FTA utilization : certificate of origin data versus customs data

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Abstract

This paper empirically examines what kinds of elements affect the gap in free trade agreement (FTA) utilization with regard to customs data and certificates of origin (CoOs) data. We focus on Thai exports to Korea under the ASEAN-Korea FTA in 2011. As a result, we found that the products with the higher demand volatility or those with a larger number of tariff-line products within the same harmonized system (HS) six-digit code have the larger gap. Another important finding is that the difference between the HS version at the time of the FTA negotiation and the current HS version does not have significant association with the gap. These findings have important implications.

Keywords: Free Trade Agreement, Certificates of Origin
JEL classification: F10; F13; F15

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FTA Utilization: Certificate of Origin Data versus Customs Data

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Abstract: This paper empirically examines what kinds of elements affect the gap in free trade agreement (FTA) utilization with regard to customs data and certificates of origin (CoOs) data. We focus on Thai exports to Korea under the ASEAN-Korea FTA in 2011. As a result, we found that the products with the higher demand volatility or those with a larger number of tariff-line products within the same harmonized system (HS) six-digit code have the larger gap. Another important finding is that the difference between the HS version at the time of the FTA negotiation and the current HS version does not have significant association with the gap. These findings have important implications.

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1. Introduction

Against the background of the explosive increase of free trade agreements (FTAs), it has become much more important to enhance the utilization of FTAs. The use of an

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FTA will generate benefits for firms in terms of savings on tariff payments as the preferential rates are lower than most favoured nation (MFN) tariff rates. The larger the tariff margin – the gap between MFN rates and FTA rates – the greater will be the benefits for firms using FTA rates. On the other hand, in order to enjoy the use of FTA rates, exporters need to comply with rules of origin (RoOs) and then obtain certificates of origin (CoOs) from the authority in exporting countries. CoOs include information on the harmonized system (HS) code of the importing country, quantity, values, and so on. These tariff margin and RoOs play the main roles in firms' decision on FTA use. In order to encourage firms to use FTA schemes, it has been important to investigate the mechanics of firms' decisions on FTA use.

In the academic field, there have been only a limited number of studies analyzing the determinants on the utilization of preferential regimes. Bureau et al. (2007) examine utilization of the Generalized System of Preferences (GSP) granted by the European Union (EU) and the United States (US) to developing countries in the agri-goods sector, while Cadot et al. (2006) focus on the trade of the EU and the US with their preferential trading partners. Francois et al. (2006) and Manchin (2006) examine the preferential trade relations of the EU and non-least-developed African, Caribbean, and Pacific (ACP) countries under the Cotonou Agreement, while Hakobyan (2010) examines US GSP utilization by 143 GSP-eligible countries. Keck and Lendle (2012) analyze utilization of both unilateral and bilateral preferences by not only the EU and US but also Australia and Canada. These studies consistently found that FTA utilization is higher in the products with the larger tariff margin and the less restrictive RoOs.

Although these existing studies have employed customs data, it is also known that data based on the CoOs are useful. Customs data and CoOs data clarify the imports and exports under FTA schemes, respectively. Thus, CoOs data are useful to examine, for example, whether the conclusion of FTAs contributes to increasing exports. However, it is also noted that there are some technical difficulties in employing CoOs data for analysis due to the unit of available data. While the customs data report preferential imports at a tariff line-level, the CoOs data on preferential exports are usually available at the HS six-digit level. Thus, we should be careful in the calculation of FTA utilization rates, which are defined as the share of trade values under FTA schemes in total trade values for FTA eligible products. Since all products at tariff line-level within the same HS six-digit code are not necessarily eligible for FTAs, the denominator should be calculated by using the data on imports at tariff line-level, which are obtainable in importing countries. Also, when calculating tariff margin for econometric analyses, we need to aggregate tariff line-level tariff margin up to the HS six-digit level. Then,

arbitral aggregation is necessary.

One more important characteristic of CoOs data is that those data are believed to overestimate the preferential exports. Even in taking a look at one trade flow, the FTA utilization values are not identical between customs data and CoOs data. In particular, it is publicly believed that those based on CoOs are likely to be overestimated, compared with those based on customs. Such a gap is sourced from not only the well-known cif-fob difference, i.e., customs data and CoOs data report trade values on cif basis and fob basis, respectively. Due to some reasons, exporters do not necessarily succeed in exporting their products under FTA schemes even if they already have obtained CoOs. Therefore, in employing CoOs data for analysis, we should recognize that the estimates obtained using those data might be biased due to some systematic biases in CoOs data *per se*.

The purpose of this paper is to examine what kinds of elements affect the gap between customs data and CoOs data. We focus on Thai exports to Korea under the ASEAN-Korea FTA (AKFTA) in 2011. AKFTA entered into force among the ten ASEAN countries and Korea in 2007. Analysis is conducted at the HS 2007 six-digit level. Specifically, we explore the contribution of four elements: multi-correspondence between the HS 2002 version and HS 2007 version, demand volatility, cif-fob ratio, and complexity of tariff-line HS codes. Our analysis will contribute to predicting the direction of the above-mentioned biases in the estimates obtained using CoOs data. Also, one of the reasons for overestimation is that exports with CoOs are rejected under FTA schemes at customs in importing countries. This is likely, for example, if exporters misclassify their products' HS codes. In terms of discouraging trade under FTA schemes, clarifying the mechanisms of such overestimation will be useful for identifying the bottleneck in actual FTA utilization.

The rest of this paper is organized as follows. The next section provides our conceptual framework on how the above four elements affect the gap between customs data and CoOs data. We also formalize our empirical framework to examine empirically the contribution of those four elements. After reporting our estimation results in Section 3, Section 4 concludes this paper.

2. Empirical Framework

This section specifies our empirical framework for examining the roles of the aforementioned four elements. Our estimation equation is simply given by:

$$\text{Gap}_p = \beta_0 + \beta_1 \text{ Multi-correspondence}_p + \beta_2 \text{ Volatility}_p$$

$+ \beta_3$ CIF/FOB Ratio$_p$ + β_4 Number of Tariff-line$_p$ + ε_p.

"Gap" is defined as (preferential trade values based on CoOs − preferential trade values based on customs) / (preferential trade values based on CoOs + preferential trade values based on customs) and lies in [−1, +1]. Thus, we estimate this model by employing a two-censored Tobit (−1 and 1) technique in addition to the ordinary least square (OLS) method. The larger gap indicates that preferential trade values based on CoOs are overestimated compared with those based on customs. Subscript *p* refers to an HS six-digit code. βs are coefficients to be estimated. ε_p represents an error term.

Our independent variables are as follow. "Multi-correspondence" is a dummy variable that takes the value one if a six-digit code in the HS 2002 version has a one-to-one correspondence to that in the HS 2007 version and zero otherwise. AKFTA was negotiated based on the HS 2002 version. Namely, in the *original* legal text of AKFTA, RoOs and tariff schedules are reported according to the HS 2002 version. However, trade in 2011 is based on the HS 2007 version. Due to the difference in the HS version, exporters may be confused about their products' RoOs and preferential tariff rates. In particular, the HS version in which information on RoOs is available is not usually updated. Thus, if their recognition of their products' HS code is different from the recognition by Korean Customs, their products may not be allowed to be imported under AKFTA. Put differently, the gap might be larger in the products for which the six-digit HS codes of HS 2007 lack one-to-one correspondence with those of HS 2002. That is, in general, we expect β_1 to be negatively estimated. However, in the case of AKFTA, this issue may not be serious because information on RoOs is available also in the HS 2007 version.[1] This availability is because only Thailand was late joining AKFTA. Since Thailand joined AKFTA in 2009, the *Royal Thailand Customs Gazette* has reported RoOs in both the HS 2002 and 2007 versions. As a result, at least in our analysis of AKFTA, β_1 may be estimated to be insignificant.

Next, Volatility$_p$ is expected to capture the demand volatility in product *p*. The products with higher volatility in trade values are likely to be traded in a form of vendor-managed inventory in East Asia. For example, after obtaining CoOs, firms in Thailand may store their export products in a bonded warehouse in Korea. Then, they may pass customs in Korea when orders are received from firms in Korea. Since CoOs in AKFTA are valid for six months, CoOs expire if orders are late. As a result, those products cannot pass through customs under the AKFTA scheme and are forced to be processed under the MFN scheme. This argument means that the gap in products with higher volatility is likely to be large. That is, we expect β_2 to be positively estimated. In

[1] http://www.thaifta.com/trade/askr/customs%2072-2552%20annex%203.pdf

order to examine this, we introduce Volatility, which is measured as the standard deviation of the log of (1 + Monthly Korean imports from the world) during 2008-2010. To take a log of zero-valued imports, we add the value one to imports. We also try the standard deviation of monthly *change* of the log of (1 + Monthly Korean imports from the world) during 2008-2010.

Third, we introduce "CIF/FOB Ratio". As in the case of ordinary trade data, the trade values based on CoOs and customs are fob basis and cif basis, respectively. Thus, the gap will be smaller in the products with the higher transport costs (i.e., β_3 is expected to be negative). The transport costs are measured by (sum of Korean imports from Thailand during 2008-2010 / sum of Thai exports to Korea during 2008-2010) – 1. In order to avoid the influence of year-specific shocks to our measure of transport costs, we compute it by aggregating three-year trade values.

Last, "Number of Tariff-line" is the number of Korean tariff-line codes in each HS six-digit code. This variable is expected to capture simply the likelihood of exporters' misclassification. Namely, exporters in Thailand may be likely to misclassify their products' HS tariff-line codes if a six-digit HS code has a larger number of tariff-line codes. The products that have attached CoOs with the wrong HS code will not be allowed for import under AKFTA. As a result, the gap will be large in the case of a larger number of tariff-line codes within a six-digit code. β_4 is expected to be positively estimated.

Our data sources are as follow. While the importers' data are from Korea Customs and Trade Development Institute (KCTDI), the exporters' data are drawn from the Bureau of Trade Preference Development, Department of Foreign Trade, Ministry of Commerce, Kingdom of Thailand. When the importers' data are aggregated up to the HS six-digit level, we restrict tariff-line codes only to those eligible for AKFTA in 2011. Also, we drop the exporters' data in the HS six-digit codes that do not include any tariff-line codes eligible for AKFTA in 2011. The information on correspondence in the HS six-digit codes between HS 2002 and HS 2007 is drawn from the UN Statistics Division.[2] The data on monthly Korean imports are obtained from World Trade Atlas.

3. Estimation Results

This section first takes a brief look at our gap measure. Then, our estimation

[2] http://unstats.un.org/unsd/trade/conversions/HS%20Correlation%20and%20Conversion%20tables.htm

results are reported. Table 1 shows the gap in FTA utilization rates between CoOs data and customs data. In total, FTA utilization rates based on CoOs data are likely to be overestimated. The utilization rates in total are 39% in CoOs data and 35% in customs data. Taking a closer look across industries (section of tariff classification), some industries have higher rates in the case of customs data. Figure 1 depicts the distribution of our Gap variable, which is defined in the previous section. Around 80% of products (HS 6-digit) have no gap. All these products have zero utilization values. A relatively high share can be observed in the products with a gap of −1, (−0.2, −0.1], (0, 0.1], and (0.9, 1].

=== Table 1 & Figure 1 ===

Next, we report our estimation results. The basic statistics and estimation results are provided in Tables 2 and 3, respectively. Columns (I) and (II) report the results by OLS and Tobit, respectively, which are qualitatively the same. Specifically, Volatility and Number of Tariff-line have significant coefficients, while the coefficients for Multi-correspondence and CIF/FOB Ratio are insignificant. These results indicate that products with the higher volatility in trade values or those with a larger number of tariff-line products have the larger Gap. On the other hand, as mentioned in the previous section, the insignificant result in Multi-correspondence will be because of the availability of information on RoOs in the HS 2007 version.

=== Tables 2 & 3 ===

As mentioned in the previous section, we also try the use of the volatility measure in trade value *changes*. The results are reported in columns (III) and (IV) in Table 3 and are qualitatively unchanged in columns (I) and (II). As a result, we conclude that the difference in FTA utilization rates between CoOs data and customs data becomes larger in products with the higher volatility in trade values or those with a larger number of tariff-line products. In addition, we again obtain an insignificant result in Multi-correspondence.

4. Concluding Remarks

This paper empirically examines what kinds of elements affect the gap in FTA utilization with regard to customs data and certificates of origin (CoOs) data. We focus

on Thai exports to Korea under the ASEAN-Korea FTA in 2011. As a result, we found that the products with higher demand volatility or those with a larger number of tariff-line products within the same HS six-digit code have a larger gap. Thus, the CoOs that are flexible in terms of expiration date will enable exporters to successfully utilize FTA schemes because products with higher demand volatility are likely to pass through customs when orders are received and thus CoOs will expire if orders are late. Also, the finer disaggregation of products at the tariff-line level results in exporters' misclassification of their products and thus discourages exporters from successfully utilizing FTA schemes. Another important finding is that, at least in the case of Thailand in AKFTA, the difference between the HS version at the time of the FTA negotiation and the current HS version does not have a significant association with the gap. Thus, we may also say that the availability of information on RoOs in the current HS version is also important.

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Table 1. FTA Utilization Rates

	COO Data	Customs Data
Live animals	80%	99%
Vegetable products	9%	68%
Animal/vegetable fats and oils	23%	95%
Food products	23%	20%
Mineral products	72%	74%
Chemical products	53%	73%
Plastics and rubber	57%	87%
Leather products	65%	77%
Wood products	6%	75%
Paper products	5%	0%
Textiles	63%	74%
Footwear	68%	83%
Stone, ceramic, and glass products	50%	83%
Precision metal products	35%	24%
Basic metal products	22%	67%
Machinery	19%	15%
Transport equipment	2%	1%
Precision machinery	22%	16%
Arms and miscellaneous	68%	67%
Works of art and antiques	0%	
Total	39%	35%

Source: Authors' calculation based on data provided by the Bureau of Trade Preference Development, Department of Foreign Trade, Ministry of Commerce, Kingdom of Thailand, and by the Korea Customs and Trade Development Institute (KCTDI).

Table 2. Basic Statistics

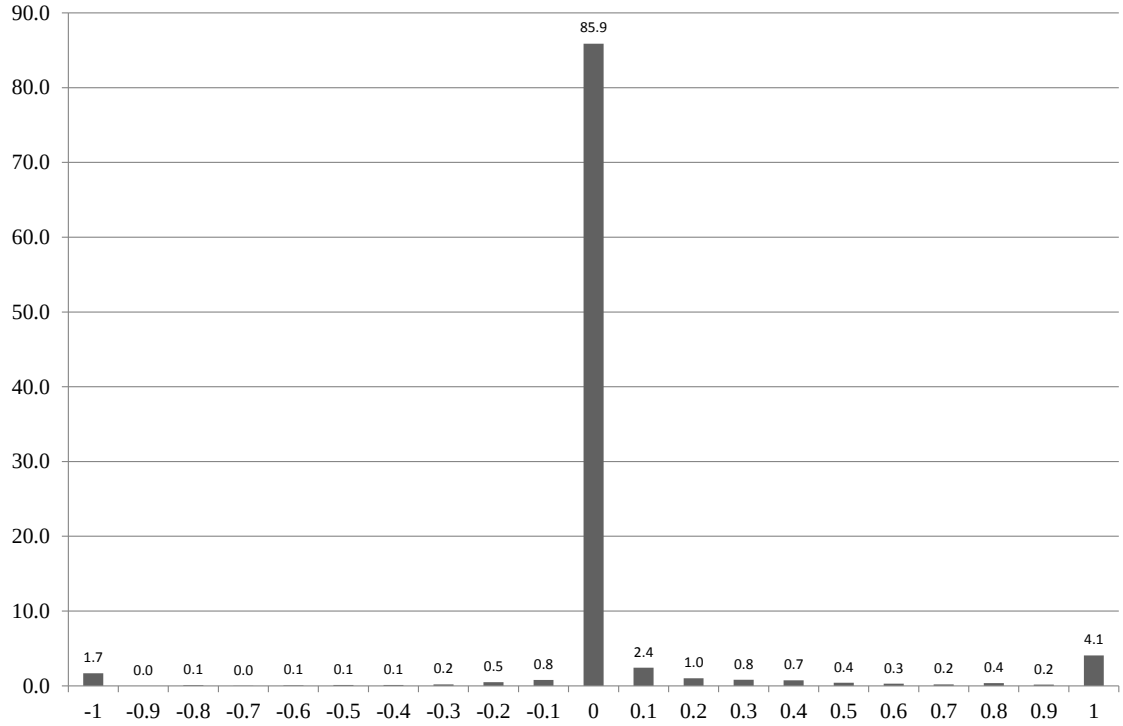
	Obs	Mean	Std. Dev.	Min	Max
Gap	3,977	0.0332	0.2578	-1	1
Multi-correspondence	3,977	0.1177	0.3223	0	1
Volatility (Level)	3,977	0.0166	0.0647	0	1.8098
Volatility (Change)	3,977	0.0189	0.0799	0	2.7616
CIF/FOB Ratio	3,977	0.5584	2.2191	-1	16.3422
Number of Tariff-line	3,977	0.5717	0.7110	0	3.8501

Table 3. Estimation Results

	(I)	(II)	(III)	(IV)
Multi-correspondence	-0.0102	-0.0108	-0.0097	-0.0102
	[0.0145]	[0.0154]	[0.0146]	[0.0154]
Volatility (Level)	0.1494**	0.1513**		
	[0.0675]	[0.0708]		
Volatility (Change)			0.1042**	0.1053**
			[0.0490]	[0.0514]
CIF/FOB Ratio	0.0007	0.0008	0.0007	0.0007
	[0.0012]	[0.0012]	[0.0012]	[0.0012]
Number of Tariff-line	0.0185***	0.0192***	0.0189***	0.0197***
	[0.0068]	[0.0072]	[0.0068]	[0.0072]
Estimation	OLS	Tobit	OLS	Tobit
Observations	3,977	3,977	3,977	3,977
(Pseudo) R-squared	0.0045	0.0101	0.0041	0.0094
Log pseudolikelihood		-828		-828

Notes: The parentheses are robust standard errors. ***, **, and * indicate 1%, 5%, and 10% significance, respectively. Tobit is a two-censored Tobit (−1 and 1).

Figure 1. Distribution of Gap



Source: Authors' calculation based on the data provided by the Bureau of Trade Preference Development, Department of Foreign Trade, Ministry of Commerce, Kingdom of Thailand and by the Korea Customs and Trade Development Institute (KCTDI).