Although basic panel methods differentiate between fixed effect (FE) and random effect (RE), the assumption that individual effects are uncorrelated with all the regressors has been widely rejected. That suggests a FE based framework is more consistent. Egger (2004) and Serlenga and Shin (2006) followed a specification in the manner of Hausman and Taylor (1981) 2SLS error components approach to address the problem of potential correlation between individual effects and explanatory variables. This paper is to be employing this instrumental variable estimation technique to consistently estimate a gravity model of IIT between China and its 26 trading partners in the capital goods sector.

This paper contributes to the existing literature in three ways. First, it deals with China's IIT in the capital goods sector alone, which means industry specific factors are supposed to be of no significance. Secondly, it examines the degree and the determinants of IIT on both intermediates and final products in the capital goods sector. Compared with the final products, the intermediates are supposed to have different factor content. Both the trade pattern and the country specific determinants of the intermediates are very likely to be different from those of the final products. Therefore, this paper also contributes to a better understanding of the bilateral trade pattern of the intermediates. Thirdly, it employs Hausman and Taylor (1981) 2SLS error components approach allowing for the existence of both observed and unobserved common factors. It is supposed to render more sensible estimations on the real nature of China's intra-industry trade with its main trading partners.

The paper is organised as follows. Section 2 presents a measurement of IIT in China's capital goods sector. Section 3 describes the regional and country specific characteristics of TIIT, VIIT and HIIT in China's capital goods sector. Section 4 follows the Hausman and Taylor (1981) methodology in application to the estimations of the determinants of IIT. Section 5 concludes.

2 Measurement

To measure IIT, two methodologies are developed and widely exploited in IIT studies. One is Grubel-Lloyd index (Grubel and Lloyd, 1975), the other is the ratio of

IIT in total trade (Fontagne and Freudenberg, 1997). Furthermore, Abd-el Rahman (1991), Greenaway and Milner (1994), Greenaway and Milner (1995), and Fontagne and Freudenberg (1997) use unit value and a threshold to disentangle HIIT and VIIT in order to take account of product quality proxied by unit values of imports and exports. Basically the Grubel-Lloyd IIT index is expressed as:

$$GL = \frac{\Sigma(X_{kj} + M_{kj}) - \Sigma \mid X_{kj} - M_{kj} \mid}{\Sigma(X_{kj} + M_{kj})} \times 100 \tag{1}$$

X is China's exports to country k in a particular industry (or product category) j, M stands for the corresponding imports, G-L denominates the extent of IIT between China and its partner country k in industry (or product category) j. G-L index ranges between 0 and 1, where 0 indicates that trade is exclusively inter-industry, whereas 1 indicates that trade is exclusively intra-industry.

Fontagne and Freudenberg (1997) points out that this conventional measurement may inflate the extent of IIT by mixing up one way trade with two way IIT. They propose the two way trade measurement to screen out those with apparently one way trade features. This new approach firstly discerns the real IIT by screening out the two way trade with quite equivalent import and export flows. They take $Min(X_{kj}, M_{kj})$ as the minimum value of export and import, and $Max(X_{kj}, M_{kj})$ as the maximum value of export and import, if $Min(X_{kj}, M_{kj})/Max(X_{kj}, M_{kj}) \leq 0.1$, then trade is one way, which means inter-industry trade; if not, then trade is two way, which means IIT.

Furthermore, Abd-el Rahman (1991) proposes to define a certain range of unit price differentials between exports and imports as a criterion to distinguish VIIT from HIIT. Unit price is taken as a proxy to product quality. Unit price differentials in a certain range reflect the differences in characteristics in the context of horizontal product differentiation, and, the price differentials out of the range reflect the differences in quality in the context of vertical product differentiation. The range among which the unit price differentials vary is defined after a threshold of 15%. The criterion is defined as:

$$1/(1+a) \leq \frac{UV^{x}_{kk'jt}}{UV^{x}_{kk'jt}} \leq 1 + a(2)$$

where UV stands for unit value, X and M refer to export and import, k represents the declaring country China, k' the partner country, and j the product at time t. If the above-mentioned criterion holds, the IIT is HIIT. If not, the IIT is VIIT. Thus, HIIT is defined as the simultaneous export and import of product where the unit

value of exports relative to the unit value of imports is within a specified range. Given the relative price falls out of this range, the IIT is taken as VIIT.

Furthermore, VIIT can be disentangled into high quality vertical intra-industry trade (HVIIT) or low quality vertical intra-industry trade (LVIIT).

if $\frac{UV^x_{kk\prime jt}}{UV^x_{kk\prime jt}} \geq 1 + a$, then, this vertical intra-industry trade is HVIIT.

if $1/(1 + a) \geq \frac{UV^x_{kk\prime jt}}{UV^x_{kk\prime jt}}$, then, this vertical intra-industry trade is LVIIT.

3 Data Description

In this study, IIT in China's trade with its 26 partner countries is calculated at the 6-digit SITC level. IIT has been divided into horizontal IIT (HIIT) and vertical IIT (VIIT) using the relative unit values of exports and imports. Both IIT ratios and Grubel-Lloyd indices are measured. Industry definition and the final products and intermediates differentiation are from the Broad Economic Classification (BEC) Rev.3. Data on total trade values and export and import unit values are from OECD 6-digit Standardised International Trade Classification (SITC) Rev.3 database. Conversion code between BEC Rev.3 and OECD SITC Rev.3 is according to the United Nations Statistics Division definition. While many empirical studies use data at 3-digit level, herein I prefer to use 6-digit data. By using data at a finer level, the likelihood of sectoral bias is supposed to be minimized to the least extent. Therefore, 202 categories of intermediates and 332 categories of final products are aggregated.

Furthermore, the data cover the period of 1994-2004. I am examining China's bilateral trade data since 1994, because the most profound growth of China's export capacity has been witnessed since then, when a serial of institutional reforms such as foreign trade liberalization, foreign exchange regime and fiscal decentralization were put into place.

In differentiating HIIT and VIIT, and HVIIT and LVIIT, I am taking a threshold of 15%, which was also used by Fontagne and Freudenberg (1997) and Fontagné and Gaulier (2006). Though Greenaway and Milner (1994) and Greenaway and Milner (1995) adopted a threshold of 25%, in order to perceive the possibly existing vertical patterns in the trade between China and other emerging/re-emerging economies, I choose a narrower one. Both G-L indices and IIT shares in total trade are calculated. Admittedly, by nature, G-L indices are lower than shares. Moreover, the final products and the intermediates are separated aggregated, in order to track the impact of fragmentation and vertical specialization.

IIT by region

Although most of the tribute of this paper is to reveal the bilateral IIT trend and the determinants of the cross countries and cross time variances, it sets off from a brief description of China's IIT with the six regions.

Basically, China's trade in capital goods sector, especially those of the intermediates, has a strong feature of IIT. In 2004, 58.7% of China's trade flows in final products belong to two-way IIT. The share of the intermediates IIT is even much higher accounting for 90% of total trade. Unexpectedly, the shares of IIT did not always increase over time. Though understandablely that IIT should have been increasing since 1994, I would also have expected a continuous upward trend since 2001, the year marked by China's accession into the WTO. However during 1994 and 2001, the shares of IIT did increase in both final products (from 35% to 69.28%) and intermediates trade (from 77% in 1994 to 98.6%), but that of the final products decreased to 58.7% in 2004, and so did that of the intermediates to 90%.

Though still dominating in both final products and intermediates trade, the share of VIIT stagnated and even shrank in final products, while that of HIIT increased substantially. In 2004, 48.7% of final products trade was VIIT, and 10% was HIIT. Similarly, in the intermediates trade, 84.2% of total trade was VIIT and 5.8% was HIIT. With the decreasing share of HIIT (from 15% in 2001 to 5.8% in 2004) in the intermediates, HIIT on the final products has increased fairly dramatically from 1.2% in 2001 to more than 10% in 2004. During the same course, VIIT in the final products retreated. This substantial phenomenon can be resulting from the upgrading product structure of the capital goods final products exports. A plausible reason lies in the fact of fragmentation and vertical specialization which suggests that China is exporting more high value-added products.

As the main source of IIT in China's trade, LVIIT even overtook the share of HVIIT, which suggests that China is increasingly exporting relatively low price products and importing relatively high price products. In 2004, 47% of the final products trade was LVIIT with only 1.5% being HVIIT. In the intermediates trade, the shares were 82.65% and 1.55% respectively. Astonishingly, HVIIT ratio even shrank over time. In the final products trade, the share of HVIIT ever accounted for 17.23% in 1998, and in the intermediates that of HVIIT amounted to 21.3% in 1994. This might suggest a deteriorating terms of trade in the capital goods sector and more domestic resources being reallocated into low-value-added products.

Regional disparity exists. Acceptedly, the trade with Asia has relatively higher ratio of IIT. In the final products trade, IIT accounts for 85.7% of total final products trade between China and Asia, while it explains 28.3%, 21.2%, 12%, 8%, and 1.5% of total final products trade between China and North America, Europe, Oceania,

Central and South America, and Africa respectively. However, the intermediates trade appears to be of less degree of regional disparity, and thus suggestively, less sensitive to distance. In 2004, the share of IIT in China's trade with Asia on the capital goods intermediates was 88.8%, only slightly higher than the ratios with Europe (61.9%) and Oceania (53.76%), and even lower than that with North America (95.2%).

Compared with other regions, trade with Asia has relatively higher ratio of HIIT which accounts for 9.3% and 12.5% in the final products and the intermediates trade respectively. However, another unexpected phenomenon is that the share of China's HVIIT with Europe on the intermediates (9.2%) is much higher than those with other regions. It suggests that China is increasingly trading high quality capital goods intermediates with Europe, a phenomenon due to China's convergence into global vertical value chain.

IIT by country

To avoid regional bias in calibrating the degree of IIT, I further break down the trade data to bilateral level, on which the estimations are based. Two substantial trends can be observed in the intermediates bilateral trade. First, G-L indices are found to be moving from relatively low levels of between 0 and 20% in the intermediates trade in 1994 to such levels as mostly between 20% and 40% in 2004. Trade with Singapore, Indonesia, Japan, Italy, the US and Korea exhibits a traditional higher degree of IIT. Along with the quite impressive increase of TIIT, VIIT accounts for most of this upward shift with the HIIT staying relatively at a stable level. Secondly, the HIITs with Japan and the US has decreased over time, while the HIITs with Thailand and Malaysia have been outperforming those with other countries. In 1994, HIIT accounted for roughly 10% in bilateral trade between China and Japan, and in that between China and the US as well. However, this level decreased to about 2-3%, which suggests either a price jump in Chinese export or a deteriorated quality in the export products. During the same course, with a level about 20%-30%, the degree of HIIT in bilateral trade with Thailand, Malaysia, Indonesia and the Netherlands are outperforming those with other countries. The shares of IIT deliever similar results, though larger in scale.

IITs in the final products are at relatively lower levels in comparison with those in the intermediates. An increasing trend of the final products IIT in China's bilateral trade with its partner countries is perceived. IIT with Asian countries such as Singapore, Malaysia, Japan and Korea are at higher levels compared with those with other partner countries. Although the bilateral trade between China and the Netherlands on the intermediates exhibits fairly large degree of HIIT, its IIT degree

in the final products is extremely low at a negligible level even in 2004. This may be due to the intermediates re-export from the Netherlands to the other European countries.

4 The Empirical Model

Model Specifications

The earlier work on IIT stems from the phenomena of intra-industry trade between industrialized economies due to product differentiation. Product differentiation, economies of scale, and imperfect competition play essential roles in these conventional studies. Economic similarity, factor endowment, transportation cost, and foreign direct investment are most widely researched to explain the determinants of the extent of intra-industry trade.

Helpman (1984) suggested that the extent of IIT will be the greater, the more similar is the size of trading partners. Which means, the extent of IIT is negatively correlated with bilateral differences in gross national product. The relation between factor endowment and IIT is dynamic regarding to which type of IIT, horizontal or vertical. Helpman (1984) proved that the extent of IIT will be the greater the more similar are the capital-labor ratios of the trading partners and suggested to take per capita incomes as a proxy for the capital-labor ratios. Falvey (1981) demonstrates that factor endowment does play a significant role in determining VIIT between industrialized economies and developing peripheries. The simultaneous existence of vertical IIT and inter-industry trade shapes a unique pattern, with relatively capital-abundant countries specializing in and exporting relatively high-quality manufactures, while labor-abundant countries specializing in low-quality manufactures. Concerning transportation cost, Krugman (1981) showed in a model of product horizontal differentiation under economies of scale that, the introduction of transportation costs will raise the prices of imported goods relative to the prices of domestic goods, and thus resulting in a decline in the volume of IIT. Empirical studies often use geographic distances between countries to proxy transportation costs. Besides these variables, this paper will also include English speaking country, Association of Southeast Asian Nations (ASEAN) membership, and year 2001 dummies.

The empirical model adopted herein is specified as below:

$$IIT_{hft} = \beta X_{hft} + \gamma Z_{hf} + \delta\theta_t + \epsilon_{hft} \tag{3}$$

$$\epsilon_{hft} = \mu_{hf} + \nu_{hft} \tag{4}$$

where IIT_{hft} is the bilateral intra-industry trade index between China and its partner countries. X_{hft} is a $k \times 1$ vector of variables that vary over individuals and time periods, Z_{hf} is a $g \times 1$ vector of time consistent individual specific variables. θ_t is the time dummy variable. X_{hft} comprises the following variables. $SIML = LN\{1 - [GDP_h/(GDP_h + GDP_f)]^2 - [GDP_f/(GDP_h + GDP_f)]^2\}$ is defined as the logarithm value of an index that stands for the relative size of the two countries in terms of GDP and ranges between 0 (absolute divergence in size) and 0.5 (equal country size). $RLF = LN|GDPPC_h - GDPPC_f|$ is the measure of countries´ differences in relative factor endowment. $TGDP = LN(GDP_h + GDP_f)$ stands for the logarithm value of the sum of GDP of China and its partner countries. It is the average country size proxy. $TPOP = LN(POP_h + POP_f)$ is the logarithm value of the total population of China and its partner country. The language dummy (LAN) equals to one when the partner country is English speaking, and it is meant to capture similarity in cultural backgrounds. DIST is the log of geographical distance between Beijing and the capitals of the partner countries. ASEAN is the dummy variable for ASEAN nations. It is supposed to have positive effect on the intra-industry trade between China and its trading partners. Time dummy variable for year 2001 is included to capture globalisation effect due to China's accession into the WTO.

Data and Estimation Results

Nominal GDP in national currencies (from IMF) are converted into real numbers using GDP deflators (from IMF) and 2000 exchange rates of national currencies to USD (IMF). Population numbers are collected from the United Nations Statistics Division and the OECD.

Firstly, I run estimations on the capital goods final products TIIT indices. The first step is OLS estimations of the TIIT, VIIT and HIIT G-L indices. Due to significant individual bilateral effects, OLS did not provide consistent estimations of TIIT and VIIT, although it did render consistent results for HIIT. The second step is running both FE and RE estimations on TIIT. As expected, the coefficients for the variables in RE deviate largely from those in the FE, which suggests a existing correlation between the bilateral individual effect u_{ij} and some of the explanatory variables. Thus, RE is biased and inconsistent. Based on these results, I estimate three regressions with Hausman and Taylor (1981) instrumental variable method by performing a two-step least square procedure. In the HT I set, distance and language are taken as exogeneous, while ASEAN is instrumented by SIML, TGDP and RLF. In the HT II set, distance and language are exogeneous, while ASEAN is instrumented only by SIML and TGDP. In the HT III set, language drops out

and distance remains exogeneous, with ASEAN being instrumented by SIML and TGDP.

Results show that, in FE, economic similarity is negatively correlated with the degree of IIT. As China is now the 3^{rd} largest economy, this result suggests that China tends to trade more in a manner of IIT with those countries with lower real GDP level. The coefficients of RLF in OLS, FE and RE are all positive, which means China trades more with those countries with similar levels of GDPPC. These findings are much in line with Helpman (1987) which conducts a cross-section OLS estimation for 14 countries for the period 1970-1981, and finds a negative correlation between the degree of IIT and economic similarity but a positive correlation between the degree of IIT and factor endowment. However, recent panel data estimation results from Egger (2004) and Serlenga and Shin (2006) rather support both positive correlations. Furthermore, regression results show that TGDP is negatively but TPOP positively correlated with the degree of IIT. Nevertheless, across all the estimations, distance is negatively correlated with the degree of IIT, and the year 2001 dummy is positively correlated with the degree of IIT as well, which suggests a positive impact of globalisation on the degree of China's intra-industry trade with its trading partners.

Some notable discrepancies exist. First, the coefficients of SIML, RLF, TGDP, TPOP and DIST are all significantly larger in HT estimations than those in OLS and RE. Secondly, the coefficient of the ASEAN membership is negative in HT estimations, but positive in OLS and RE. Thirdly, English language speaking dummy shows no significance in HT.

The third step is to run the estimations on capital goods final products VIIT by following the similar procedure as above-mentioned. Bilateral country individual effect is significant and a FE estimation is more consistent. Distance is always significant across all the regressions and is negatively correlated with VIIT. However there is no significance of SIML in all the regressions, namely OLS, FE or RE.

The final procedure is to estimate the determinants of the intermediates IIT. The first finding is that economic similarity is much more significant in correlation with the degree of IIT, although it is not significantly correlated with the degree of the final products IIT. Secondly, factor endowment RLF is of no significance in either FE or RE. Thirdly, different from the estimations on the capital goods final products, ASEAN dummy, instead of distance, is significantly and negatively correlated with the degree of both TIIT and VIIT of the intermediates. It suggests that China is exchanging the intermediates in a less intra-industry manner with ASEAN countries in comparison with European or American countries.

5 Conclusions

This paper follows a Hausman-Taylor instrumental variable method in panel data econometrics to estimate the degree of China's intra-industry trade in the capital goods sector with its 26 trading partner countries. It finds that economic similarity is very significantly negatively correlated with the intermediates IIT, but to a less extent correlated with the final products IIT. Factor endowment is of no significance in determining IIT in the intermediates, although it is significantly positively correlated with the final products IIT. Economic size is significantly negatively correlated with both final products and intermediates IIT. China exchanges products in a more two-way manner with populous countries. Disputes on "the death of distance" can be interpreted by separate estimations on the final products trade and the intermediates trade. Distance is not yet dead in impacting the degree of the final products IIT, but of less importance in influencing the intermediates IIT. China is exchanging the intermediates in a more intra-industry manner in the capital goods sector with European and American countries than with ASEAN nations. However, because VIIT is dominating TIIT, no significant differences exist between the estimation results of TIIT and VIIT.

Table 1: Estimation Results for Capital Goods Final Products TIIT

	(1) OLS_T	(2) FE_T	(3) RE_T	(4) HT IV_I	(5) HT IV_{II}	(6) HT IV_{III}
SIML	0.509	-14.04*	-0.826			
	(0.70)	(-2.07)	(-0.52)			
RLF	3.960***	15.16**	5.114**			
	(4.59)	(2.81)	(2.82)			
TGDP	-3.935	-33.20**	-6.257			
	(-1.92)	(-2.98)	(-1.61)			
TPOP	107.5***	444.1***	168.4***			
	(5.23)	(4.55)	(4.13)			
DIST	-8.386***		-8.209***	-17.02**	-20.07*	-19.97*
	(-11.03)		(-4.54)	(-2.71)	(-2.48)	(-2.57)
LAN	3.033**		2.098	2.614	4.031	
	(2.93)		(0.86)	(0.39)	(0.50)	
ASEAN	20.13***		20.65***	-5.758	-16.07	-19.17
	(14.58)		(6.39)	(-0.42)	(-0.82)	(-0.94)
DUM01	4.207***	2.424*	3.471***			
	(3.35)	(2.35)	(3.39)			
_cons	-669.1***	-2980.3***	-1094.2***	149.0**	177.0*	177.4*
	(-4.96)	(-4.67)	(-4.08)	(2.67)	(2.45)	(2.53)
N	281	281	281	281	281	281
chi2			218.8	11.03	8.408	8.021
Sargan-chi2				1.3312	1.4638	0.9178
				(0.514)	(0.226)	(0.427)

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: Estimation Results for Capital Goods Final Prodcts VIIT

	(1) OLS_V	(2) FE_V	(3) RE_V	(4) HT IV_I	(5) HT IV_{II}	(6) HT IV_{III}
SIML	0.671	-9.962	-0.491			
	(0.94)	(-1.47)	(-0.32)			
RLF	4.027***	14.36**	4.938**			
	(4.72)	(2.66)	(2.80)			
TGDP	-4.346*	-27.30*	-6.057			
	(-2.15)	(-2.45)	(-1.59)			
TPOP	108.0***	397.0***	162.2***			
	(5.32)	(4.06)	(4.08)			
DIST	-7.661***		-7.449***	-12.31**	-14.14*	-14.68**
	(-10.19)		(-4.28)	(-2.72)	(-2.57)	(-2.77)
LAN	3.043**		2.179	0.313	1.162	
	(2.97)		(0.93)	(0.07)	(0.21)	
ASEAN	18.76***		19.26***	7.605	1.429	-1.628
	(13.75)		(6.18)	(0.76)	(0.11)	(-0.12)
DUM01	4.338***	2.654*	3.627***			
	(3.50)	(2.57)	(3.55)			
_cons	-676.2***	-2679.6***	-1057.6***	106.3**	123.0*	128.5**
	(-5.07)	(-4.19)	(-4.04)	(2.64)	(2.51)	(2.68)
N	281	281	281	281	281	281
chi2			204.2	19.65	15.32	14.07
Sargan-chi2				1.4222	2.7456	2.106
				(0.491)	(0.098)	(0.147)

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Estimation Results for Capital Goods Intermediates TIIT

	(1) OLS_T	(2) FE_T	(3) RE_T	(4) HT IV_I	(5) HT IV_{II}	(6) HT IV_{III}
SIML	4.139***	-50.53***	2.220			
	(3.72)	(-4.73)	(1.07)			
RLF	4.359**	-0.320	4.236			
	(3.32)	(-0.04)	(1.76)			
TGDP	-1.897	-88.74***	-1.767			
	(-0.61)	(-5.08)	(-0.33)			
TPOP	170.6***	805.3***	205.8***			
	(5.43)	(5.32)	(3.70)			
DIST	-9.942***		-9.714***	-80.41	-90.41	-74.01
	(-8.52)		(-4.23)	(-1.93)	(-1.79)	(-1.55)
LAN	12.84***		12.29***	65.53	70.17	
	(8.12)		(3.97)	(1.50)	(1.41)	
ASEAN	21.57***		20.54***	-258.3**	-292.1*	-290.9*
	(10.19)		(4.98)	(-2.82)	(-2.40)	(-2.32)
_cons	-1108.9***	-5149.1***	-1366.5***	728.1*	819.7	692.2
	(-5.37)	(-5.21)	(-3.74)	(1.97)	(1.82)	(1.61)
N	286	286	286	286	286	286
chi2			229.0	8.499	6.158	5.407
Sargan-chi2				0.104	0.0026	0.1638
				(0.95)	(0.96)	(0.686)

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Estimation Results for Capital Goods Intermediates VIIT

	(1) OLS_V	(2) FE_V	(3) RE_V	(4) HT IV_I	(5) HT IV_{II}	(6) HT IV_{III}
SIML	4.730***	-51.81***	3.254			
	(4.37)	(-4.81)	(1.71)			
RLF	3.925**	0.945	3.914			
	(3.08)	(0.11)	(1.77)			
TGDP	-2.352	-96.27***	-2.584			
	(-0.78)	(-5.41)	(-0.52)			
TPOP	157.2***	854.6***	188.9***			
	(5.14)	(5.48)	(3.64)			
DIST	-8.211***		-8.030***	-80.77	-91.38	-74.65
	(-7.24)		(-3.85)	(-1.89)	(-1.76)	(-1.52)
LAN	12.70***		12.26***	66.40	71.32	
	(8.26)		(4.35)	(1.47)	(1.39)	
ASEAN	17.71***		16.95***	-268.9**	-304.7*	-303.3*
	(8.61)		(4.51)	(-2.86)	(-2.42)	(-2.35)
DUM01	3.832*	0.975	3.185			
	(2.05)	(0.59)	(1.86)			
_cons	-1024.7***	-5453.0***	-1253.1***	732.7	829.9	699.7
	(-5.10)	(-5.34)	(-3.67)	(1.93)	(1.79)	(1.58)
N	286	286	286	286	286	286
chi2			208.8	8.680	6.272	5.566
Sargan-chi2				0.1118	0	0.1638
				(0.946)		(0.686)

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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