



# UNSW Business School

## Working Paper

Never Stand Still

Business School

Economics

UNSW Business School Research Paper No. 2016 ECON 02  
First version February 2016  
UNSW Business School Research Paper No. 2016 ECON 02A  
Second version May 2016  
UNSW Business School Research Paper No. 2016 ECON 02B  
This version August 2016

Do Free Trade Agreements Increase The New Goods Margin? Evidence from Korea

Sang-Wook (Stanley) Cho

This paper can be downloaded without charge from  
The Social Science Research Network Electronic Paper Collection:  
<http://ssrn.com/abstract=2736608>

# Do Free Trade Agreements Increase the New Goods Margin? Evidence from Korea

Sang-Wook (Stanley) Cho\*

*School of Economics,  
University of New South Wales,  
Sydney, Australia*

---

## Abstract

This paper analyzes the role of the new goods margin in the growth of trade between Korea and countries with which it has signed free trade agreements (FTAs). Using a methodology developed by Kehoe and Ruhl (2013), I look at the set of least-traded goods (or “new” goods) that constitutes the bottom decile of total trade value in 1995, and calculate its share of trade in 2013, when most of the bilateral trade agreements came into full effect. On average, these new goods account for 28 percent of Korea’s exports and 26 percent of its post-FTA imports. Most of the goods that account for Korea’s trade growth along the extensive margin come from industries that also include intensively traded goods. Looking at some potential drivers of the new goods margin, I find that the prices of the least-traded goods relative to other goods fell, which could potentially explain the growth in the new goods trade. In addition, products that were heavily protected prior to the FTA experience high growth in imports for Korea.

*JEL classification:* F13, F14

*Keywords:* Free trade agreement, Extensive margin, New goods margin, Intensive margin, Tariffs, Relative prices

---

---

\*I thank Arpita Chatterjee, Scott French, Dongryul Lee and participants at the Western Economic Associations Annual Meetings for helpful comments and suggestions. All errors remain my own.

*Email address:* s.cho@unsw.edu.au (Sang-Wook (Stanley) Cho)

## 1. Introduction

In the last two decades, free trade agreements (FTAs) have become an increasingly prevalent and dominant feature of international trade. Korea, too, has sought to participate in this global wave of trade liberalization, and bilateral trade agreements have become a major driving force of the country's trade policy. Starting with the free trade agreement with Chile in 2004, Korea has been actively pursuing FTAs with its major trade partners. This strategy culminated in Korea becoming one of very few countries to sign FTAs with both the US and the European Union by 2012. As these bilateral trade agreements entailed elimination of tariffs and other behind-the-border barriers, FTAs provided a new potential for growth in trade for Korea and its trade partners. The increase in trade not only implied growth in the trade of goods that were already being traded, but also implied new trading opportunities for goods that had not been traded before, or non-traded goods. The former phenomenon is referred to as "changes at the intensive margin," and the latter concept is referred to as "changes along the extensive margin," or the *new goods margin*.<sup>1</sup> This paper analyzes the role of the new goods margin in the growth of trade between Korea and countries or regions that signed FTAs with Korea. The countries/regions I consider are Chile, European Free Trade Association (EFTA)<sup>2</sup>, Singapore, Association of Southeast Asian Nations (ASEAN)<sup>3</sup>, India, European Union (EU), and Peru.

For the data analysis, I use bilateral product-level trade data from the World Bank's World Integrated Trade Solution (WITS) database between 1995 and 2013. I then measure

---

<sup>1</sup>This paper contributes to the emerging literature on the role of the extensive and intensive margins in the growth of trade. There is considerable debate about the relative impact of each margin; Hummels and Klenow (2005) conclude that the extensive margin is the primary avenue for export growth, while Helpman et al. (2008) and Besedes and Prusa (2011) found that the intensive margin plays the dominant role. It is worthwhile, however, to note that these terms do not necessarily have the same meaning. In some cases, extensive margin refers to the number of exporting firms for a given good, and in other cases such as Helpman et al. (2008), it refers to the country-pair-specific export relationship. In this paper, I consider product-specific trade margins.

<sup>2</sup>EFTA countries are Iceland, Liechtenstein, Norway, and Switzerland.

<sup>3</sup>ASEAN countries are Brunei, Myanmar, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam.

the new goods margin in international trade using the methodology introduced by Kehoe and Ruhl (2013). They define the set of least-traded goods (or “new” goods) to include goods that were initially either non-traded or were traded in small amounts. Altogether, the least-traded goods cumulatively account for the bottom 10 percent of total bilateral trade value in the initial year of our sample period. I then trace how much the trade in these least-traded goods grows over time and ask whether the FTAs had any impact in their growth. I further restrict my focus to a subset of the least-traded goods with the largest gain in terms of trade volume, which I label as “top gainers” within the least-traded goods, and characterize their industry distribution.

Recently, several studies in the literature have identified the importance of the new goods margin during periods of trade liberalization. Since Melitz (2003), researchers have used models with heterogeneous firms facing fixed costs in exporting in order to study export decisions at the firm level. For example, Arkolakis (2010) uses market penetration costs to understand the positive correlation between trade liberalization and the number of small exporters in each exporting market. In the empirical literature, with the help of detailed firm-level and industry-level data, papers such as Arkolakis et al. (2008) find growth in the variety of imported goods during trade liberalization. Broda and Weinstein (2006) argue that the effect of new goods and varieties in the United States economy is large and estimate welfare gains at 2.6 percent due to the import of new varieties between 1972 and 2001. Kehoe and Ruhl (2013) analyze several trade liberalization episodes, such as the North American Free Trade Agreement (NAFTA); they find a strong relationship between the initial trade composition and its post-liberalization growth. Furthermore, using the methodology of Kehoe and Ruhl (2013), Dalton (2014) shows that following China’s membership in the World Trade Organization, the set of least-traded goods exported from China to Japan increases its share from 10 percent to 22 percent, while Amarsanaa and Kurokawa (2012) study the period of structural transition in Mongolia and document large increases in the new goods margin of Mongolia’s trade with major trade partners.

The main findings from the analysis of the growth of new goods margin are as follows. First, there is a significant increase in trade volumes for the least-traded goods during 1995 and 2013, which includes the years of FTAs under consideration. These least-traded goods' share with FTA countries increases, on weighted average terms, from 10 percent in 1995 to 28 percent for exports and to 26 percent for imports in 2013. This magnitude of growth in the new goods margin in Korea is comparable to the results in Kehoe and Ruhl (2013) on the trade between Canada and Mexico during the 1990s which included the implementation of NAFTA in 1994, and in Sandrey and Van Seventer (2004) on New Zealand's export to Australia after the Closer Economic Relations Trade Agreement in the mid-1980s. When compared to the control group of countries with no FTAs with Korea (consisting of China, Japan and the US), the results show mixed signals. That is, for the import of least-traded goods, I find that their share grew more with countries with which Korea signed an FTA. However, for the export of least-traded goods, there is weak indication that FTA brought in any additional impact on the new goods margin as I find larger increases in the share of least-traded goods exported to countries with no FTAs.

Second, most of the trade growth by the least-traded goods is driven by a small subset of goods that experience explosive growth in trade. On average, these goods consist of approximately one tenth of all the least-traded goods and account for around 90 percent of the trade share held by all least-traded goods in 2013. These top gainers are concentrated in industries from which most of the existing top-traded products come. In other words, Korea's trade growth along the extensive margin took place in industries that are also responsible for the growth in the intensive margin.

Third, I examine the role of tariffs and relative prices on the new goods margin. In line with Romalis (2007) which points out a significant correlation between pre-liberalization tariff rates and import growth, tariff barriers in Korea were higher on the least-traded goods than other goods. In addition, from a simple logit regression, we learn that the probability of a non-traded good in 1995 being imported in 2013 increases with the tariff rate, implying

that a removal of high tariff barriers through an FTA in the least-traded sectors may be associated with the growth in new goods margin in imports. For Korean exports, however, there is weak indication that the least-traded exports were subject to higher tariffs than other exports. As for the role of relative prices, I find that the prices of the least-traded goods relative to other type of goods fell for most of the countries that we consider. On average, the magnitude of the fall in the relative prices of the least-traded exports is greater with the non-FTA countries while the fall in the relative prices of the least-traded imports is larger with the FTA countries.

The specific contributions of this paper are as follows. First, I use specific events to understand the impact of trade liberalization on the variety of imports and exports. I then compare my results with a set of countries without FTAs to analyze whether the growth of the new goods margin was significantly different under country-specific episodes of trade liberalization. As FTAs involve a bilateral removal of tariffs only for the countries involved, they provide a clean policy experiment wherein I conduct a comparison study with the control group of countries that were not affected. In addition, by grouping several cases of FTAs together, I provide a more general implication than cases where a single event was analyzed. Second, in addition to documenting the new goods margin, this paper expands the results of Kehoe and Ruhl (2013) by identifying potential drivers of the new goods margin and analyzing the roles of tariffs and relative prices on trade growth. Third, this paper provides useful implications for policy makers to more accurately analyze the distributional impacts of trade policies. For instance, trade growth along both intensive and extensive margins in Korea was concentrated in a few selected industries. More recently, a free trade agreement with China came into effect in late 2015, and our methodology can be used to evaluate the impact of such policies on individual industrial sectors.

The rest of the paper is organized as follows. Section 2 presents an overview of Korea's FTAs. Section 3 describes the methodology for data analysis. Section 4 describes the main results and Section 5 discusses some main factors driving the results. We conclude in Section

6.

## 2. A Brief Overview of Korea's FTA

Free trade agreements (often known as “preferential trade agreements”) are international treaties that reduce barriers to tariffs, quotas and other restrictions on trade and investment, which could take place between two countries or among a group of countries. In the last two decades, these free trade agreements have become an increasingly prevalent and dominant feature of international trade. Statistics available on the World Bank's Global Preferential Trade Agreements Database list more than 330 FTAs in effect as of 2015. Of these, Korea has been an active pursuant of FTAs as it relies heavily on trade. Starting with an FTA with Chile that came into effect in April 2004, Korea has since then signed FTAs with the following countries as of 2012: Singapore (2006), European Free Trade Association (EFTA) (2006), Association of Southeast Asian Nations<sup>4</sup> (ASEAN) (2008), India (2010), European Union<sup>5</sup> (EU) (2011), and Peru (2011). As of 2013, these countries covered by the FTAs account for 26 percent of Korea's total trade.<sup>6</sup>

Most empirical research studying FTAs documents an increase in trade after signing FTAs. Baier and Bergstrand (2007), for example, show that, on average, an FTA approximately doubles two members' bilateral trade after 10 years. There is also a similar trend in Korea's trade with its FTA partners as shown by the average growth rate of trade (nominal exports and imports) before and after signing of the respective FTAs shown in Table 1. Here, we calculate the average annual growth rate from 1995 up to one year prior to the FTA implementation (labelled as “pre-FTA years”) and the average annual growth rate from the year prior to the FTA to 2013 (labelled as “post-FTA years”). For all the countries and regions, with the exception of India and the EU, there has been an explosive growth in

---

<sup>4</sup>While negotiations took place with each individual member country, by 2008 all but Thailand had signed the agreement. Tariff removal with Thailand came into effect in 2010.

<sup>5</sup>I consider the European Union to consist of 28 member countries.

<sup>6</sup>We exclude more recent cases of FTAs with the US (2012) and Turkey (2013) from our analysis.

**Table 1. Free Trade Agreement Timeline and Trade Growth**

FTA Partner	Year of FTA in Effect	Average Annual Growth Rate	
		(pre-FTA years)	(post-FTA years)
Chile	2004	-0.6%	16.3%
Singapore	2006	3.7%	12.5%
EFTA	2006	0.9%	14.9%
ASEAN	2008	8.1%	11.1%
India	2010	14.1%	9.6%
EU	2011	6.4%	4.4%
Peru	2011	12.8%	20.0%
Average	N.A.	6.5%	12.7%

**Table 2. Trade Growth Comparison**

Partner	Trade Share in 1995	Average Annual Growth Rate	
		(1995–2004)	(2004–2013)
FTA partners	27.3%	6.0%	9.7%
USA + China + Japan	46.5%	6.8%	7.7%
Rest of the World	26.2%	8.2%	11.5%



trade after signing the FTA. On average, the growth rate almost doubles during the post-FTA years. This is even more remarkable given that for most cases, post-FTA years include the 2009–2010 global financial crisis that witnessed a big slowdown in international trade growth.

For reference, Table 2 compares the annual growth rate of Korea’s trade with the FTA partners with some major non-FTA partners (US, China and Japan combined) as well as the rest of the world during the sample periods before and after 2004. For all groups we consider, the trade growth increases in the latter half of the sample period. However, the annual trade growth increases the most among the FTA partners, growing from 6.0% to 9.7% (62 percent increase), compared to other major trade partners growing from 6.8% to 7.7% (13 percent increase) and the rest of the world from 8.2% to 11.5% (40 percent increase). In fact, the growth rate of trade with the FTA partners exceeds that with the major non-FTA partners in the second half of the sample period in which most FTAs came into effect.

### 3. Methodology

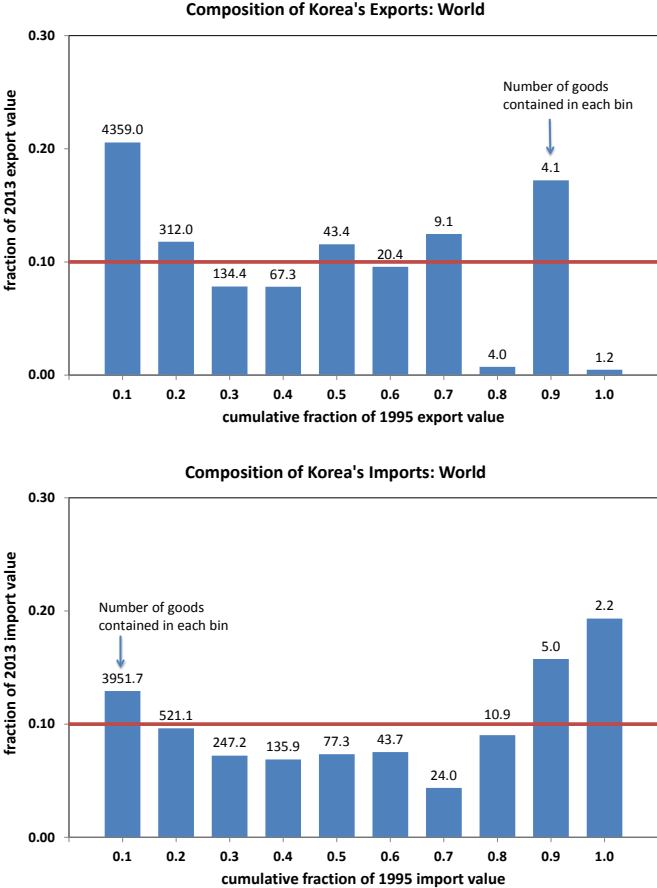
For our analysis, I use detailed merchandise trade data taken from the World Bank’s World Integrated Trade Solution (WITS) database to extract Korea’s annual bilateral trade with its FTA signees as well as some other main trade partners (US, China and Japan). Our sample period begins in 1995 and ends in 2013. Our level of disaggregation is at 6-digit Harmonized System (HS) codes, which contain approximately 5300 classification of goods. In order to construct a measure of the new goods margin in international trade, we adopt the latest methodology introduced by Kehoe and Ruhl (2013)<sup>7</sup> that defines the set of least-traded goods to include goods that were initially not traded or were traded in a small positive volume. In our analysis, while the year 1995 is the initial year in study, we take the

---

<sup>7</sup>Kehoe and Ruhl (2013) use the 5-digit Standard International Trade Classification (SITC) Revision 2 code which has roughly one third the number of products than the 6-digit HS code. In addition, I find an anomaly in the SITC classification in the product category 93100 (“Special transactions, commodity not classified according to class”) which shows an abnormal growth in recent years and may bias the outcome.

average trade value of the first three years (1995–1997) and reorder the goods according to the ascending order of trade. This way, the ordering of the goods depends less on the choice of the initial year, as suggested by Kehoe and Ruhl (2013). We then group the goods into deciles according to their cumulative value, and the basket of goods that constitutes the first decile (or the bottom 10 percent of total bilateral trade value) is called the “least-traded” goods. We then trace the growth of trade value for each decile bin between 1995 and 2013 with particular focus on the bottom decile that contains the least-traded goods.

**Figure 1. Composition of Total Trade (1995-2013)**



As a reference, I show the decile distribution of Korea’s total imports and exports with the world in Figure 1. The horizontal axis shows the cumulative fraction of 1995 trade value in deciles, and the vertical axis represents the fraction of trade value in 2013. Numbers shown above each column bar indicate the number of goods that make up each decile bin.

For example, out of a total of 4955 goods that recorded positive exports at least once during the sample period, there are 4359 “least-traded” goods that make up the bottom 10 percent and 1.2 “top-traded” goods that make up the top 10 percent of Korea’s world exports in 1995. In order to fit the goods into deciles in value terms, some goods had to be split across different bins. For example, in 1995, the top export good in Korea was semiconductors, or HS code 854211 (“Monolithic Integrated Circuits, Digital”), with 9.5 percent of total export value. The second largest export product was cargo vessels, or HS code 890190 (“Cargo vessels other than tanker or refrigerated”), with 2.8 percent of total export in 1995. As the cumulative share of the first two products exceeds 10 percent, the second good was split across the top two bins, with 0.2 fraction allocated to the top decile bin and the remaining 0.8 fraction to the second highest decile bin. The height of each column indicates how much the basket of goods in each bin accounts for the trade value in 2013. For instance, the basket of least-traded goods in 1995 that comprised the lowest 10 percent of total exports now makes up 21 percent of the total value of exports in 2013. Finally, the horizontal line across the vertical axis value of 0.1 provides a reference point to the relative growth of trade in each bin. If the bar exceeds the line, this implies that the growth of trade in the given bin was higher than the average growth of trade. If all the bars were to be aligned at the horizontal line, this would imply that the growth of trade across different goods bin had been uniform with no change in the distribution over time.

A quick comparison of exports and imports shows opposite patterns in the relative growth rate of least-traded goods (in the bottom decile) and top-traded goods (in the top decile). Whereas export growth was helped by growth in the least-traded goods, import growth was mainly due to growth in the top-traded goods. Contrary to exports, the imports of the least-traded goods grows from 10 percent of imports in 1995 to only 13 percent in 2013. On the other hand, the top decile bin in imports grows its share from 10 percent in 1995 to 19 percent in 2013. This disproportionate growth in the top-traded imports mostly reflects the import of crude oil (or HS code 270900), which initially makes up 8 percent of total imports

**Table 3. Total Trade Growth of Least-Traded Goods (1995–2013)**

	Least-Traded Goods (LTG)	Top Gainers of LTG
(Exports)	Number of Goods	4359
	Share in 1995 (%)	10.0
	Share in 2013 (%)	20.6
	$\bar{x}_{1995}$ (US\$ Mil)	–
(Imports)	Number of Goods	3952
	Share in 1995 (%)	10.0
	Share in 2013 (%)	12.9
	$\bar{x}_{1995}$ (US\$ Mil)	–

in 1995 but increases its share to 19 percent in 2013.<sup>8</sup>

The number of goods contained in different decile bins are heavily skewed towards the bin that contains the least-traded goods. For example, for Korea’s world exports, around 88 percent of goods are contained in the least-traded bin, while in imports, with 3951.7 goods in the least-traded bin out of 5019 goods, the fraction stands around 79 percent. Despite the least-traded bin containing a large number of goods, majority of those goods are still traded in low volumes in 2013. In fact, it is only a small fraction of the least-traded goods that drives the overall growth of trade in the least-traded bin. To identify these goods that experience a big growth in trade volume, I first define  $\bar{x}_t$  as the cut-off value for goods to be contained in the set of the least-traded goods such that good  $i$  in year  $t$  is classified as least-traded if  $x_{i,t} \leq \bar{x}_t$ . Using this  $\bar{x}_t$  as our threshold, I extract a subset of least-traded goods if  $x_{i,t} \leq \bar{x}_t$  and  $x_{i,s} > \bar{x}_t$  for  $s > t$ . These goods are labelled “top gainers” of the least-traded goods.

As summarized in Table 3, we see that these top gainers constitute around 16 percent of the least-traded goods in exports and 22 percent of the least-traded goods in imports.

---

<sup>8</sup>The top three imported products in 1995 were crude petroleum oil (HS code 270900), semiconductors (HS code 854211), and gold (HS code 710812). Only crude oil remains in the top three in 2013. The large increase in the share of crude oil imports is partly due to the steep rise in the price of crude oil.

Despite taking a small fraction within the least-traded goods, these top gainers are the main drivers of the growth in the least-traded goods. For example, while the share of the least-traded exports grew from 10 percent in 1995 to 20.6 percent in 2013, the top gainers alone accounted for 18.5 percent of total exports in 2013. Similarly, for imports, the top gainers accounted for 10.8 percent of total imports in 2013, which covers most of the 12.9 percent share held by all of the least-traded imports. Table 3 also shows the threshold values  $\bar{x}_t$ . In relative terms,  $\bar{x}_t$  represented 0.020% and 0.013% of total world exports and imports in 1995, respectively.

#### 4. Benchmark Results

I analyze the growth of Korea's trade with a set of countries or regions with which Korea signed FTAs, and another set of countries with which Korea did not sign FTAs. The first set includes Chile, Singapore, EFTA, ASEAN 10, India, EU 28, and Peru. The second set includes China, Japan and the US. In terms of trade volume, these two sets account for around 27 percent and 46 percent of Korea's total trade in 1995, respectively. For each country pair and trade flow, we look at the composition of trade and the growth of the least-traded goods.

##### *4.1. Korea's Export of Least-Traded Goods*

###### *4.1.1. Composition of Exports*

Figure 2 and 3 show the decile distribution of goods exported to countries with FTAs and countries without FTAs, respectively. For exports, the top-traded goods during the years 1995 to 1997 were either small passenger cars (HS code 870322), semiconductors (HS code 854211), or distilled petroleum oil (HS code 271000). Small passenger cars were the top Korean exports to Chile, India, and Peru, while semiconductors were the top export item to Singapore, ASEAN, EU, Japan, and the US. For China, the top Korean export product was distilled petroleum oil. The column in the top decile bin of the distribution in Figure 2 and 3 reflects the growth rate of these top export goods, which shows that the relative importance

Figure 2. Composition of Exports (1995-2013) FTA Countries

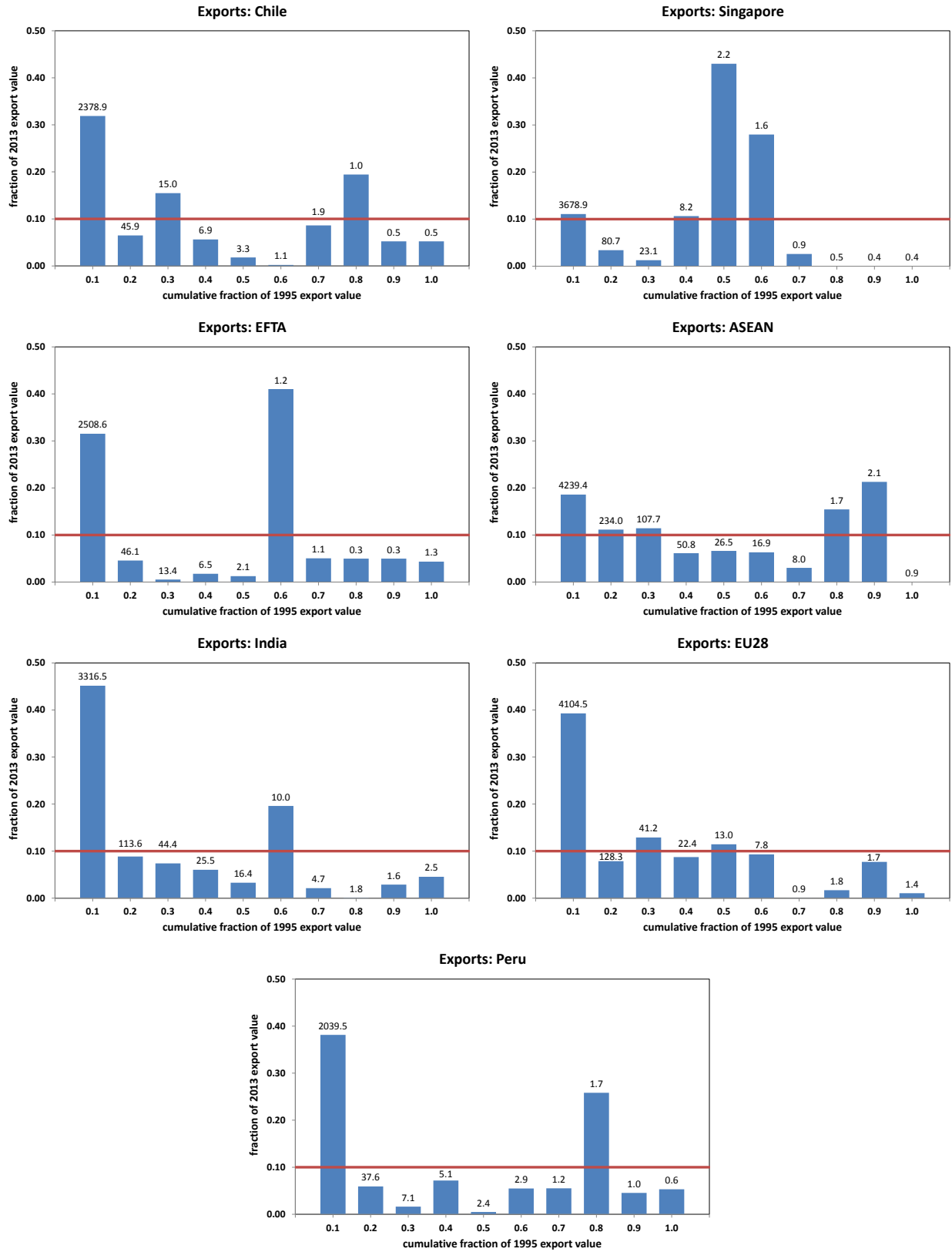
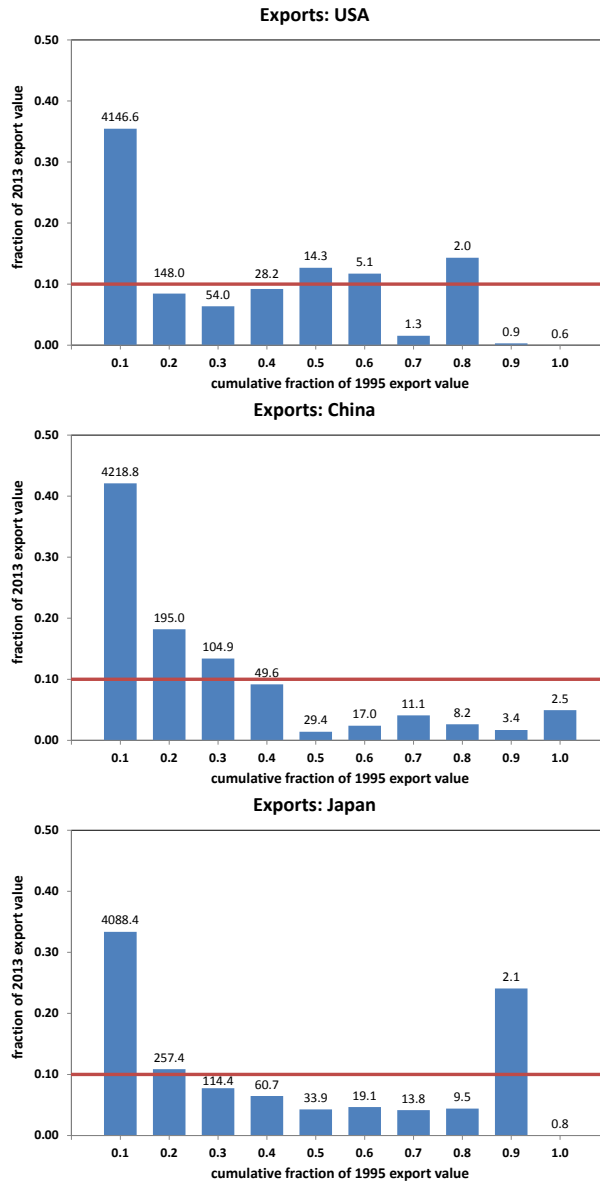


Figure 3. Composition of Exports (1995-2013) Non-FTA Countries



of top export products diminished over time. For instance, semiconductors (HS code 854211) which was the top export product in 1995 no longer show up in the top 20 export list for any of the trade partners we consider in 2013. In 2013, the top three export products are medium-sized passenger cars (HS code 870323), distilled petroleum oil (HS code 271000), and other monolithic integrated circuits (HS code 854219). At the 4 digit HS code level, the top three exports remain unchanged between 1995 and 2013.

**Table 4. Least-Traded Goods (LTG) in Korean Exports**

Partner	Shares in 2013 (%)		Number of Goods			$\bar{x}_{1995}$	
	LTG	Top Gainers	All	LTG	Top Gainers	US\$K.	$\frac{\bar{x}_t}{\sum x_{i,t}}$ (%)
Chile	31.9	27.8	2455	2378.9	124	786.0	0.123
Singapore	11.1	8.0	3797	3678.9	203	3643.0	0.054
EFTA	31.5	28.1	2581	2508.6	82	894.9	0.093
ASEAN	18.6	16.3	4688	4239.4	602	4643.1	0.026
India	45.2	43.8	3537	3316.5	565	619.3	0.055
EU 28	39.3	35.1	4323	4104.5	339	7886.8	0.044
Peru	38.1	35.9	2099	2039.5	161	323.4	0.167
<b>Weighted Mean (FTA)</b>	<b>28.3</b>	<b>24.9</b>	4230.5	3969.0	387.9	5669.4	0.044
USA	35.4	31.1	4401	4146.6	329	9718.7	0.040
China	42.1	41.2	4640	4218.8	762	3417.3	0.037
Japan	33.4	29.7	4600	4088.4	449	3648.6	0.021
<b>Weighted Mean (Non-FTA)</b>	<b>35.9</b>	<b>32.5</b>	4511.4	4140.0	447.8	6530.8	0.033

#### 4.1.2. Least-Traded Exports

For the least-traded goods, we focus on the lowest bin in the decile distribution. I summarize the growth of trade in goods contained in the least-traded bin in Table 4. This bin is typically characterized by disproportionately large number of goods and contains more than 90 percent of goods traded with most partners. I also show the share of exports by the top gainers within the least-traded goods in the table as well as the threshold level  $\bar{x}$  in nominal units (thousand US\$) as well as in fraction of total exports in 1995. For averages, I use a weighted average using total exports in 1995.<sup>9</sup>

For countries with FTAs, there is a sizeable growth in exports of the least-traded goods between 1995 and 2013. Across Korea's FTA signees, the collective trade share of least-traded goods grows over time from 10 percent to as low as 11 percent of total exports with Singapore, to as high as 39 percent with the EU and 45 percent with India. Looking at the weighted average, the export share of least-traded goods with the FTA partners grows from

<sup>9</sup>The weights are reported in the Appendix.



10 percent in 1995 to 28 percent in 2013. This growth in the new goods margin is similar in magnitude to the results in Kehoe and Ruhl (2013) on the trade among the NAFTA country pairs during the 1990s, which included the implementation of NAFTA in 1994. Kehoe and Ruhl (2013) compare the growth of the new goods margin for the NAFTA country pairs with the growth of the least-traded US exports to Germany, Japan, and the UK (where no major trade policy changes took place), and find that trade liberalization episodes trigger a larger growth in the extensive margin than periods of regular business cycle fluctuation. In the case of Korea, I also analyze the growth of Korea's exports to a set of countries with which Korea did not sign FTAs represented by China, Japan and the US. In fact, contrary to Kehoe and Ruhl (2013), our sample period exhibits even larger increases in the share of least-traded goods exports to countries without FTAs. That is, the weighted average of share of least-traded goods in 2013 is higher in the non-FTA countries at 36 percent than the set of FTA countries at 28 percent.

To focus more on the extensive margin of export growth, I also report the export shares held by the top gainers within the least-traded exports. For Korea's FTA partners, these top gainers constitute less than one tenth of all the least-traded products. However, their export shares in 2013 account for almost 90 percent of the export share held by all of the least-traded goods. On average, they hold approximately 25 percent of total exports to the FTA partners. Similarly, these top gainers also take a large fraction of exports to the non-FTA partners, with around 33 percent of total exports in 2013.

To characterize the export dynamics of the least-traded goods, I restrict my attention to the 20 top gainers for each of the FTA partners within the least-traded product bin according to their exports share in 2013. Figure 4 shows the industry distribution of the top gainers at the two digit HS code level, and as a comparison, I also show the distribution of top export products. I find that the top gainers in the least-traded exports are concentrated in the following industries: Electrical machinery and equipment (HS code 85), Machinery and mechanical appliances and parts (HS code 84), Plastics (HS code 39), Iron and steel (HS

code 72), and Vehicles and parts (HS code 87). The figure also shows that these industries are also the same industries where the top exported goods are represented. In other words, at an industry level, industries where trade grows along the extensive margin overlap with those where trade grows along the intensive margin.

**Figure 4. Industry Distribution of Top Gainers in Exports**



#### 4.1.3. Time Series of Least-Traded Exports

I also analyze the growth of least-traded goods across the whole sample period as shown in Figure 5. This time series measure is useful for identifying the timing of the FTA on the new goods margin. For the countries with FTAs in place, a vertical bar indicates the year in which the FTA came into effect. We notice two patterns in the time series: first, the changes in the least-traded goods' share are not always monotone over time. For example, for exports to India, the share of trade in the least-traded goods rose from 10 percent in 1995 to 51 percent in 2003, but decreased to as low as 41 percent by 2010 when the FTA came into effect. The explosive growth in the new goods margin in the late 1990s and early 2000s in India coincides with the period of trade liberalization reforms and may reflect tariff reductions taking place during that time (Panagariya, 2001). Similarly, the share of the least-traded exports to Chile continued its increase after the FTA in 2004 and peaked at 68 percent in 2007, but declined afterwards. By 2013, the share was at 32 percent, which is the

same level as in 2004. Second, Figure 5 enables us to understand whether signing an FTA had any direct impact on the new goods margin and also to determine the timing of growth. Surprisingly, for many countries, there is no evidence of FTAs affecting the growth of the least-traded goods in the short run. The cases where the share of the least-traded exports increased in the years following up to or after the FTA were with Chile, EFTA, ASEAN and the EU. For other countries with FTAs, I find no immediate impact of the FTA on expanding the new goods margin, despite its growth over a longer time horizon.

#### *4.2. Korea's Import of Least-Traded Goods*

##### *4.2.1. Composition of Imports*

For imports, the top-traded products between 1995 and 1997 varied by region and country. From developed countries, the largest import items were semiconductors (HS code 854211) and machinery and mechanical appliances (HS code 847989), which also happen to be among Korea's top export goods. From EFTA and EU, the top import product was gold (HS code 710812). The top imports from developing countries were mostly country-specific mineral resources such as iron ores (HS code 260111) from India, refined copper (HS code 740311) from Peru and Chile, and natural gas (HS code 271111) from the ASEAN countries. Figure 6 and 7 show the distribution of imports, which is heavily skewed to the least-traded goods. In 2013, top imports from developing regions are still concentrated in natural resource products. For example, top imports from Chile, Peru, and the ASEAN countries are copper ores (HS code 260300) and natural gas (HS code 271111). Similar to Korean exports, semiconductors (HS code 854211) disappear from the top import list. Instead, other monolithic integrated circuits (HS code 854219) are listed as top imports from Singapore, US, Japan and China . At the 4 digit HS code level, however, the main import products in 2013 remain the same as those in 1995.

Figure 5. Time Series of Least-Traded Exports

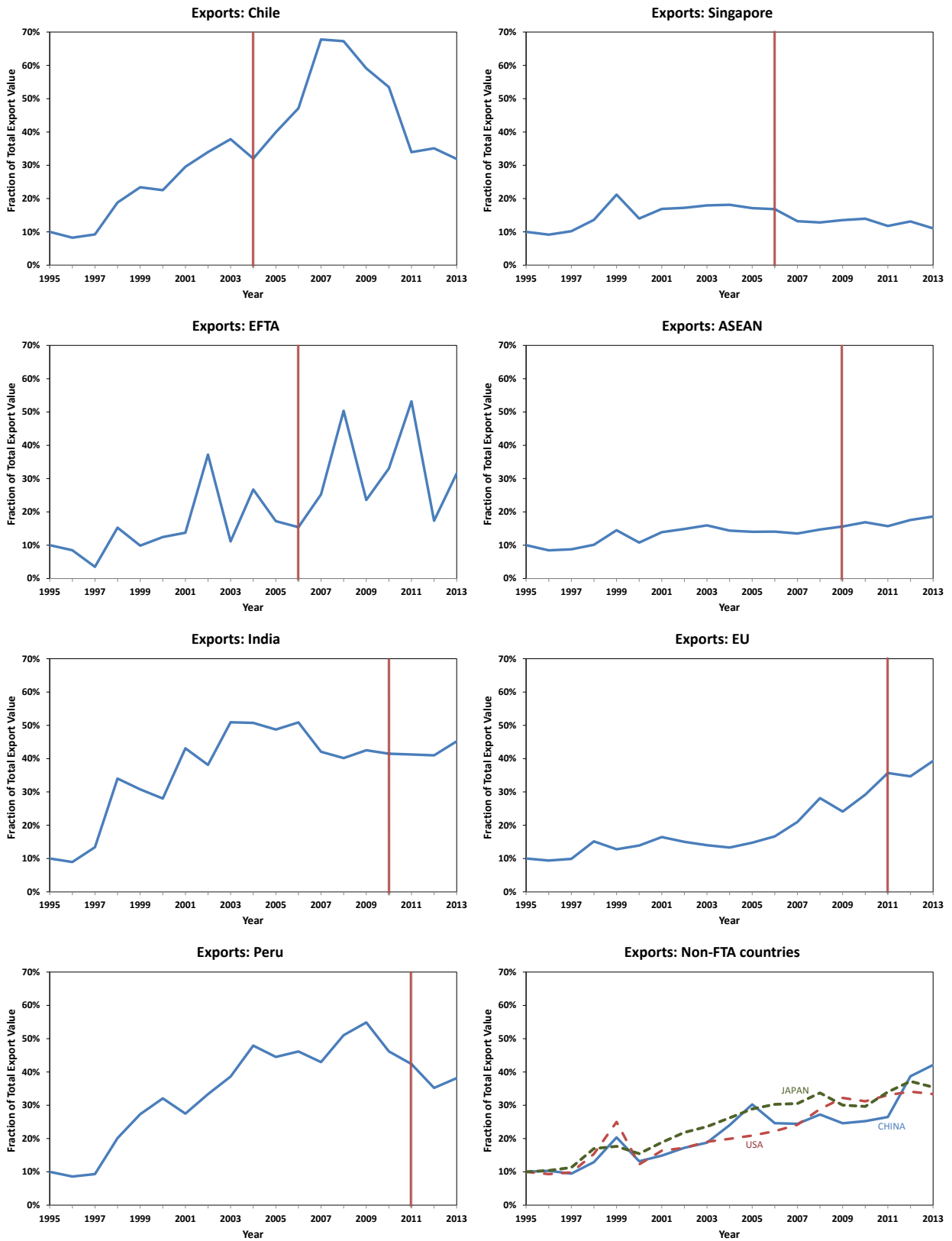


Figure 6. Composition of Imports (1995-2013) FTA Countries

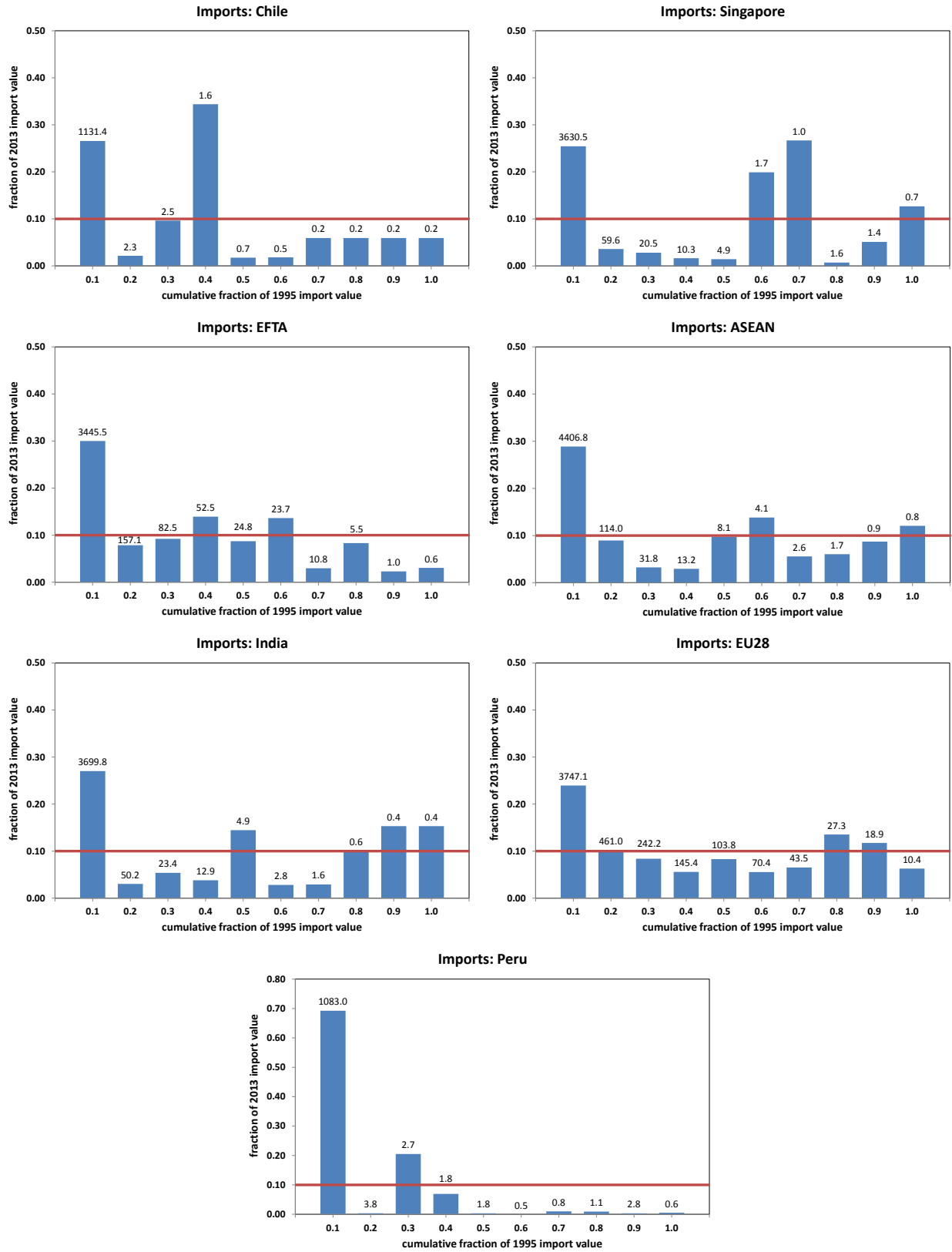
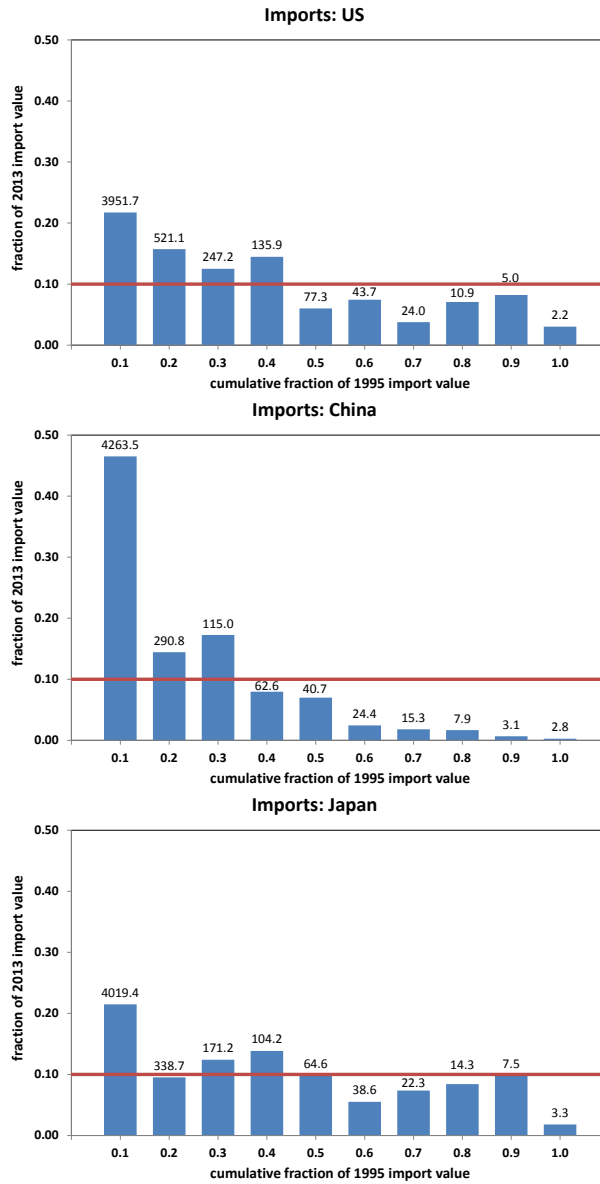


Figure 7. Composition of Imports (1995-2013) Non-FTA Countries



#### 4.2.2. Least-Traded Imports

Table 5 summarizes the shares of the least-traded import goods at the end of the sample period in 2013. We find that from countries with FTAs, there is a robust growth in the share of the least-traded goods between 1995 and 2013. The import share of least-traded goods increases from 10 percent to around 24 percent of total imports from EU to as high as 69 percent with Peru. On average, the share of least-traded imports from the FTA countries increases from 10 percent to 26 percent in 2013. Contrary to the case of exports, I find that

**Table 5. Least-Traded Goods (LTG) in Korean Imports**

Partner	Shares in 2013 (%)		Number of Goods			$\bar{x}_{1995}$	
	LTG	Top Gainers	All	LTG	Top Gainers	US\$K.	$\frac{\bar{x}_t}{\sum x_{i,t}}$ (%)
Chile	26.6	20.2	1140	1131.4	18	30889.3	3.026
Singapore	25.4	23.2	3732	3630.5	143	2138.7	0.099
EFTA	30.0	28.1	3804	3445.5	274	675.7	0.040
ASEAN	28.9	25.9	4584	4406.8	498	4769.9	0.047
India	27.0	23.8	3797	3699.8	264	913.8	0.114
EU 28	23.9	21.9	4870	3747.1	597	2750.6	0.015
Peru	69.3	68.1	1099	1083.0	16	2039.3	1.569
<b>Weighted Mean (FTA)</b>	<b>25.9</b>	<b>23.5</b>	4508.4	3791.7	496.5	3939.8	0.134
USA	21.7	16.0	4881	4310.3	309	6052.4	0.020
China	46.5	45.4	4826	4263.5	1575	1792.9	0.024
Japan	21.5	18.3	4784	4019.4	308	5805.3	0.018
<b>Weighted Mean (Non-FTA)</b>	<b>24.2</b>	<b>20.2</b>	4830.3	4170.7	441.6	5490.4	0.019

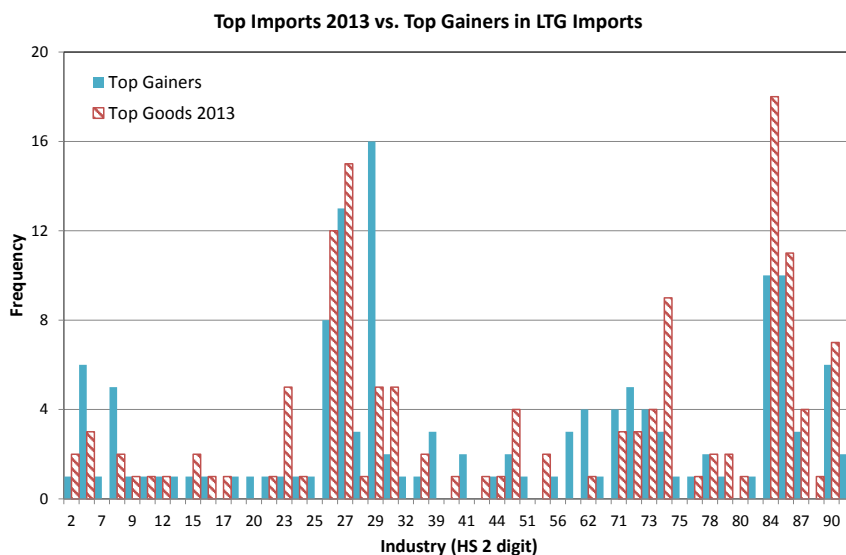
the growth of the least-traded goods in imports is higher with the FTA partners than with the non-FTA partners. That is, the average share of least-traded imports from the control group countries in 2013 is lower at 24 percent.

Table 5 also reports the shares of the top gainers within the least-traded imports. While the number of products classified as least-traded takes more than 80 percent of all products being traded, most of these goods are not traded in high volumes. On the other hand, a handful of products classified as the top gainers drive most of the increase in imports of the least-traded goods. From Korea's FTA partners, these top gainers constitute around 13 percent of the least-traded goods but accounts for more than 90 percent of the import share generated by the least-traded goods.

To understand the import dynamics of the least-traded goods, I restrict my attention to the 20 top gaining products within the least-traded products for each of the FTA partners. Figure 8 plots the two digit HS code level industry distribution of the top gainers as well as the top imported products in 2013. At the two digit HS code level, these top gainers

are heavily represented in the following industries: Organic chemicals (HS code 29), Mineral fuels and oils (HS code 27), Electrical machinery and equipment (HS code 85), Machinery and mechanical appliances and parts (HS code 84), and Ores slag and ash (HS code 26).

**Figure 8. Industry Distribution of Top Gainers in Imports**

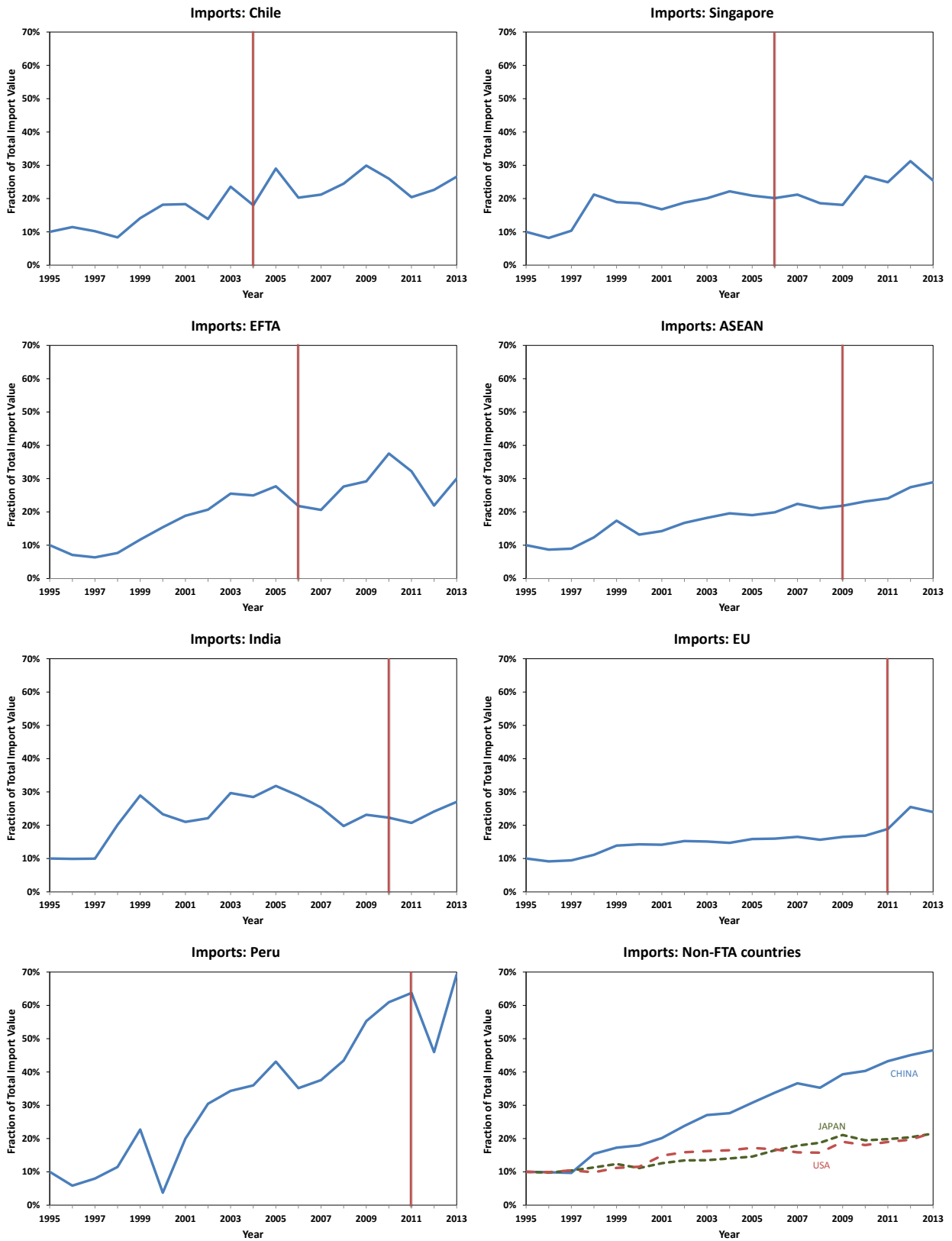


#### 4.2.3. Time Series of Least-Traded Imports

We also analyze the timing of the growth of least-traded goods in Figure 9. Most of the increase in the share of imports of least-traded goods from the EU took place during the last three years of the sample period, possibly driven by the FTA that came in effect in 2011. On the other hand, the new goods margin in imports grows explosively from 10 percent to more than 64 percent with Peru by the year in which respective trade agreements were implemented. Compared to the time series of least-traded exports, the time series for imports is more consistently monotone over time. In addition, in terms of the timing of FTAs and the growth of the new goods margin, there are mixed signs of evidence. For example, there are signs of increasing imports of the least-traded goods from Chile, ASEAN, EU, and Peru around the years when FTAs came into effect. This is consistent with the findings of Kehoe and Ruhl (2013) that timing of NAFTA in 1994 coincides with an increase in the share of least-traded goods trade between Canada and Mexico. However, there is no overwhelming support across all the FTAs in our study as the share of least-traded goods



Figure 9. Time Series of Least-Traded Imports



import declines or stays constant in the immediate aftermath of the FTAs with Singapore, India and EFTA.

## 5. Main Factors

In this section, I raise a few simple questions regarding the driving forces behind the outcomes in the Benchmark Results section. While the new goods margin increased in both Korea's imports and exports, I note that the growth was more salient with Korea's imports from the FTA partners, especially when compared to the set of non-FTA countries. On the other hand, the growth of Korea's new goods exports to the FTA partners was outpaced by the non-FTA partners. In this regard, we can ask two following questions similar to Amarsanaa and Kurokawa (2012): First, can the tariff differentials explain the asymmetric outcome of FTAs on the new goods margin? Second, did the prices of least-traded goods relative to other types of goods fall more in the imports than the exports?

### 5.1. Role of Tariffs

One of the main benchmark results is that FTAs affected the variety of imports more than the variety of exports in Korea. One possible reason is that on the import side, Korea's tariff rates were relatively high or its tariff reduction during the sample period was relatively minimal compared to its partners. Given that the tariff barriers were higher in Korea than its trade partners, the elimination of the trade barriers could have had a larger impact on Korea's imports than its exports where Korean products initially faced lower barriers to trade to begin with. In fact, a simple average of the Most Favoured Nation (MFN) tariff rates at the 2-digit HS code level in Korea stayed constant around 16 percent between 1995 and 2008. When we exclude agricultural products, the simple average is reduced to around 8–9 percent, with modest reduction in the rate during the same period. This is in contrast to a general trend of falling tariff rates over time observed in other countries. In fact, the World Development Indicators (WDI) show that the weighted mean applied tariff rate in Korea increased from 6.8 percent in 1995 to 8.9 percent in 2009, in contrast to the falling

**Table 6. Tariff Rate on Goods Imported to Korea**

Partner	Simple Average (%)			Weighted Average (%)		
	Top Gainer	Least-traded	Others	Top Gainer	Least-traded	Others
Chile	9.9	13.3	2.9	10.4	4.2	3.7
Singapore	7.2	11.1	5.9	5.6	5.9	4.4
EFTA	7.2	10.4	7.7	5.8	6.8	6.4
ASEAN	10.6	12.0	12.1	9.2	8.2	5.7
India	10.8	12.5	8.7	10.4	7.7	6.8
EU 28	10.0	13.3	8.5	7.4	7.5	8.9
Peru	10.0	15.0	3.3	5.1	8.4	3.6
<b>Average</b>	<b>9.4</b>	<b>12.5</b>	<b>7.0</b>	<b>7.7</b>	<b>7.0</b>	<b>5.6</b>

tariff rates observed in its FTA partners. For example, the average tariff rate fell from 6.3 percent to 1.5 percent in the EU and from 10.6 percent to 6.0 percent in Chile between 1995 and 2009.

In the literature, there are several studies that document the role of tariffs on trade, and more specifically on the extensive margin. Among others, Romalis (2007) shows that tariff removal through NAFTA increased trade in many highly protected sectors, while Rose (2004) finds that preferential tariff systems such as the Generalized System of Preferences (GSP) extended to developing countries approximately doubles trade. As such, I ask whether preferential tariffs can account for the changes in the new goods margin and whether tariff differentials between Korea's imports and exports can account for the patterns of new goods margin shown in the benchmark results.

#### *5.1.1. Average Tariff Rates*

First, I compare Korea's tariff rates in Table 6 for the least-traded imports from the FTA partners. I consider simple averages of applied MFN tariff rates for the year 2000 as well as effective tariff rates weighted by the trade volumes in 2000.

For imports, Korean tariffs are generally higher on the least-traded goods than on other goods both in terms of simple and weighted averages. When we restrict our attention to the top gainers within the least-traded imports, the same implication holds. Looking at imports

**Table 7. Tariff Rate on Goods Exported from Korea**

Partner	Simple Average (%)			Weighted Average (%)		
	Top Gainer	Least-traded	Others	Top Gainer	Least-traded	Others
Chile	9.0	9.0	9.0	9.0	9.0	9.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0
EFTA	1.5	3.2	2.5	1.2	0.8	0.5
ASEAN	6.2	7.2	7.1	6.4	6.6	5.0
India	32.0	31.7	29.4	29.5	30.3	27.5
EU	3.4	4.5	4.8	3.2	3.9	3.4
Peru	12.2	13.2	14.2	12.2	13.1	13.4
<b>Average</b>	<b>9.2</b>	<b>9.8</b>	<b>9.6</b>	<b>8.8</b>	<b>9.1</b>	<b>8.4</b>

from individual trade partners, effective tariff rates are higher on the least-traded goods than on other goods for all trade partners except for the EU. Comparing the effective tariff rates on the top gainers within the least-traded imports and the non-least-traded goods, the tariff barriers are higher on the top gainers for all partners except for the EU and EFTA. While we are not inferring any causality, we see this information to be similar to Romalis (2007) on the correlation between pre-liberalization tariff rates and import growth as the import tariffs were higher on the least-traded goods than other goods.

Similarly, I compare the tariff rates of FTA partners on Korean exports in Table 7. For the ASEAN tariff rates, I take the average tariff rates imposed by Brunei, Indonesia, Myanmar, Malaysia, Philippines, Singapore, and Thailand. For EFTA tariff rates, I take the average of tariffs imposed by Iceland, Norway and Switzerland.

Unlike imports, I find weaker indication of higher tariff rates for the least-traded export goods. As seen in Table 7, there was no variation in tariff rates across different types of goods in Chile and Singapore as these countries impose a flat tariff on all goods. For simple averages, the tariff rates on the top gainers were in fact slightly lower than the non-least-traded goods. On average, the weighted tariff rates for Korean exports were only marginally higher on the least-traded goods than on other goods. For individual trade partners, for the EU and Peru, effective tariff rates on the top gainers were in fact lower than the non-least-

**Table 8. Logit Regression**

Partner	Import		Export	
	Coefficient	Standard Error	Coefficient	Standard Error
Chile	1.265	0.440 ***	–	–
Singapore	0.894	0.275 ***	–	–
EFTA	0.084	0.375	-1.790	1.054
ASEAN	0.619	0.209 ***	0.365	0.758
India	0.417	0.223 *	1.505	0.513***
EU 28	2.236	0.247 ***	-0.583	1.076
Peru	1.029	0.371 ***	-15.550	2.205***

traded goods.

In summary, comparing the tariff rates, I find that the least-traded goods (for all types as well as the top gainers) were subject to higher tariffs compared to non-least-traded goods. These protective barriers were more prominent on the imports of goods into Korea than on the exports.

### 5.1.2. Logit Regression

In order to quantify the relationship between the tariff rates and the growth of trade, I run a simple logit regression following Debaere and Mostashari (2012). I first create a binary indicator  $Y_{i,j}$  which equals unity if the trade value is 0 in 1995 but positive in 2013 for exports from country  $i$  to country  $j$  and zero otherwise. Then I regress the dependent variable  $Y_{i,j}$  on  $\Delta \log(1 + \tau_j)$  which is the change in the natural log of the applied MFN tariff rate in country  $j$  and measures the magnitude of tariff reduction upon an FTA. The results of the logit regression are reported in Table 8 for both imports and exports.

For Chile and Singapore, I only test the case of Korea's imports as there is no variation in the tariff rates on Korean exports in these countries. Levels of significance are denoted at 1 percent (\*\*\*), 5 percent (\*\*) and 10 percent (\*). In the table, the coefficients for the tariff changes in imports are all positive and significant except for imports from the EFTA countries. That is, the probability of a non-traded good in 1995 becoming traded in 2013

increases with the magnitude of the tariff rate reduction. This implies that the new goods margin in imports is associated with the removal of tariff barriers in highly protected sectors. My results are consistent with Debaere and Mostashari (2012), who document the impact of tariff reduction in increasing the extensive margin in imports for the US. On the other hand, such relationship between the tariffs and the extensive margin does not show up in Korean exports, as four out of five regression coefficients are either not significant or not positive. The findings from the logit regression is in line with our earlier conclusion that tariff removals played a larger role in the new goods margin in imports than in exports.

### *5.2. Role of Relative Prices*

Another possible driver of the increases in the new goods margin and the patterns observed for exports and imports could be the changes in the price of the least-traded goods relative to other goods. Generally, decreases in the relative prices of the least-traded goods (possibly driven by productivity gains in the industry that produces these goods) can generate an increase in the new goods margin. One could also compare the changes in the relative prices of the least-traded goods for the FTA partners and the non-FTA partners.

In order to analyse the role of relative prices, I derive unit prices for each product in the HS code for each country-pair and each trade flow from the WITS database using information on total value and total quantity. However, a large number of products were dropped as they showed zero trade value or were missing quantity information. For example, for Korea's exports to Singapore, the sample size decreased from 3797 to 693 once I dropped products with zero trade or missing quantity in the first and the last three years of the sample period. Similarly, the number of least-traded exports to Singapore decreased from 3679 to 638.<sup>10</sup> With the remaining products, I report the median of the unit price changes for all least-traded goods, top gainers within the least-traded goods, and other non-least-traded goods in

---

<sup>10</sup>Table B in the Appendix summarizes how the sample size changes when we are left with products with positive unit prices. On average, the sample size decreases by around two thirds. However, for imports from Chile and Peru, the sample size shrinks considerably.

**Table 9. Unit Price Changes (1995–2013) (Median, Percent)**

Partner	Exports			Imports		
	Top Gainer	Least-traded	Others	Top Gainer	Least-traded	Others
Chile	48.7	49.6	22.0	68.9	68.9	218.2
Singapore	67.1	58.9	77.1	24.9	27.6	25.7
EFTA	70.0	36.0	58.2	39.6	42.3	67.7
ASEAN	47.5	39.8	56.9	13.2	2.7	53.3
India	19.7	18.6	66.5	71.9	46.3	25.7
EU 28	36.9	38.4	30.9	48.9	56.0	51.8
Peru	28.9	69.0	14.5	284.7	16.9	207.7
<b>Weighted Mean (FTA)</b>	<b>45.7</b>	<b>42.0</b>	<b>47.9</b>	<b>40.2</b>	<b>40.3</b>	<b>56.5</b>
USA	41.9	34.1	30.3	62.1	71.0	66.7
China	58.3	61.8	76.1	28.3	32.2	58.4
Japan	52.7	52.3	53.1	49.9	48.2	64.4
<b>Weighted Mean (Non-FTA)</b>	<b>48.5</b>	<b>45.3</b>	<b>46.3</b>	<b>52.9</b>	<b>56.4</b>	<b>64.8</b>
<b>World</b>	<b>62.4</b>	<b>46.9</b>	<b>46.9</b>	<b>20.2</b>	<b>13.8</b>	<b>27.5</b>

Table 9. I also report the weighted average for the FTA countries and the non-FTA countries using the weights in Table A. in the Appendix. I find that the median unit price increase among the least-traded goods (for both exports and imports and for both top gainers and all of the least-traded goods) is generally lower than the corresponding change among other type of goods. In addition, the price change differential is larger in the imports than the exports. That is, the average unit price increase in the least-traded imports is markedly lower than the price increase in the non-least-traded imports, implying that the relative price of the least-traded imports have fallen more than the that of the exports.

Next, in addition to reporting the median changes in the unit prices, I also report the weighted average of price changes in Table 10. For this, I create a price deflator index for each types of goods we consider as follows: Let  $N$ ,  $G$  and  $T$  denote the set of all least-traded goods, top gainers within the least-traded goods and the rest of the goods in the initial year  $t$ , respectively, and let  $p_{i,t}$  and  $q_{i,t}$  denote the price and quantity of product  $i$  in year  $t$ . The

**Table 10. Price Deflator Index in 2013 (1995=100)**

Partner	Exports			Imports		
	Top Gainer	Least-traded	Others	Top Gainer	Least-traded	Others
Chile	140.9	126.8	146.4	138.2	145.2	306.0
Singapore	52.1	68.5	450.0	43.0	43.8	226.3
EFTA	38.6	46.0	194.1	38.3	39.4	129.0
ASEAN	106.5	100.7	205.2	66.4	56.0	267.5
India	91.4	90.0	125.0	154.0	138.7	295.8
EU 28	102.6	85.7	101.4	132.0	120.8	135.3
Peru	136.9	136.3	119.2	384.7	166.6	453.3
<b>Weighted Average</b>	<b>93.9</b>	<b>87.2</b>	<b>195.6</b>	<b>106.8</b>	<b>96.8</b>	<b>184.3</b>
USA	74.2	74.2	146.9	116.8	119.3	155.3
China	29.9	30.3	232.4	80.2	80.0	142.7
Japan	44.2	48.1	201.8	51.9	53.0	132.7
<b>Weighted Average</b>	<b>56.1</b>	<b>57.5</b>	<b>180.9</b>	<b>82.9</b>	<b>84.5</b>	<b>143.5</b>
<b>World</b>	<b>103.6</b>	<b>102.5</b>	<b>178.1</b>	<b>83.4</b>	<b>78.8</b>	<b>204.2</b>

price deflator for goods type  $j$  in  $\{N, G, T\}$  between years  $t$  and  $t + s$ ,  $\pi_{t,t+s}^j$  is defined as  $\pi_{t,t+s}^j = \frac{\sum_{i \in j} p_{i,t+s} q_{i,t+s}}{\sum_{i \in j} p_{i,t} q_{i,t+s}}$ . I also normalized price index of the base year (1995) as 100.

Table 10 further strengthens the our earlier result regarding the relative prices of the least-traded goods. When we consider the price index, I find that the prices of the least-traded goods relative to the prices of other goods fell for all types of the least goods and for both exports and imports. Comparing the FTA partners versus the non-FTA partners, in terms of the weighted average, in imports, the relative price of least-traded goods fell more with the FTA partners, and vice versa in exports with the non-FTA partners. This result is also in line with the variations in the new goods margin observed between the two trade groups where the new goods margin was larger in imports for the FTA partners and in exports for the non-FTA partners.



## 6. Conclusion

What are the long term impacts of free trade agreements (FTAs) on the exports and imports dynamics? Do they simply deepen existing trade patterns or do they also provide new trading opportunities? If the latter, how can policy-makers follow up on measures that are conducive to promoting exports to new markets? The economics literature has provided a wide range of answers and policy implications on this issue, and this paper makes further contributions by addressing the role of the new goods margin in trade under FTAs and the distributional impacts of trade policy. Using the methodology initiated by Kehoe and Ruhl (2013), I look at the set of new goods that had been non-traded, or traded in negligible volumes, and measure the trade patterns between 1995 and 2013, a period during which Korea's various bilateral trade agreements came into effect. On average, I identify significant growth in the trade of these least-traded goods as their share in total trade grows from 10 percent to 28 percent of exports and 26 percent of imports after FTA. When compared to a control group of main trade partners with no FTAs, the growth in the variety of imported goods is more pronounced from FTA partners. For exports, however, I find weaker evidence for a growth in the variety of goods with the FTA countries when compared to other main export destinations. As such, while the results of this paper indicate that the new goods margin expands during periods of trade liberalization, it also sheds additional perspectives on the role of trade policies and institutions. One reason for the difference in the new goods margin in Korean exports over its imports could be the difference in magnitudes of tariff reduction. In particular, for Korean exports, the magnitude of tariff reduction as a result of an FTA was larger for goods that had been traded before. For imports into Korea, on the other hand, high tariffs acted as barriers to trade for the least-traded goods, and their removal was associated with new opportunities for trade resulting in a large increase in the new goods margin. Another possible reason for the difference in imports and exports could be that Korean exporters did not fully take advantage of the new export possibilities; this may be an area worth exploring for the policy makers in promoting exports. A third

explanation points to the short-term nature of export dynamics. In the trade literature, some study the role of imperfect information in the entry and exit dynamics in the export market. For example, Besedes and Prusa (2011) find that firms may enter new markets due to removal of trade barriers but may soon face other type of costs and barriers which were unknown at the time of entry. In our study, we note that the growth of the new goods margin in some developing countries (e.g., Chile, India, and Peru) had a hump-shaped pattern with peaks occurring before the year FTAs took place. It might be interesting to see whether this pattern reflects exporters' decision to enter a new market in anticipation of trade cost removals but exiting after they face other types of unanticipated barriers. Incorporating these features into the one developed in this article would surely complement our analysis presented here and help us more accurately understand the impact of trade on different industries as well as the role of intensive and extensive margin in the trade growth. I leave those topics as possible extensions for future research.

## References

- Amarsanaa, Chingunjav, Kurokawa, Yoshinori, 2012, The Extensive Margin of International Trade in a Transition Economy: The Case of Mongolia. Tsukuba Economics Working Papers, No. 2011-005.
- Arkolakis, Costas. 2010. Market Penetration Costs and the New Consumers Margin in International Trade. *Journal of Political Economy*, Vol. 118, pp. 1151-1199.
- Arkolakis, Costas, Demidova, Svetlana, Klenow, Peter J., Rodríguez-Clare, Andrés, 2008, Endogenous Variety and the Gains from Trade. *American Economic Review*, Vol. 98, pp. 444-450.
- Baier, Scott L., Bergstrand, Jeffrey H., 2007. Do Free Trade Agreements Actually Increase Members' International Trade? *Journal of International Economics*, Vol. 71, No. 1, pp.72-95.
- Besedeš, Tibor, Prusa, Thomas J., 2011. The Role of Extensive and Intensive Margins and Export Growth. *Journal of Development Economics*, Vol. 96, pp.371-379.

- Broda, Christian, Weinstein, David E., 2006. Globalization and the Gains from Variety. *Quarterly Journal of Economics*, Vol. 121, pp.541-85.
- Dalton, John T., 2014. The New Goods Margin in Japanese-Chinese Trade. *Japan and the World Economy*, Vol. 31, pp. 8-13.
- Debaere, Peter, Mostashari, Shalah, 2010. Do Tariffs Matter for the Extensive Margin of International Trade? An Empirical Analysis. *Journal of International Economics*, Vol. 81, pp.163-169.
- Helpman, Elhanan, Melitz, Marc, Rubinstein, Yona, 2008. Estimating Trade Flows: Trading Partners and Trading Volumes. *Quarterly Journal of Economics*, Vol. 123, No. 2, pp.441-487.
- Hummels, David, Klenow, Peter J., 2005. The Variety and Quality of a Nation's Exports. *American Economic Review*, Vol. 95, No. 3, pp. 704-723.
- Kehoe, Timothy J., Ruhl, Kim J., 2013. How Important is the New Goods Margin in International Trade? *Journal of Political Economy*, Vol. 121, No. 2, pp. 358-392.
- Melitz, Marc J., 2003. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, Vol. 71, pp. 1695-1725.
- Panagariya, Arvind, 2001. India's Economic Reforms: What Has Been Achieved? What Remains to Be Done? EDRC Policy Brief No. 2, Asian Development Bank.
- Romalis, John, 2007. NAFTA's and CUSFTA's Impact on International Trade. *Review of Economics and Statistics*, Vol. 89, pp. 416-435.
- Rose, Andrew K., 2004. Do We Really Know That the WTO Increases Trade? *American Economic Review*, Vol. 94, No. 1, pp. 98-114.
- Sandrey, Ron, Van Seventer, Dirk, 2004. Has the New Zealand/Australian Closer Economic Relationship (CER) Been Trade Widening or Deepening? African Development and Poverty Reduction: The Macro-Micro Linkage Forum Paper.

## Appendix

**Table A. Total Trade in 1995 and Weights**

FTA Partner	Export		Import	
	Total Export (US\$ Mil.)	Weight	Total Import (US\$ Mil.)	Weight
Chile	636,507	0.016	1,020,932	0.032
Singapore	6,689,334	0.173	2,165,317	0.067
EFTA	965,826	0.025	1,681,442	0.052
ASEAN (excl. SGP)	11,289,541	0.291	7,968,741	0.246
India	1,125,800	0.029	798,278	0.025
EU 28	17,852,866	0.461	18,563,731	0.574
Peru	194,226	0.005	129,943	0.004

Non-FTA Partner	Export		Import	
	Total Export (US\$ Mil.)	Weight	Total Import (US\$ Mil.)	Weight
USA	24,343,731	0.482	30,416,473	0.432
China	9,143,564	0.181	7,400,268	0.105
Japan	17,048,826	0.337	32,600,929	0.463

**Table B. Sample Size for Unit Price Calculation**

Export Partner	WITS (Benchmark)			With Positive Unit Price		
	All	LTG	Top Gainers	All	LTG	Top Gainers
Chile	2455	2378.9	124	161	134	29
Singapore	3797	3678.9	203	693	638	77
EFTA	2581	2508.6	82	208	187	29
ASEAN	4688	4239.4	602	1741	1434	368
India	3537	3316.5	565	462	338	179
EU 28	4323	4104.5	339	1103	1101	200
Peru	2099	2039.5	161	88	72	27
USA	4401	4146.6	329	1172	1066	183
China	4640	4218.8	762	1562	1265	427
Japan	4600	4088.4	449	1523	1202	275
<b>World</b>	<b>4955</b>	<b>4359</b>	<b>690</b>	<b>2614</b>	<b>2239</b>	<b>489</b>

Import Partner	WITS (Benchmark)			With Positive Unit Price		
	All	LTG	Top Gainers	All	LTG	Top Gainers
Chile	1140	1131.4	18	31	27	5
Singapore	3732	3630.5	143	398	349	59
EFTA	3804	3445.5	274	618	475	140
ASEAN	4584	4406.8	498	1023	918	231
India	3797	3699.8	264	313	251	70
EU 28	4870	3747.1	597	2409	1758	390
Peru	1099	1083.0	16	11	6	1
USA	4401	4146.6	329	2255	1900	204
China	4640	4218.8	762	1589	1225	747
Japan	4600	4088.4	449	2248	1764	238
<b>World</b>	<b>5019</b>	<b>3952</b>	<b>861</b>	<b>3095</b>	<b>2406</b>	<b>635</b>