

Export Diversification in Regional Markets for China, Japan and Korea

Farazi Binti Ferdous*

東アジアにおける日中韓の輸出品多様化について

ファラジ ビンティ フェルドウス*

Summary: Asia began emphasizing FTAs as a trade policy instrument in the late 1990s, and the region is today at the forefront of world FTA activity. The schedule and list of FTAs in the last decade clearly give the picture of the cumulative FTA relations and that Japan is the leading country in that respect with its bilateral and plurilateral FTAs with the regional economies. China is in the second position with two bilateral FTAs, and Korea has the lowest number of FTAs with most recent involvement in the action of regional FTAs. This study gives an attempt to find whether there is any change in the diversification pattern of regional export during the period (2001-2010) of booming FTAs in East Asia. Recent research in international trade has focused on changes in trade patterns driven by countries starting to export goods that they had not exported before which are referred as changes on extensive margin or the new goods margin. Theoretical models as Melitz (2003), predict that changes in the underlying fundamentals of an economy, for example changes in tariffs due to FTAs, have an effect on the extensive margin. Following this model, this study aims to test the hypothesis that FTA usage lowers trade costs bilaterally and thus expands the range of products traded between regional partners of East Asian economies. The highly disaggregated (HS 6-digit) level data is used in this study in order to pick up the FTAs' impact on the extensive margin of regional trade in China, Japan and Korea. The study finds that there are changes in the extensive margin of export in the regional trade of China, Japan and Korea. It also finds that FTAs affect export diversification positively for China and Japan but not for Korea.

*Graduate School of Asia Pacific Studies, Waseda University, Doctoral Degree Program

1. Introduction

Export diversification has been measured in many ways by researchers; such as, using concentration indexes, counts of exported products or indexes that take into account the productivity content of the export basket. Besides the counting of exported products, this study looks at the extensive margin of export or the new goods margin which is a new trend in this research area. Recent research in international trade has focused on changes in trade patterns driven by countries starting to export goods that they had not exported before. These sort of changes are referred as changes on extensive margin or the new goods margin. At the same time, changes in intensive margin are changes in exports of goods that were previously exported.

Recently, trade models have been developed that use the extensive margin to explain the changes in the trade volumes. The theoretical models as Melitz (2003), predict that changes in the underlying fundamentals of an economy, for example changes in tariffs due to free trade agreements (FTAs), have an effect on the extensive margin. This study particularly follows the assumptions of the new-new trade theory or the Melitz (2003) model and also keeps an eye on the researches that use this model. Moreover, this paper follows other studies that relate the model to the trade liberalization as a cost reducing tool for increasing export diversification. Among very few of such studies, the study of Amurgo-Pacheco (2006) are one where Melitz (2003) model is used to explain the effect of trade liberalization on the range of traded products. He uses HS 6-digit data on Euro-Mediterranean trade and finds expansion in the range of traded products at the time of FTA. Again, Amurgo-Pacheco & Pierola (2008) use Melitz (2003) model to explain the geographical and product diversification patterns across a group of developed and developing nations. They conclude that FTAs have positive impacts on export diversification for developing countries.

Baldwin (2005) and Baldwin & Taglioni (2004) show in their studies that the euro is stimulating the export of new products rather than simply increasing the volume of already-traded varieties. They use Melitz (2003) model assuming that the euro makes Eurozone nations look like a single nation from the exporters view, the euro could induce firms to export varieties that they had previously sold domestically. Again, Baldwin & Di Nino (2006) use Melitz (2003) model to test the hypothesis that euro boosted trade via the extensive margin as well as intensive margin. Their empirical evidence can be considered as supportive to the hypothesis but not conclusive.

In the field of East Asian trade studies, Ando & Urata (2011) examines the impact of Japan-Mexico EPA (Economic Partnership Agreement) on bilateral trade and EPA utilization rate. They find that EPA has contributed to the opening up of protected markets but they do not use the new-new trade model. Moreover, Athukorala & Yamashita (2006), Ando (2007), Damuri et al. (2006), Ng & Yeats (2003) and others

study about the export pattern of East Asian economies. But either they do not use the highly disaggregated data for trade or they do not use the new-new trade model, which is the specialty of this study. Following the model and recent studies in this field, this study aims to test the hypothesis that FTA usage lowers trade costs bilaterally and thus expands the range of products traded between regional partners of East Asia.

After critical examination of the existing trade and diversification literatures, the study finds that the researchers in the previous studies regarding regional export diversification in China, Japan and Korea have ignored the presence of zero's in the bilateral trade matrix and the FTA's impact on them. Economists, policymakers and businesspeople in the world are concerned about the business impact of the booming FTAs in the economically important East Asia. Asia has begun emphasizing FTAs as a trade policy instrument in the late 1990s, and the region is at the front of world FTA activity today (Kawai and Wignaraja 2011). In 2000, there was hardly any FTA activity in the East Asian region, only three regional FTAs were in effect. However, by the end of the decade, FTAs in effect increased more than tenfolds with 44 FTAs in effect (Table 1). The schedule and list of FTAs in the last decade clearly give the picture of the cumulative FTA relations and that Japan is the leading country in that respect with its bilateral and plurilateral FTAs with the regional economies. Korea has the lowest number of FTAs among the three and most recent involvement in the action of regional FTAs. Therefore, this study gives an attempt to find whether there is any change in the diversification pattern of regional export during the period of booming FTAs in China, Japan and Korea.

The highly disaggregated data is used in this study in order to pick up the FTAs impact on the extensive margin of regional trade in selected East Asian economies. The study selects these three countries due to the fact that these three largest Northeast Asian economies are stirring the spread of FTAs in East Asia (Kawai and Wignaraja 2011). This study examines the changes in the export diversification patterns of China, Japan and Korea to each other while there is no FTA between them. Additionally, exports from these three countries to Indonesia, Malaysia, Philippines, Singapore and Thailand are covered for the study whereas China, Japan and Korea have either bilateral or plurilateral FTAs with these ASEAN (the Association of Southeast Asian Nations) countries (Table 2). Therefore, this paper has three exporters and seven corresponding importers to investigate.

The study finds that there are changes in the extensive margin of export in the regional trade of China, Japan and Korea. It also finds supportive results with the thesis hypothesis that, FTAs affect export diversification positively. The study confirms that FTAs increase the probability of exporting new varieties for these countries. All

three countries have maximum extensive export with FTA partner countries. At the same time, the extensive margin share is concentrated in some sectors like machinery, metal and related products, minerals and chemicals. Destination country size and distance of the market are always important determinants for export diversification as found in the study.

2. Patterns and evolution of export diversification

2.1 Evolution of number of zero export

Amurgo-Pacheco & Pierola (2008) consider the existence of zeros in the trade matrix as the non-successful experience of diversification and thus it is an important piece of information. Chart 1 represents the evolution of zero exports for China, Japan and Korea to the partner countries. The percentage share of non-traded (export) goods to the regional markets under consideration, out of the total number of exporting goods at the HS 6-digit level are calculated for each corresponding exporter. The declining trend of zero export is found for China and Korea while it is increasing for Japan. This chart shows that the number of exports between China, Japan, Korea and the regional markets have been changing during the last decade. In other words, the number of exports has been changing for the East Asian countries under investigation and thus there are changes in the export diversification pattern.

2.2 The data, calculation and evolution of extensive margin of export

The ideal dataset of this kind of study should contain product-level, firm-level bilateral trade data; this would allow picking up bilateral switches in export behavior at the individual product and firm level (Baldwin and Di Nino 2006). Since these data are not available to the researchers, the common practice is to use the most detailed trade data that is available for a wide range of nations. This study focuses on the regional export diversification of China, Japan and Korea from 2001 to 2010 since this paper wants to investigate the impact of the booming FTAs on export diversification in East Asia during this time period. The export directions in this study are China, Japan and Korea's export to each other. At the same time the export of China, Japan and Korea to Indonesia, Malaysia, Philippines, Singapore and Thailand are also considered.

For this study the extensive or new products have been defined as those products (at the HS 6-digit level) that have not been exported for the first two years but have started to export afterwards, either consecutively or not. On the other hand, the exports of the products (at the HS 6-digit level) that have been positive from the beginning of the study period are defined as intensive export. There are more than 5000 product lines at the 6-digit level for each exporter. So the total set of data in the

study is large, for 3 exporting countries and 7 corresponding partners for 10 years. The HS 6-digit level data of this study is compiled from the International Trade Center (ITC) based on UNComtrade database.

One important issue is that each of the HS 6-digit level product categories in this study encompasses a range of individual goods, so it is not possible to pick up the full extensive margin. As a consequence, this paper cannot identify cases where FTA usage induces more varieties to be bilaterally traded in an HS 6-digit category that has always had positive export flows. However, this paper can detect the extensive margin in cases where a bilateral trade flow switches from zero to positive since the number of export varieties was zero before and positive afterwards. Accordingly, when it observes a positive export flow between a pair of nations in a particular product category, the study considers that it includes many different varieties but cannot identify how many. Therefore, this study cannot establish the full link between FTA usage and the number of varieties.

As shown in Chart 2, the extensive margin of China's export is more for Philippines, Indonesia and Thailand. These ASEAN countries and China have China-ASEAN CECA (Comprehensive Economic Cooperation Agreement) and China-Thailand FTA. On the other hand, the lowest cases of extensive margin of exports are for Japan and Korea who have no FTAs with China. Similarly, Chart 3 and Chart 4 show the evolution of extensive margin of Japan and Korea's export accordingly. Again, maximum increases in the extensive margin of export in these countries are found for the partners with FTAs and less with non-FTA partners. Thus, it can be summarized that China, Japan and Korea have increasing trend of extensive margin of export for the regional trade with FTA partner countries.

2.3 Regional share of extensive margin of export value

This section looks at the regional share of extensive margin of export value for China, Japan and Korea. As shown in Chart 5, 6 and 7, all three countries have maximum extensive export with the FTA partner countries for the case of regional share of export. For example, China's extensive export share is larger with Philippines, Indonesia, Thailand and Malaysia. Japan's extensive export is more with Singapore, Indonesia, Philippines and Malaysia. Korea's exports of new goods are found mostly with Indonesia and Thailand. In other words, the level of extensive margin of export is lowest between China, Japan and Korea, and this study assumes that this might be due to the absence of FTAs between them.

2.4 Sectoral share of export value

In this section, the HS-6 categories of 97 chapters has been converted to 21 sectors

and then to fewer classification of aggregated level for expositional simplicity as shown in Table 3. Chart 8, 9 and 10 represents the cases of China, Japan and Korea's sectoral share of the extensive margin of export in the regional trade. It is clear from the charts that export share is concentrated in some sectors for all three countries. This study calculates and finds that total export shares for these countries are mostly concentrated on Machinery (84-92) and Minerals & Chemicals (25-38) sectors (not presented in this paper). Similarly, extensive margin of export is concentrated on Machinery (84-92), Base metal & related products (72-83) and Minerals & Chemicals (25-38). This finding points out to the fact that, there are emergence of new goods in the export list for the regional trade of China, Japan and Korea. But, the sectoral pattern of the new goods margin is similar to the sectoral pattern of total trade, for all three countries. Thus, it reflects the intensity of the existing or intensive margin of export for the regional export share in China, Japan and Korea.

2.5 Analysis of the findings

Trade in machinery includes parts and components and this is the important share of total and extensive margin of export for the study. Therefore, the study findings reflect the consequence of the fragmentation of production and its importance in the regional trade of China, Japan and Korea. Besides, the findings support the Melitz (2003) model in the sense that only large firms export while small firms do not and also that firms try to have large enough sales to make it profitable to cover the sunk costs of entering the foreign markets (Amurgo-Pacheco 2006). This explains the big share of intensive margin of export and the concentration of limited sectors in the extensive margin. Detailed theoretical explanation is given in the theoretical section of this paper.

Previous studies find explanation of more FTA usage by the MNCs (Multi-National Corporations) and less FTA usage by the SMEs (Small and Medium Enterprises). Kawai & Wignaraja (2011) identifies the East Asian FTA users by industry and reveals that a larger proportion of firms in the machinery and automotive industry use FTAs than firms in food, electronics or textile and garment industries. The pattern of FTA usage matches with the patterns of protection and margins of preference, i.e. more protected industries with higher margins of preference tend to use FTAs more than less protected industries. They also find that the most striking difference between users and non-users of FTAs is in firm size. The larger firms are more capable than the small firms to muster the large fixed costs entailed to use FTAs. Ando & Urata (2011) examines the impact of Japan-Mexico EPA on bilateral trade and EPA utilization rate. They find that EPA has contributed to the opening up of protected markets. Therefore, this study assumes that usage of FTAs lowers trade costs

bilaterally and thus expands the range of products traded between partners.

2.6 Extensive margin and FTAs

In this section the MFN (most-favored-nation) and FTA tariff rates of the importing countries are matched to see the real changes. It is found that there are gaps between applied MFN and FTA tariff rates (margin of preference) in these countries. The matching charts can qualitatively prove the hypothesis that FTAs reduce the trade cost and thus induces new categories of export. Also the study finds that the drop in zeros happened mostly in the sectors where the FTA has been most liberal. Based on the findings of regional and sectoral share, the importer's (Indonesia) tariff data is matched for the extensive export of Korea, which is presented in Table 4. The table shows few selected sample data that represent the sectors where highest extensive margins are found. It clearly shows the emergence of extensive export in response to the declined tariff rate due to FTA. This study checks and finds the similar changes for other countries and partners but not presented here.

3. The New-New Trade Theory

While considering the theory related to export diversification, Ricardian trade theory explains that open economies are predicted to specialize in producing a specific range of goods, so that specialization is expected to accompany any reduction in the impediments to trade, be they policy or technology driven (Imbs and Wacziarg 2003). Economic activity in integrating economies tends to be increasingly agglomerated i.e. increasing observed degrees of concentration at the sector level within such countries (Imbs and Wacziarg 2003). Therefore, traditional trade theory predicts that trade liberalization reduces export diversification where the new-new trade theory suggests that FTAs induces export diversification by lowering trade costs.

Traditional trade theories do not provide any explanation of changes in the zero trade flows and thus fail to properly explain the changes or inclusion in the diversification pattern. Therefore, this study follows the recent trend of using the "new-new trade theory" that takes account of the fact that not all firms export. Particularly this study follows the simplified descriptions given in the articles of Baldwin & Di Nino (2006) and Amurgo-Pacheco & Pierola (2008). According to their explanations, the Melitz (2003) model is basically a Helpman and Krugman (1985) model with two key innovations: fixed cost of entering a new market and differences in firm's marginal production costs. Due to the market entry costs, only firms with low marginal cost find it profitable to export.

As Baldwin & Di Nino (2006) explained, the bilateral export from the origin (o) to destination (d) is determined by two conditions. The first or the domestic cut-off

condition defines the highest marginal cost for active nation-o firms, which means that firms with marginal costs above this threshold will not produce even for the local market. Therefore, the equilibrium in nation-o is characterized by one cut-off condition for every market, including the domestic one. The formal domestic cut-off condition is:

$$F_o^D = \left(\frac{\overline{a_{oo}}}{1-1/\sigma} \right)^{1-\sigma} \frac{B_o}{\sigma} \quad (1)$$

Where, F_o^D is the cost of entering the domestic market in nation-o (origin), 'a' is the firm-specific marginal cost and $\overline{a_{oo}}$ is the threshold marginal cost for local sales in nation-o. B_o is the demand shifter in nation-o and σ is the elasticity of substitution which is assumed to be constant and greater than one.

Firms with sufficiently low marginal costs are able to export to foreign markets since only they are able to cover the fixed market-entry costs. The condition that defines the export threshold marginal cost for firms exporting from nation-o to nation-d is the pair-specific export cut-off condition. The formal export cut-off condition is:

$$F_d^X = \left(\frac{\overline{a_{od}} \tau_{od}}{1-1/\sigma} \right)^{1-\sigma} \frac{B_d}{\sigma} \quad (2)$$

Where, F_d^X is the fixed cost of entering the market in nation-d (destination), $\overline{a_{od}}$ is the pair-specific threshold marginal cost, τ_{od} is the bilateral trade cost. Again, B_d is the demand shifter in nation-d, namely $E_d/p_d^{1-\sigma}$ where E_d is the total expenditure of the destination nation on all varieties and p_d is the usual CES price index. Therefore, the theory assumes that the bilateral exports from nation-o to nation-d are endogenously determined by the domestic and the export cut-off conditions as shown in Fig 1 (a_D and a_X).

The second threshold implies the model's prediction in line with the common observation that big, efficient firms are more likely to export than small firms. Since the big firms are able to cover the fixed market entry costs while the small firms fully pass on the per-unit trade costs to export markets and thus the price of their good is higher in foreign markets. Moreover, the further away the market, the higher will be the price due to passed-on trade costs and so the lower will be the operating profit earned.

The total value of the per-firm bilateral exports measured in terms of numeraire is:

$$V_{od} = \begin{cases} \int_0^{\overline{a_{od}}} n_o \frac{a \sigma_{od}}{\left(1 - \frac{1}{\sigma}\right)^{1-\sigma}} B_d dG(a|\overline{a_{oo}}), & \text{if } a \leq \overline{a_{od}} \\ 0, & a > \overline{a_{od}} \end{cases}$$

Where, V_{od} is the volume of bilateral exports between the origin and the destinations. $G(a|\bar{a}_{00})$ is the conditional density function that describes the distribution of marginal costs in nation-o. It is conditioned on the domestic threshold marginal cost \bar{a}_{00} since only firms that produce can export and firms with a 's above \bar{a}_{00} cannot produce in nation-o. Thus, when the threshold marginal cost shifts to the right, smaller firms will be able to export their goods and so the range of exported goods will be widen.

Re-arranging the variables we have:

$$V_{od} = \begin{cases} \tau_{od}^{1-\sigma} B_d \left\{ n_o \int_0^{\bar{a}_{od}} a^{1-\sigma} dG(a|\bar{a}_{00}) \right\} \left(1 - \frac{1}{\sigma}\right)^{\sigma-1}, & a \leq \bar{a}_{od} \\ 0, & a > \bar{a}_{od} \end{cases} \quad (3)$$

The significant points of equation (3) are that the drop in the bilateral trade cost, τ , or the fixed market entry costs will stimulate bilateral exports. These trade cost reductions can induce firms to start exporting across a bilateral relation when there was no trade. The study focuses on the bilateral trade flows that switch from zero to a positive number along with the change in existing trade flows. This new-varieties hypothesis assumes that a drop in bilateral trade costs, or the fixed market entry costs not only stimulates bilateral exports (intensive margin), but it can also induce firms to start exporting new categories of goods (extensive margin).

The expression for the bilateral trade volume, equation (3) suggests a gravity-like estimation. Noting that B_d equals $E_d/p_d^{1-\sigma}$, therefore GDP of the importing country can be the proxy for E_d , and the GDP of the exporting country can be the proxy for n_o . While n_o is related to the endowment of exporting nation. The remaining expressions, including bilateral trade costs $\tau_{od}^{1-\sigma}$, and additional nation-o specific factors affecting n_o can be controlled for using time-invariant pair dummies, following previous researchers this study also uses distance between markets.

This framework is assumed to be linked to diversification to the extent that the range of exported goods is somehow linked to the export threshold. The idea is, as the fixed market entry costs have been falling over time for exporting firms, the number of zeros in export vectors should be falling. This study assumes in line with the previous research of Baldwin & Di Nino (2006), Amurgo-Pacheco & Pierola (2008) and others, that this drop in bilateral trade costs, or the fixed market entry costs, not only stimulating bilateral exports, but also induce firms to start exporting new categories of goods that were previously not exported.

As Amurgo-Pacheco & Pierola (2008) explains, signing FTAs and as a consequence the associated costs with exporting will be reduced. For example, higher transparency

in the rules for exporting to FTA members lower information costs for exporters which translates into a fall in the fixed cost of entering the FTA. Therefore, the assumption is that the FTA lowers the fixed market entry costs for its members. As a result, of that a wider range of firms will find it worthwhile to sell its goods in FTA. As a consequence, there will be increase in the number of goods exported to the FTA. Therefore, more goods will increase the trade volume as well.

4. Econometric approach: Estimations and results

4.1 Estimation at the disaggregated level data

The disaggregated data set for this study consists of uni-directional product pairs among the three exporters and other corresponding ASEAN partners. The standard panel gravity regression takes the bilateral trade as the sections (the columns) and the yearly observations as the time series (the rows). In case of this study, it has 3x7 uni-directional country pairs for each product category, and there are more than 5000 categories, so there are more than 39,000 sections for total export list per year per exporter. The author estimates the model with one exporter's dataset at a time. Therefore, a single nation as the exporter and other seven nations as export partners are estimated. The econometric model for this study is as follows:

$$\text{Log}(V_{odit}) = \alpha + \beta_1 \log(\text{GDP}_{o_t}) + \beta_2 \log(\text{GDP}_{d_t}) + \beta_3 \log(\text{Dist}_{od}) + \beta_4 \text{FTA} + \beta_5 \text{SD} + \varepsilon_t$$

Where, the variables are V_{odit} which is the dollar value of exports from country-o (origin) to country-d (destination), of product (i) for each 6-digit category in year t. Source of the export data is ITC, COMTRADE database. GDP_{o_t} is GDP of the origin in year t at constant 2000 bill US\$ and GDP_{d_t} is GDP of the destination country in year t, taken from WDI (World Development Indicators), World Bank database. Distance data between origin to destination is taken from CEPII data source as represented by Dist_{od} . FTA dummy is created to take account the reduction of trade costs which is 1 if FTA exists between countries, otherwise 0. The variable SD is the Sector Dummy which is 1 for the machinery sectors and 0 for other sectors, to control sectoral differences.

As mentioned above, this paper estimates the model with a panel data analyses by pooled OLS method for China, Japan and Korea. Estimations are done separately for total export at every HS 6-digit category and also for extensive margin of export (own calculation) as dependent variable. The results of the disaggregated level estimation are presented in Table 5 and Table 6. Estimation signs of the variables are followed by the hypotheses and almost all variables are statistically significant. The

results support that larger the size of the market at destination and the closer the markets (lower trade costs), the larger the increase in the volume of exports both in total and extensive margin of export. The negative impact of Japan's GDP on export diversification follows the hump shaped pattern of export diversification explained by Imbs & Wacziarg (2003), that diversification is followed by re-concentration for high income economies. The reducing number of exports for Japan is also reflected in the increase of number of zero exports in Chart 1. The sector dummy (SD) is positive and significant for all exporters. This proves that the machinery sector is becoming more important for expanding export varieties, i.e. trade in machinery helps the diversification process. This supports the pattern of sectoral distribution of total and extensive margin for each exporter presented in section two.

Most importantly, the study confirms the hypothesis that FTAs affect export diversification positively for China and Japan but not such for Korea. Even though Table 4 shows that there are successful cases of FTA usage and emergence of many new goods, the negative impact of Korea's FTA on diversification can be explained with the limited use of FTAs in Korea, its late entry to FTAs and low margin of preference. That approves the fact that usage of FTAs increases the probability of expanding new varieties of export to the trade list. The result shows that the effect of FTA usage on export diversification is highest for China. These results do not offer exact estimation on the precise impact on the extensive margin of trade. But they provide an indication of how the likelihood to diversify more is affected. And also confirm the main finding about the impact of the gravity and trade costs variables in creating trade in new varieties. The study findings provide supportive though not conclusive evidence for the new goods hypothesis in these countries.

5. Conclusions

This study uses disaggregated (HS 6-digit) level data to explain the changes in the pattern of regional export diversification in China, Japan and Korea. By looking at the new goods or extensive margin of export in the regional trade of China, Japan and Korea this paper contributes to the new trend of export diversification literature. It finds that there are changes in the export diversification pattern and it has increased in the regional markets for these economies. Interestingly, all three countries have maximum extensive or new goods margin with regional FTA partner countries. At the same time, the extensive margin share is concentrated in some sectors like machinery, metal and related products, minerals and chemicals. Therefore, the share of existing product or intensive margin of export is major for the regional export in these countries. The study finds that utilizing FTAs and therefore reducing the trade costs helps to lift diversification by increasing the chances of exporting a wider variety of goods.

The study analyzes the regional export scenario of China, Japan and Korea using the new-goods hypothesis and thus contributes to the literature in the issue. Using the assumptions of Melitz (2003) model and with highly disaggregated export data the study confirms that FTAs increase the probability of exporting new varieties for these countries. But this change or increase is observed in only few sectors as found in this paper. Therefore, when looking at the aggregate level, it gives the scenario of concentration of export in the sectors like machineries, metals, minerals and so on. This can be explained by the traditional trade theory which claims that trade liberalization reduces export diversification where the new-new trade theory suggests that FTAs induces export diversification by lowering trade costs. The study results are not conclusive but increase the ability to associate the reduction or changes of zeros in the export list and the increase or variations in diversification with the effects of trade liberalization and economic integration.

Tables

Table 1. Growth of East Asian FTAs (2000-2010)

Year	Concluded FTAs		Future FTAs	
	In Effect	Signed	Under negotiation	Proposed
2000	3	1	5	4
2005	19	9	36	33
2010	44	6	48	30

(Source: Kawai and Wignaraja 2011, pp. 7)

Table 2. Regional FTAs of China, Japan and Korea

	Bilateral FTA (Date in effect)	Plurilateral FTA (Date in effect)
China	Thailand (2003), Singapore (2009)	ASEAN (2005)
Japan	Singapore (2002), Malaysia (2006), Thailand (2007), Indonesia (2008), Philippines (2008)	ASEAN (2008)
Korea	Singapore (2006)	ASEAN (2007)

(Source: Kawai and Wignaraja 2011, pp. 22-24)

Table 3. Classification of aggregated level for expositional simplicity

Product Code (21 sector)	Product Name	Classification for the study chart
HS01-05	Live animals & products	Agriculture & Food (01-24)
HS06-14	Vegetable products	
HS15	Animal & vegetable oils	
HS16-24	Products of food industry	
HS25-27	Mineral products	Minerals & Chemicals (25-38)
HS28-38	Chemicals	
HS39-40	Plastic & plastic materials	Plastic, Skin, Wood & Paper (39-49)
HS41-43	Skin, raw material	
HS44-46	Wood & wood products	
HS47-49	Pulp & paper	
HS50-63	Textiles	Textiles (50-63)
HS64-67	Footwear, umbrellas	Other (64-70, 93-99)
HS68-70	Cement, ceramic, et al.	
HS71	Precious stones	Precious stones (71)
HS72-83	Base metal & products	Base metal & products (72-83)
HS84	General machinery	Machinery (84-92)
HS85	Electric machinery	
HS86-89	Transport equipment	
HS90-92	Precision machinery	
HS94-96	Various manufactured goods	Other (64-70, 93-99)
Others	Others (HS93, HS97)	

(Source: Own arrangement based on HS data classification from ITC, COMTRADE)

Table 4. Korea's extensive margin of export and Indonesia's tariff rates

Country	Product Code (HS6)	Export Value of Korea (thousand US\$)		Tariff rates of Indonesia (2010)	
		2001	2010	MFN (Applied)	FTA rate for Korea
Indonesia (Importer)	280700	0	1835	5.0	0.0
	340530	0	331	10.0	5.0
	722790	0	1116	5.0	0.0
	843710	0	1054	5.0	0.0
	890400	0	502	5.0	0.0

Data based on: WTO (Tariff Analysis Online), ITC (Market Access Map), WB (WITS)

Table 5. Extensive margin of export (Total export value) (OLS estimation)

	Log (GDP_o) (+ve)	Log (GDP_d) (+ve)	Log (DIST) (-ve)	FTA (+ve)	SD (+ve)
CHN (obs.396130)	1.26*** (51.50)	0.512*** (93.58)	-0.23*** (-18.15)	0.075*** (4.34)	1.06*** (83.41)
JPN (obs.396900)	-0.49*** (-3.18)	0.63*** (88.99)	-0.29*** (-21.27)	0.029*** (2.14)	2.29*** (182.53)
KOR (obs.395500)	0.64*** (10.80)	0.4003*** (60.06)	-0.45*** (-30.19)	-0.068*** (-4.31)	1.26*** (114.38)

- ***=significant at 1%, **=significant at 5% and *=significant at 10%
- t-values in parentheses

Table 6. Extensive margin of export (Extensive export value) (OLS estimation)

	Log(GDP_o) (+ve)	Log (GDP_d) (+ve)	Log (DIST) (-ve)	FTA (+ve)	SD (+ve)
CHN (obs. 45360)	3.09*** (58.89)	0.063*** (4.89)	-0.21*** (-7.59)	0.38*** (10.96)	0.29*** (10.55)
JPN (obs. 25610)	11.57*** (36.002)	0.17*** (12.09)	-0.029 (-1.01)	0.21*** (7.71)	0.25*** (8.00)
KOR (obs. 39620)	6.89*** (53.86)	0.03** (2.12)	-0.037 (-1.18)	-0.38*** (-11.58)	0.15*** (6.36)

- ***=significant at 1%, **=significant at 5% and *=significant at 10%
- t-values in parentheses

Charts

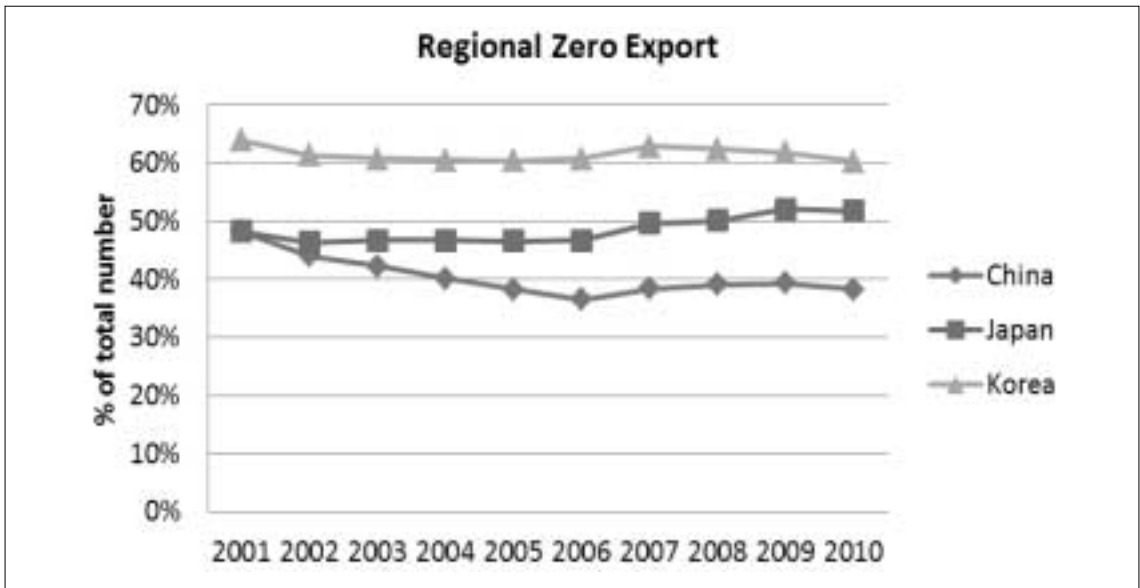


Chart 1. Evolution of number of zero export

(Own calculation using export data compiled from ITC database)

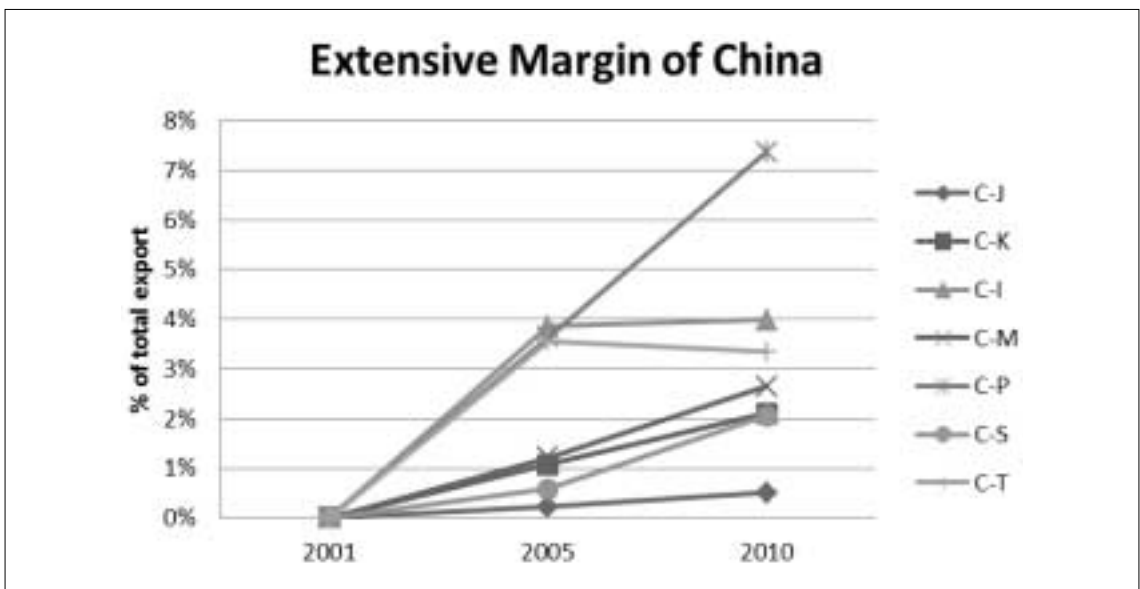


Chart 2. Evolution of extensive margin of export in China (2001-2010)

(C: China, J: Japan, K: Korea, I: Indonesia, M: Malaysia, P: Philippines, S: Singapore, T: Thailand)
 (Own calculation based on the data of ITC)

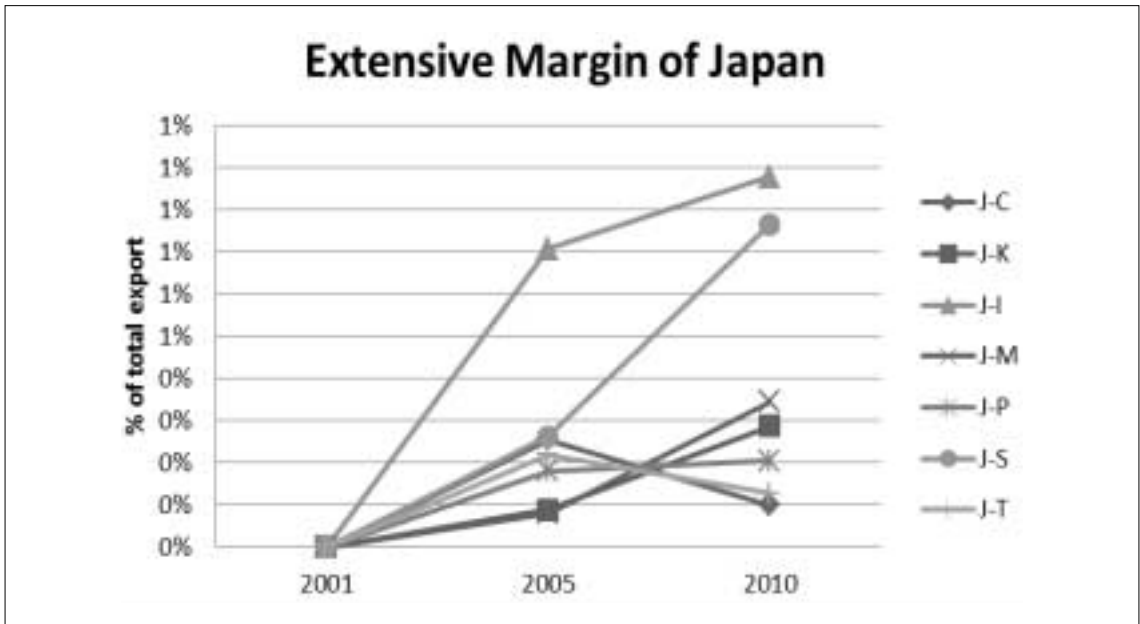


Chart 3. Evolution of extensive margin of export in Japan (2001-2010)
 (C: China, J: Japan, K: Korea, I: Indonesia, M: Malaysia, P: Philippines, S: Singapore, T: Thailand)
 (Own calculation based on the data of ITC)

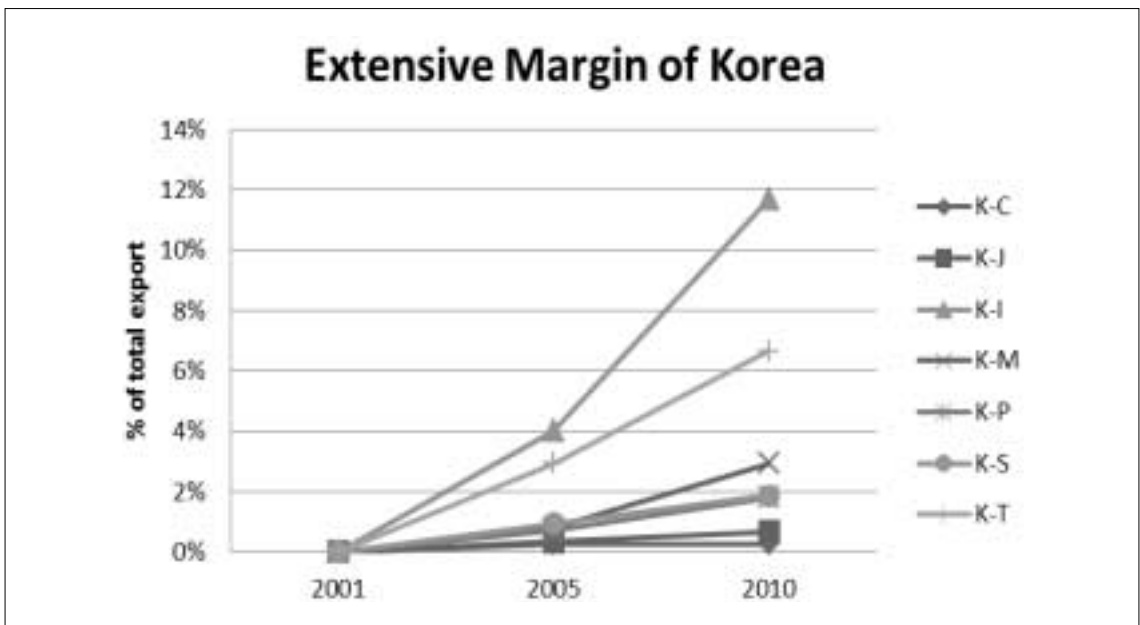


Chart 4. Evolution of extensive margin of export in Korea (2001-2010)
 (C: China, J: Japan, K: Korea, I: Indonesia, M: Malaysia, P: Philippines, S: Singapore, T: Thailand)
 (Own calculation based on the data of ITC)

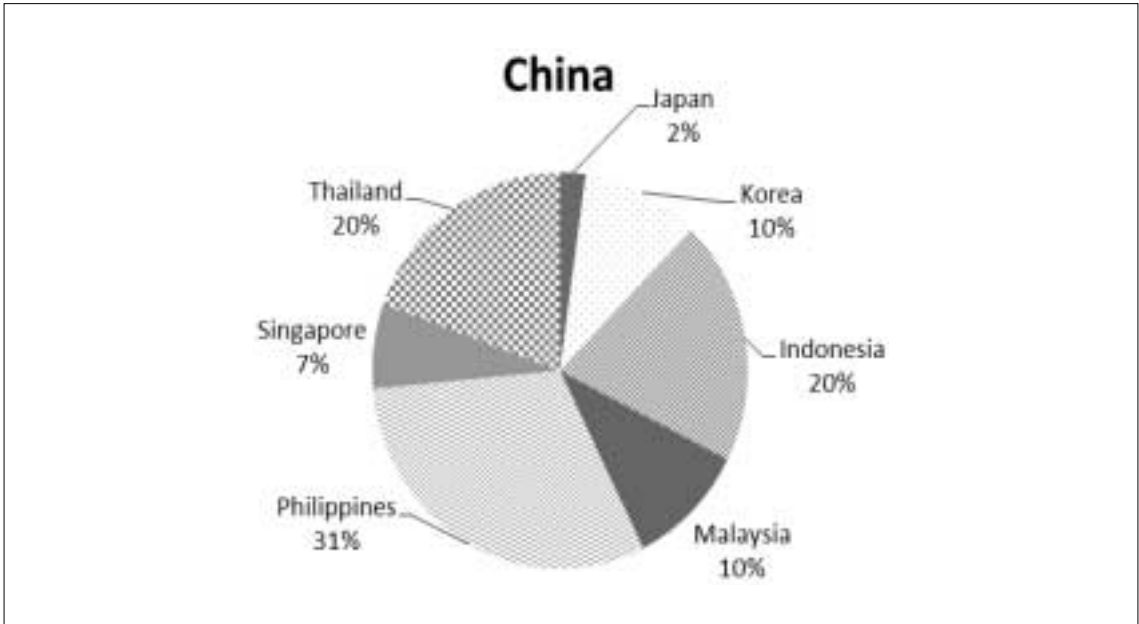


Chart 5. China's regional share of extensive margin of export
(Own calculation based on the data of ITC)

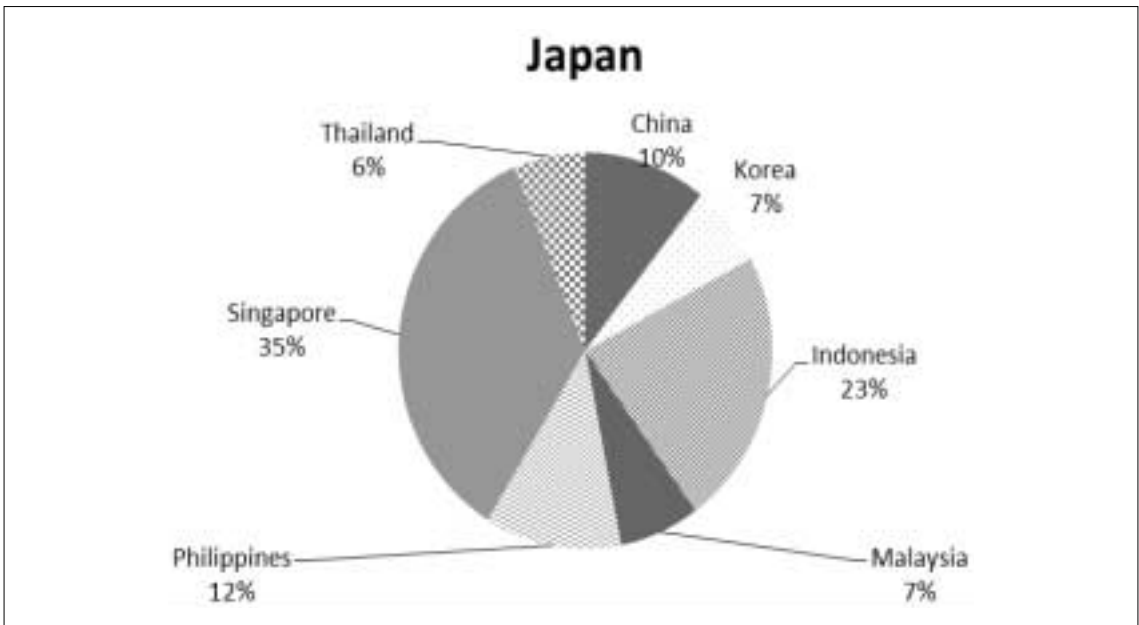


Chart 6. Japan's regional share of extensive margin of export
(Own calculation based on the data of ITC)

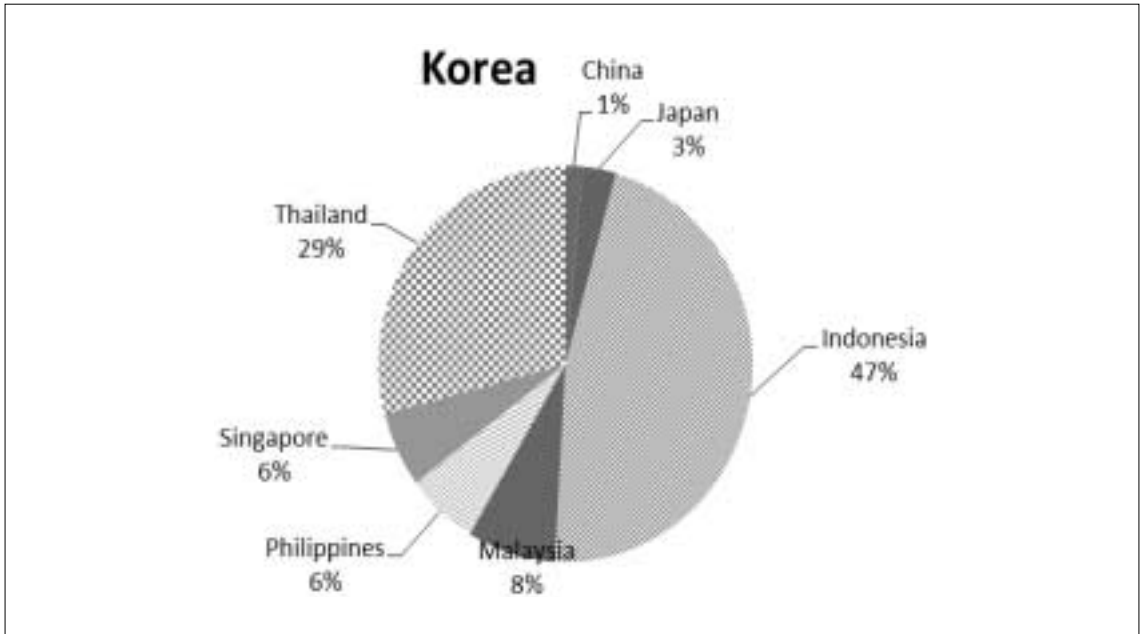


Chart 7. Korea's regional share of extensive margin of export
(Own calculation based on the data of ITC)

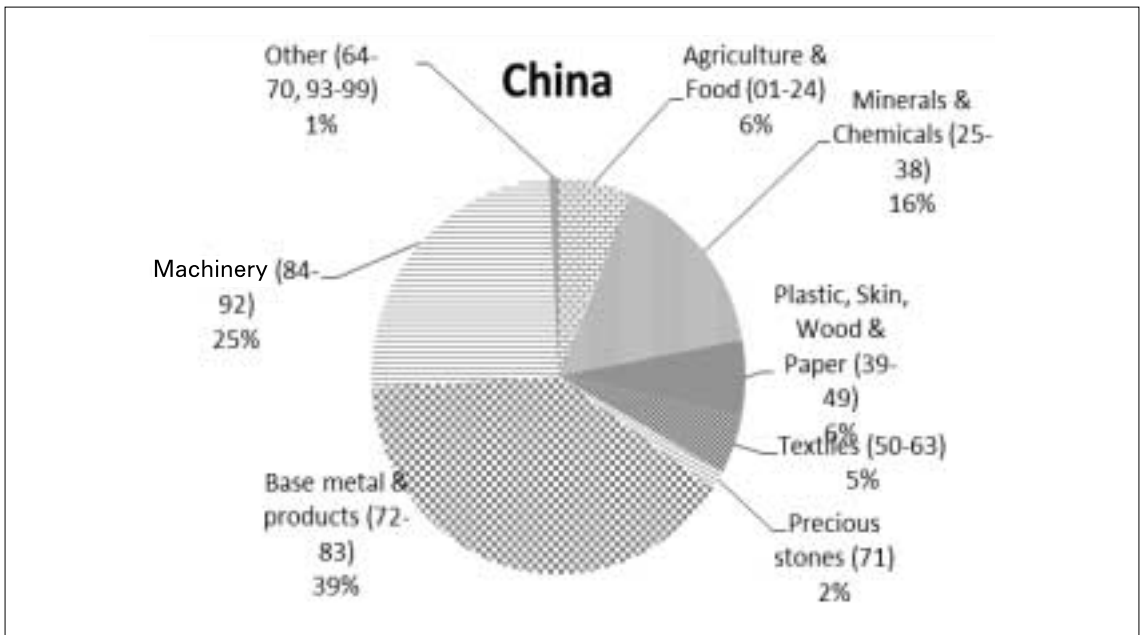


Chart 8. Sectoral share of China's extensive margin of export
(Own calculation based on the data of ITC)

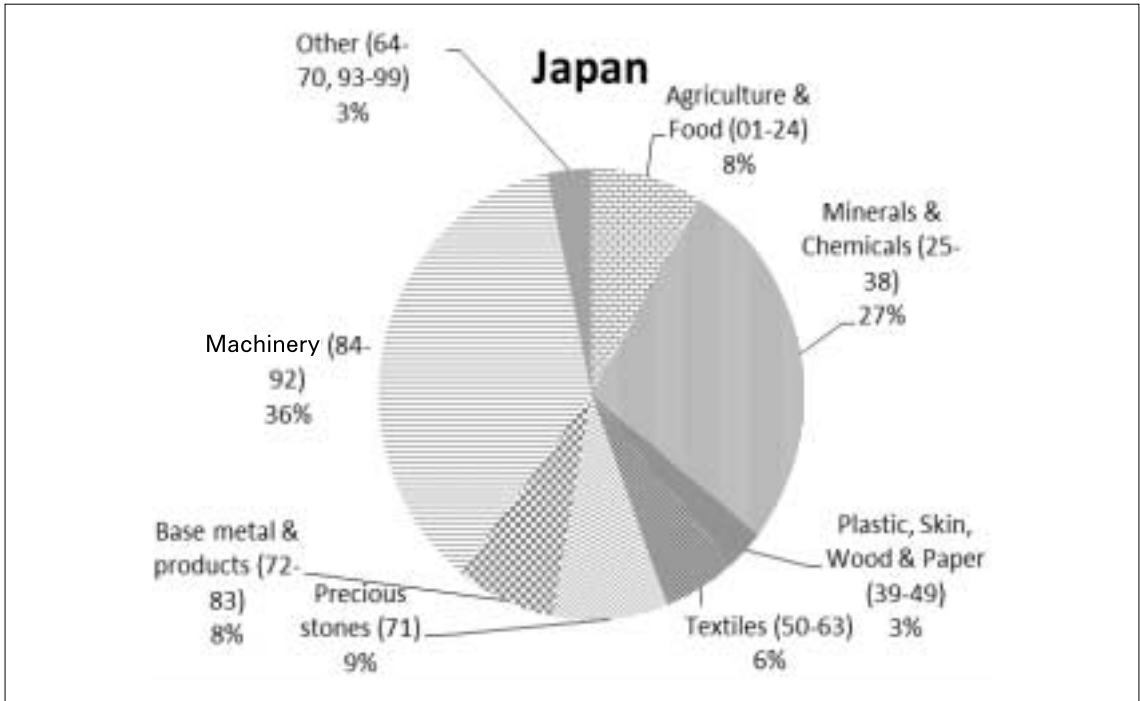


Chart 9. Sectoral share of Japan's extensive margin of export
(Own calculation based on the data of ITC)

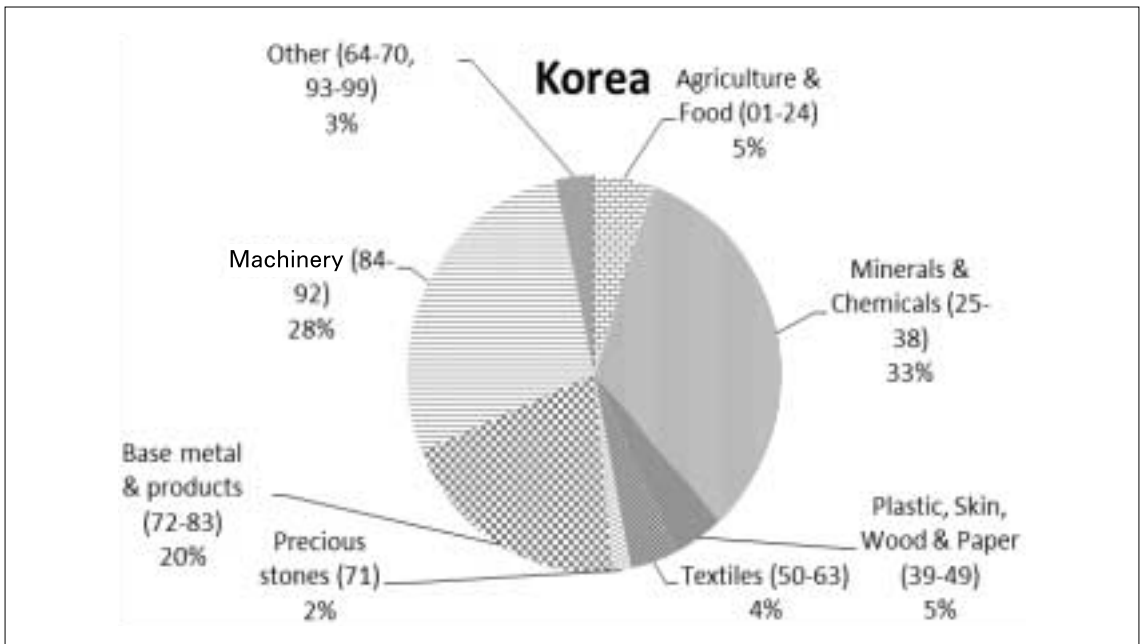


Chart 10. Sectoral share of Korea's extensive margin of export
(Own calculation based on the data of ITC)

Figures

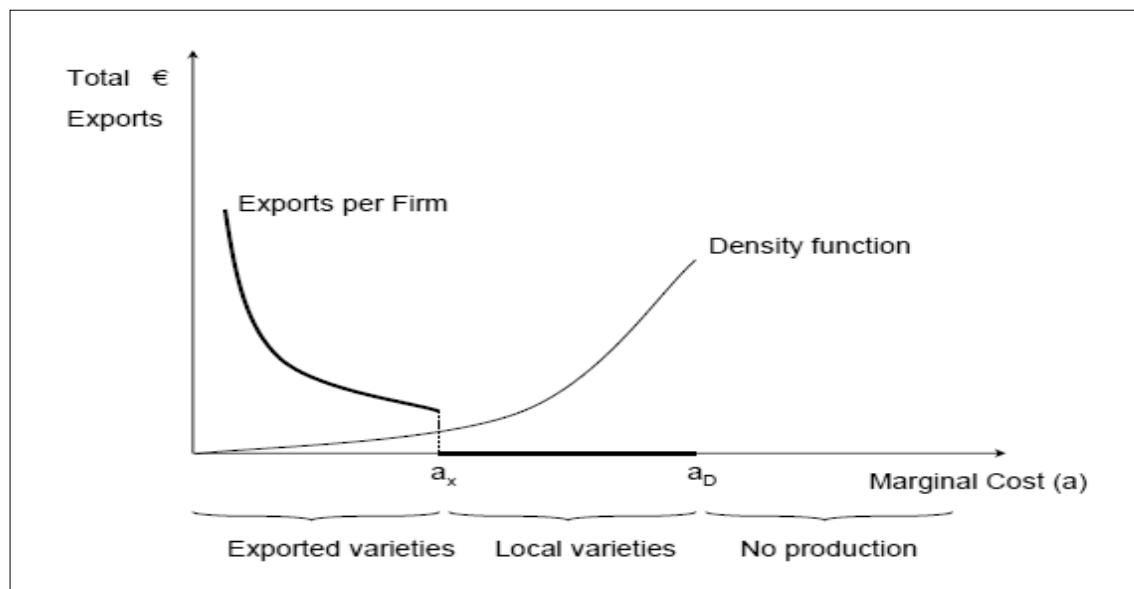


Figure 1. Graphical presentation of the Melitz (2003) model

(Source: Amurgo-Pacheco and Pierola 2008, pp. 12)

References

- Agosin, Manuel, R. 2007. "Export Diversification and Growth in emerging economies." Series Documentos de Trabajos. Vol. 233. No.2. <http://www.econ.uchile.cl/uploads/publicacion/7fec2632-b4c3-45a3-ab78-0970614f5bab.pdf> (January 9, 2011)
- Agosin, Manuel R., R. Álvarez, C. Bravo-Ortega, and E. Puentes. 2010. "Determinants of exports diversifications around the world: 1962-2000." Working Papers. <http://www.econ.uchile.cl/uploads/addon/archivo/a9710cd36a7496f9c1725df9a74e4723167978dd.pdf> (January 9, 2011)
- Amarsanaa, Chingunjav, and Yoshinori Kurokawa. 2012. "The Extensive Margin of International Trade in a Transition Economy: The Case of Mongolia." Tsukuba Economics Working Papers. No. 2011-005. <http://www.econ.tsukuba.ac.jp/RePEc/2011-005.pdf>
- Amin, Sheila, Gutierrez De Pifueres, and Michael Ferrantino. 1997. "Export diversification and structural dynamics in the growth process: The case of Chile." *Journal of Development Economics*. Vol. 52. pp. 375-391.
- Amurgo-Pacheco, A. 2008. Patterns of export diversification in developing countries: intensive and extensive margins. World Bank Publications.

- http://books.google.com/books?hl=en&lr=&id=_bLIgz9--PAC&oi=fnd&pg=PA1&dq=Patterns+of+export+diversification+in+developing+countries:+intensive+and+extensive+margins&ots=xvRsueOdc&sig=vKF_wNOy7p5kdN_qywzjoJmtA88 (January 9, 2011)
- Amurgo-Pacheco, Alberto. 2006. "Preferential Trade Liberalization and the Range of Exported Products: The Case of the Euro-Mediterranean FTA." HEI Working paper. No. 18, Geneva.
- Ando, Mitsuyo and Urata, Shujiro (2011), "Impacts of the Japan-Mexico EPA on Bilateral Trade". REITI discussion paper series. No. 11-E-020.
<http://ideas.repec.org/p/eti/dpaper/11020.html> (October 10, 2010)
- Ando, M. 2007. "Impacts of Japanese FTAs/EPAs: post evaluation from the initial data." Assessing Quality and Impacts of Major Free Trade Agreements. *Tokyo*.
<http://www.rieti.go.jp/jp/publications/dp/07e041.pdf> (March 6, 2012)
- Athukorala, Prema-chandra, and Nobuaki Yamashita. 2006. "Production fragmentation and trade integration: East Asia in a global context." *Journal of Economics and Finance*. No. 17. pp. 233-256.
- Baldwin, R. E., and V. Di Nino. 2006. "Euros and zeros: The common currency effect on trade in new goods." NBER Working Paper. No. 5973.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=942968 (December 9, 2010)
- Baldwin, Richard. 2005. "The euro's trade effects." Prepared for *ECB Workshop* What effects is EMU having on the euro area and its member countries?, Frankfurt.
http://www.ecb.int/events/pdf/conferences/emu/sessionI_Baldwin_Paper.pdf (December 9, 2010)
- Baldwin, Richard, and Daria Taglioni. 2004. "Positive OCA criteria?: Microfoundations for the Rose effect." http://www.iadb.org/intal/aplicaciones/uploads/ponencias/Foro_ELSNIT_2005_02_BaldwinTaglioni.pdf (December 9, 2010)
- Cadot, Olivier, and Vanessa Strauss-kahn. 2011. "Trade Diversification, Income, and Growth: What Do We Know?" *Journal of Economic Surveys*. doi:10.1111/j.1467-6419.2011.00719.x (January 9, 2011)
- Cadot, Olivier, C. Carrère, and V. Strauss-Kahn. 2007. "Export diversification: What's behind the hump?" *The Review of Economics and Statistics*. MIT Press.
http://www.mitpressjournals.org/doi/abs/10.1162/REST_a_00078 (January 9, 2011)
- Damuri, Y.R., Raymond Atje, and A.B. Gaduh. 2006. "Integration and trade specialization in East Asia." CSIS working paper series.
http://www.csis.or.id/working_paper_file/66/wpe094.pdf (January 9, 2011)
- Dennis, Allen, and Ben Shepherd. 2011. "Trade Facilitation and Export Diversification." *The World Economy*. Vol. 34. No. 1. pp. 101-122.

- Feenstra, R. C. 1994. "New product varieties and the measurement of international prices." *The American Economic Review*. Vol. 84. No. 1. pp. 157-177.
- Funke, Michael, and Ralf Ruhwedel. 2001. "Export variety and export performance: empirical evidence from East Asia." *Journal of Asian Economics*. Vol. 12. No. 4. pp. 493-505.
- Helpman, E and Krugman, P (1985), *Market structure and foreign trade*. MIT press.
- Hummels, David, and Peter J Klenow. 2005. "The Variety and Quality of a Nation's Exports." *American Economic Review*. Vol. 95. No. 3. pp. 704-723.
- Imbs, Jean, and Romain Wacziarg. 2003. "Stages of Diversification." *American Economic Review*. Vol. 93. No.1. pp. 63-86.
- Kang, Kichun, and Jong-Ho Kim. 2010. "Exploring the Spectrum of Export Destination: the Geographic Spread of Korean Exports, Its Determinants, and Policy Implications." *The Developing Economies*. Vol. 48. No.4. pp. 421-449.
- Kawai, Masahiro, and Ganeshan Wignaraja. 2011. *Asia's Free Trade Agreements How is Business Responding?* Edward Elgar.
- Kehoe, T.J., and K. J. Ruhl. 2009. "How important is the new goods margin in international trade?" Citeseer. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.148.2417&rep=rep1&type=pdf> (January 9, 2011)
- Krugman, Paul R. 1981. "Intraindustry specialization and the gains from trade." *The Journal of Political Economy*. Vol. 89. No.5. pp. 959-973.
- Krugman, P. 1980. "Scale economies, product differentiation, and the pattern of trade." *The American Economic Review*. Vol.70. No.5. pp. 950-959.
- Melitz, Marc J. 2003. "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity." *Econometrica*. Vol. 71. No. 6. pp. 1695-1725.
- Ng, Francis, and AJ Yeats. 2003. "Major trade trends in East Asia: what are their implications for regional cooperation and growth?" World Bank Publications. No. 3084. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=636446 (November 29, 2011)
- Takahashi, Katsuhide and Urata, Shujiro. 2009. "On the Use of FTAs by Japanese Firms: Further Evidence." Research Institute of Economy Trade and Industry 09-E-028. <http://www.rieti.go.jp/jp/publications/dp/09e028.pdf> (April 10, 2012)

(Received 9th May, 2012)

(Accepted 24th July, 2012)