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Measuring the Costs of FTA Utilization: Evidence from Transaction-Level Import Data of Thailand

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Keywords: FTA; Fixed costs; Thailand
JEL classification: F13, F53

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Measuring the Costs of FTA Utilization: Evidence from Transaction-Level Import Data of Thailand

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Abstract

In this study, we measure the utilization costs of free trade agreement (FTA) tariff schemes. To do that, we use shipment-level customs data on Thai imports, which identify not only firms, source country, and commodity but also tariff schemes. We propose several measures as a proxy for FTA utilization costs. The example includes the minimum amount of firm-level savings on tariff payments, i.e., trade values under FTA schemes multiplied by the tariff margin, in all transactions. Consequently, the median costs for FTA utilization in 2008, for example, are estimated to be approximately US$2,000 for exports from China, US$300 for exports from Australia, and US$1,000 for exports from Japan. We also found that FTA utilization costs differ by rule of origin and industry.

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1. Introduction

The cost for using free trade agreement (FTA) tariff schemes has become an important issue in policy discussions about FTAs. When exporting to FTA member countries, firms can enjoy the benefit of using FTA tariff rates, which are lower than the general tariff rates (e.g., most favored nation (MFN) rates). However, in general, FTA users need to bear some costs in doing so. FTA users must comply with the rules of origin (RoOs) to take advantage of FTA tariff schemes. To certify the "originality" of their products, exporters must submit various documents, including a list of inputs, production flow chart, production instructions, invoices for each input, and contract documents. To handle this documentation work, exporters may establish a division or assign staff to be in charge of FTA utilization. With these documents, exporters apply for certificates of origin (CoOs) from the authority to use FTA tariff schemes. Obtaining this type of documentation incurs some costs for FTA utilization. Consequently, even when exporting to FTA member countries, only productive exporters who can earn enough to offset these costs will be able to use FTA schemes.[1]

Several studies have estimated the costs of FTA utilization. Applying the threshold regression approach to the utilization rate of Cotonou preferences, Francois et al. (2006) found that the tariff-equivalent costs of using the scheme ranged between 4% and 4.5%. Hayakawa (2011) showed that by employing the threshold regression method, the average tariff equivalent of fixed costs for use of FTA for all existing FTAs in the world is estimated at approximately 3%. Cadot and de Melo (2007) surveyed this literature, concluding that such fixed costs range between 3% and 5% of the product price. Some studies estimated the absolute values of FTA utilization costs. Ulloa and Wagner (2013) computed the costs directly by employing the data on FTA utilization for exports from Chile to the U.S. They found that the 75th percentile was around US$3,000 in the year of entry into force (approximately US$200 for the median) and the costs decreased by 60%–80% in the following one to two years. By employing firm-level data from the Generalized System of Preferences (GSP) utilization for exporting apparel products to Europe from Bangladesh and by developing a theoretical model of firms' preferential scheme utilization, Cherkashin et al. (2015) structurally estimated the costs (called documentation costs of RoO compliance), which were US$4,240.[2]

[1] Demidova and Krishna (2008) introduce the choice of tariff schemes into the firm-heterogeneity model of Melitz (2003) and theoretically demonstrate that productive firms use FTA schemes for exporting while less-productive firms use MFN schemes for exporting.

[2] Das et al. (2007) structurally estimated the fixed costs of entry to export markets. They found that the sunk components are around US$400,000 and that the annual fixed costs are almost zero.

In this study, by following the approach adopted in Ulloa and Wagner (2013), we add new evidence to the literature on FTA utilization costs. It theoretically shows that the FTA utilization (fixed) costs are equal to the tariff margin (i.e., the difference between MFN and FTA rates) multiplied by the exports (we call this the saving amount of tariff payments), in situations wherein total profits from FTA use and non-use equalize. A challenging issue is how to obtain such a level of exports, or "cutoff exports." Ulloa and Wagner (2013) obtained data by estimating the cumulative density of exports. From a theoretical point of view, the cumulative density *at* cutoff exports becomes equal to the share of exports under MFN schemes. Thus, with the cumulative density of exports for each product and the product level data for FTA utilization, cutoff exports may be computed.

Our detailed data on firms' FTA utilization enable us to measure FTA utilization costs more directly and simply compared with previous studies. Our data consist in shipment level customs data for Thai imports. These contain information not only on firms, source countries, and commodities but also on tariff scheme (i.e., FTA or MFN) used for imports. Recently, several empirical papers used shipment-level data (e.g., Amiti et al. 2014; Berman et al. 2012; Eaton et al. 2011). However, no studies have used data that enable identification of the employed tariff scheme.[3] With this dataset, for example, as the cutoff exports, we can identify the minimum firm-level trade values under FTA schemes or the maximum firm-level trade values under MFN schemes. That is, without imposing any strong assumption on functional form on the distribution of trade values (i.e., productivity), we can compute the costs for FTA utilization. Using the estimates on FTA utilization costs, we also examine the differences in the FTA utilization costs across various dimensions such as industry or RoOs.[4]

The rest of this paper is organized as follows. Section 2 explains our methodology for measuring FTA utilization costs. Section 3 provides an overview of our dataset. Section 4 reports the estimates for FTA utilization costs and examines their differences across industries and RoOs. Finally, Section 5 concludes this paper.

2. Methodology

[3] The exception is Cherkashin et al. (2015). However, their dataset includes only data for the apparel industry. By contrast, our data set covers all industries.

[4] We also checked the validity of the method proposed in Ulloa and Wagner (2013), by employing our detailed dataset. Specifically, we estimate the cumulative *import* density function, compute cutoff imports, and examine whether or not firms with imports greater than this cutoff are likely to utilize FTA schemes when importing. As a result, we found some extent of prediction power. More details are available in Appendix A.

In this section, we explain our methodology for quantifying the FTA utilization costs. The idea behind this is simple.[5] Exporters are heterogeneous in terms of productivity. Exporters with higher productivity are more likely to use FTA schemes for exporting because such firms in general have larger export volumes and thus higher savings in tariff payments through the use of FTA tariff rates (i.e., benefits from FTA utilization). From a theoretical point of view, such benefits should be equal to the cost of FTA utilization for a firm with productivity for which the total profit from FTA use becomes indistinguishable from that of the use of MFN rates (i.e., productivity cutoff between FTA use and non-use). Savings in tariff payments for a firm with cutoff productivity can be seen as the cost for FTA utilization.

Therefore, a critical issue is how to identify a firm with cutoff productivity. From an empirical point of view, two types of firms are potential candidates. One is a firm with minimum exports under the FTA scheme, whereas the other is a firm with maximum exports under the MFN scheme. Theoretically, the difference between the minimum exports under FTA rates and the maximum exports under MFN rates should be zero or negligible. However, in reality, the difference may be large. Furthermore, cases may exist where the maximum exports under MFN rates exceed the minimum exports under FTA rates.[6]

Considering the difference between these two types of exports, we propose some measures. Since our dataset covers import data, we explain our method from the import side.[7] We define the saving amount of tariff payments for firm *f*'s imports of product *p* from country *i* in year *t* as follows:

$$S^{S}_{fipt} = \left(MFN_{ipt} - FTA_{ipt}\right) \times IMP^{S}_{fipt},$$

where MFN_{ipt} and FTA_{ipt} are MFN rates and FTA rates for importing product *p* from country *i* in year *t*, respectively. IMP^{S}_{fipt} denotes firm *f*'s imports of product *p* from country *i* in year *t* under scheme *S* (i.e., *S* = {FTA scheme, MFN scheme}). On the basis of the above discussion on cutoff firms, we compute the savings amount of tariff

[5] For more details, see Ulloa and Wagner (2013).

[6] This case does not occur in the theoretical model by Ulloa and Wagner (2013) or Demidova and Krishna (2008) because they assume a "pecking-order" nature between a firm's productivity and the choice to use an FTA.

[7] Importantly, our dataset does not include information on export firms. For example, when a firm imports a certain product from multiple firms in a certain export country under a certain tariff scheme, we can only know the sum of imports from these exporting firms. In such a case, figures on firm-level imports obtained from import side are not necessarily consistent with those on firm-level exports obtained from export side. However, we believe that such cases are rare in our dataset. Indeed, by employing the shipment-level data on exports from Mexico to the U.S., Sugita et al. (2015) show that country-product-level matching of exporters and importers is approximately one to one.

payments by employing not only imports under FTA schemes but also those under MFN schemes.[8] Consequently, when both FTA users and non-users are importing product *p* from country *i* in year *t* (we call this case "partial utilization"), the FTA utilization costs for importing product *p* from country *i* in year *t* (denoted by $Cost_{ipt}$) lie within the following range:

$$Cost_{ipt} \in \begin{cases} \left(\max_f\{S_{fipt}^{MFN}\}, \min_f\{S_{fipt}^{FTA}\}\right] & if \max_f\{S_{fipt}^{MFN}\} \leq \min_f\{S_{fipt}^{FTA}\} \\ \left[\min_f\{S_{fipt}^{FTA}\}, \max_f\{S_{fipt}^{MFN}\}\right) & if \max_f\{S_{fipt}^{MFN}\} > \min_f\{S_{fipt}^{FTA}\} \end{cases}.$$

There are two other cases to be considered: (1) there are no FTA users (called "no utilization"), and (2) all firms import under FTA rates (called "full utilization"). These cases happen because the number of firms is finite in any country and productivity distribution has some support (i.e., lowest and highest productivity levels).[9] Consequently, in the case of no utilization, FTA utilization costs will lie within the following range:

$$Cost_{ipt} \in \left(\max_f\{S_{fipt}^{MFN}\}, \infty\right).$$

Namely, the case of no utilization implies that the observed maximum amount of tariff savings is not large enough to cover the FTA utilization costs. In the case of full utilization, the range of FTA utilization costs can be shown as follows:

$$Cost_{ipt} \in \left[0, \min_f\{S_{fipt}^{FTA}\}\right].$$

This case implies that even the observed minimum amount of tariff savings can cover FTA utilization costs.

Later, we provide an overview of some basic statistics for FTA utilization costs. Accordingly, we define our estimated *point* for these costs as follows:

[8] The use of imports under MFN schemes is because, as mentioned above, those values might be closer to imports by exporters with cutoff productivity. However, note that (*MFN* − *FTA*) * *IMP* exactly shows the *actual* savings amount of tariff payments only when we compute a variable *IMP* by employing imports under FTA schemes, not MFN schemes. Namely, we use (*MFN* − *FTA*) * *IMP* to compute the *hypothetical* savings amount for tariff payments for exporters with cutoff productivity.

[9] Helpman et al. (2008) assume the cumulative productivity distribution function with support in specifying the gravity equation.

$$\begin{cases} \left(\max_f\{S_{fipt}^{MFN}\} + \min_f\{S_{fipt}^{FTA}\}\right)/2 & in\ the\ case\ of\ partial\ utilization \\ \max_f\{S_{fipt}^{MFN}\} & in\ the\ case\ of\ no\ utilization \\ \min_f\{S_{fipt}^{FTA}\} & in\ the\ case\ of\ full\ utilization \end{cases}.$$

Namely, our estimated point is at the lower boundary of FTA utilization costs in the case of no utilization and at the upper boundary of FTA utilization costs in the case of full utilization. As a robustness check, we also define the estimated point in the case of partial utilization as $\max_f\{S_{fipt}^{MFN}\}$ or $\min_f\{S_{fipt}^{FTA}\}$.

Last, there are four noteworthy points. First, we can compute FTA utilization costs only for products with positive imports under any tariff scheme. Second, firms may decide whether or not to use an FTA based on future inter-temporal benefits or on a per-shipment basis according to the benefits for each shipment, rather than on annual benefits. Thus, we calculate the FTA utilization costs by employing not only annual import data but also import data based on another time-dimension: daily import data. Third, our estimated FTA utilization costs include not only fixed costs but also variable costs (if any). In complying with RoOs, FTA users may need to change their procurement sources from optimal ones, and therefore suffer from increased variable costs.[10] In the above method, we cannot differentiate variable and fixed costs arising from FTA utilization.[11] Fourth, since our dataset is import (not export) data, a firm may import a product from a country under both FTA rates and MFN rates. This is likely if the firm imports from multiple exporters (e.g., productive exporters and less-productive exporters). Our calculations include both types of imports.[12]

3. Overview of the Dataset

Before calculating the FTA utilization costs, we briefly overview several tables on FTA utilization costs and trade values under FTA schemes. Table 1 shows the fees for issuance of CoOs in major Asia-Pacific countries. Such fees are one of the observable costs for FTA utilization. The fee is relatively expensive in developed countries such as Australia, Japan, and New Zealand. In addition to these developed countries, it is also expensive in Cambodia, amounting to US$50 (US$15 for small quantities). In most other countries, the fee is trivial. In Thailand, for example, it is free of charge in the case

[10] Demidova and Krishna (2008) assume such a rise of variable costs when using FTA schemes for exporting.
[11] These points are also pointed out in Ulloa and Wagner (2013).
[12] Also see footnote 7.

of online certification and US$1.00 in the case of manual certification. It is also free of charge for exporting from Korea. If the total costs for FTA utilization are in general around US$4,000 as estimated in previous studies, the fees for issuing CoOs will comprise a trivial share of the total costs.

=== Table 1 ===

Our dataset contains transaction-level import data covering 2007 to 2011 and covers all commodity imports into Thailand.[13] Our dataset contains the Customs clearing date, Harmonized System (HS) eight-digit code, export country, firm's identification code, tariff scheme (e.g., MFN, FTA), and import value in Thai Baht (THB). As mentioned in the previous section, we use data on imports aggregated according to years, in addition to the HS eight-digit code, exporting countries, firms, and tariff schemes. We call this dataset the "Annual data." Later, we also employ data on imports aggregated by date, which we call the "Daily data." We classify tariff schemes into three categories: (1) MFN, (2) FTA, and (3) other schemes, which include imports under schemes of bonded warehouses, free zones, investment promotions, duty drawbacks under Section 19 bis, and duty drawbacks for re-exports.[14] Although the choice of other such schemes have important implications for our analysis, we do not consider them as focusing only on MFN and FTA schemes when calculating FTA utilization costs.

We also carefully chose sample export countries and years. As of January 2014, Thailand has concluded several FTAs.[15] Since the launch of the ASEAN Free Trade Area (AFTA) in 1993, Thailand has signed and implemented five bilateral FTAs with the following countries: Australia (Thailand–Australia FTA, TAFTA), New Zealand, India, Japan (Japan–Thailand Economic Partnership Agreement, JTEPA), and Peru. In addition, Thailand, together with the other ASEAN members, has concluded regional

[13] As mentioned in the introduction section, this dataset is confidential and is obtained from the Customs Department, Kingdom of Thailand.

[14] Goods imported under the schemes of bonded warehouses, free zones, and investment promotions may be exempt from Customs duties subject to certain conditions. The duty drawback under Section 19 bis or for re-exports enables exporting firms to obtain a refund of the Customs duty paid for imported goods when such goods are inputs for goods for export or are re-exported without any transformation. Under these schemes, only firms approved by the authorities in charge can claim such privileges. Eligible imported goods and duty privileges vary across schemes. For example, virtually all goods imported under bonded warehouse and free zone schemes are duty-free. Under the investment promotion scheme, raw materials are duty-free, while machinery may be either duty-free or subject to a 50% tariff reduction. On the other hand, machinery is ineligible for a refund on import duty paid under duty drawback schemes.

[15] The list of Thailand's FTAs is available in Appendix B.

agreements with the following countries: China (ASEAN–China FTA, ACFTA), Japan, Korea, India, Australia, and New Zealand. In this study, we restrict sample export countries and years to those wherein only a single FTA scheme is available when exporting to Thailand.[16] Consequently, we choose imports from China during 2007 to 2011 (i.e., ACFTA) and those from Australia (TAFTA) and Japan (JTEPA) in 2008. Thailand became a member of ACFTA in 2005, TAFTA in 2005, and JTEPA in 2007.[17] The case of China will be useful for examining the time-series change in FTA utilization costs, whereas the cases of Australia and Japan will be invaluable in investigating cross-country differences in FTA utilization costs. Moreover, unlike ACFTA, both TAFTA and JTEPA are bilateral rather than multilateral FTAs. Thus, we may be able to obtain more precise estimates on FTA utilization costs because the framework in Ulloa and Wagner (2013) is essentially applied to the case of bilateral FTAs.

Table 2 reports the basic statistics on firm-level annual imports. In the column "# of Eligible Products," we can see that the number of products eligible for ACFTA increased substantially in 2009 and 2010. The increase in 2009 was particularly notable.[18] The column "# of Import Firms" shows a larger number of importers from China than from Australia and Japan. In all cases, the number of importers under MFNs is the largest. However, importers from China under the FTA scheme increased markedly during the sample period. Similar findings are available for import values, as shown in the column "Import Values," though imports under other schemes are the highest in some cases. The increase of imports from China under FTAs is remarkable. Imports from China under FTAs surpassed the corresponding values under MFN in 2010, and the gap increased in 2011.

=== Table 2 ===

Two additional findings are of interest in Table 2. From the column of "Average

[16] When multiple FTA schemes are available, the firms' decision on FTA use will be much more complicated: firms will choose the tariff scheme from among the MFN rates, bilateral FTA rates, and multilateral FTA rates rather than simply from between the MFN and FTA rates. Since it is beyond the scope of this paper to take into account such complicated decisions on tariff schemes, we simply focus on trading pairs in which only a single FTA scheme is available.

[17] Afterward, Thailand became a member of ASEAN–Australia–New Zealand FTA in 2010 and ASEAN–Japan Comprehensive Economic Partnership in 2009. Therefore, we focus on imports from Australia and Japan only in 2008. As a result, we compute FTA utilization costs for some years after each FTA's entry into force.

[18] As in other FTAs, in our sample FTAs, tariff reduction for some products starts some years after an agreement comes into force. Also, tariff rates for some products are not immediately eliminated but only subsequently lowered. We believe that these differences in the method of tariff reduction across products do not yield serious biases in our computations.

Import Values," we can see larger firm-level import values under FTA schemes than under MFN schemes, although those under others are significantly larger in the case of imports from China. The larger values under FTA schemes are consistent with findings of higher FTA utilization for products with larger trade values by the previous studies on the determinants of FTA utilization (e.g., Hayakawa et al. 2014). In this table, we also report FTA utilization rates, where the numerator is import values under FTA schemes and the denominator is either the sum of imports under the FTA and MFN schemes or the sum of those under all schemes. In either case, ACFTA utilization rates have risen over time. In 2008, utilization rates of ACFTA and TAFTA are almost the same and are higher than those of JTEPA.

Table 3 reports basic statistics at the firm-product level. In this table, we employ both Annual and Daily data. The trend is similar to that found in Table 2. The number of transactions is larger under MFN than under FTAs. However, the number of import transactions from China under FTAs increases more dramatically. In 2008, the number of transactions for China is much greater than that for Australia and Japan under FTAs. In contrast, average imports under FTA schemes are consistently larger than those under MFN schemes, though those under other schemes show the largest values. In 2008, in contrast to the number of transactions, average imports from Japan under FTAs are highest, followed by those from Australia.

=== Table 3 ===

4. FTA Utilization Costs

In this section, the method proposed in Section 2 is used to calculate FTA utilization costs. We first report the basic statistics for our measure of FTA utilization costs. Then, we statistically examine those costs in terms of various dimensions such as industry or RoOs.

4.1. Basic Statistics

The results of calculating FTA utilization costs using the Annual data are presented in the panel "Annual: Average" in Table 4, which reports the number of sample products, the average, standard deviation, median, and maximum values of the calculated costs. There are four noteworthy points. First, in 2008, the mean value of the cost of using FTA was 536,000 THB (approximately US$16,000) in China, 312,000 THB (approximately US$9,000) in Australia, and 1,082,000 THB (approximately

US$32,000) in Japan. Second, in 2008, the median value of the FTA utilization cost was 75,000 THB (approximately US$2,000) in China, 9,000 THB (approximately US$300) in Australia, and 42,000 THB (approximately $1,000) in Japan. Japan shows higher costs than China in the case of means but lower costs for median values. Third, in the case of China, mean values were unstable over time, while median values gradually decreased. Fourth, as indicated above, average values were much larger than median values, implying that the upper range of the calculated values was significantly larger.

=== Table 4 ===

As mentioned in the introduction, previous studies have estimated preferential tariff scheme utilization costs at approximately US$3,000 to 4,000. Thus, our estimates of median values are closer to those in previous studies. In 2008, as mentioned above, those are approximately US$2,000 for exporting from China, US$300 for exporting from Australia, and US$1,000 for exporting from Japan. These amounts are much higher than the CoO fees reported in Table 1. Thus, we can say that most FTA utilization costs consist of not CoO fees but mainly the cost of preparing the documents (e.g., expenses for the labor required to handle the documentation work) as mentioned in the introductory section.

We also compute FTA utilization costs in different ways. In the panel “Daily: Average” in Table 4, we use the Daily data. We observe more or less similar patterns for FTA utilization costs to those found using the Annual data, although the absolute values using the two datasets are naturally different. The panel “Maximum under MFN” reports utilization costs in the case of using the maximum value of tariff savings evaluated for imports under MFN schemes when calculating the utilization costs for partial utilization. In the panel “Minimum under FTA,” we use the minimum value of tariff savings evaluated for imports under FTA schemes. These values are calculated using the Annual data. The results follow a trend similar to those in the column “Annual: Average.” However, the absolute values differ by method. In particular, the median values in the case of China in the column “Minimum under FTA” are extremely low, less than 2,000 THB (US$60).

4.2. Statistical Analysis

In this subsection, we statistically investigate the above-computed costs for FTA utilization. First, we examine their differences across exporting countries. As found in the previous subsection, median values are rather different from mean values. Therefore,

we employ the stochastic dominance approach, which enables us to compare FTA utilization costs across countries at all moments of their cost distribution, rather than at a single moment, e.g., mean. In particular, we conduct Kolmogorov-Smirnov tests for the utilization costs presented in “Annual: Average” in 2008 in Table 4. The results are reported in Table 5, showing that utilization costs in China stochastically dominate those in Australia and Japan. Furthermore, those in Australia are dominated by those in Japan. Thus, roughly, China has the highest FTA utilization costs, followed by Japan.

=== Table 5 ===

Next, we examine the correlation of FTA utilization costs with various elements. In particular, we regress various elements on a log of FTA utilization costs, which are based on the 2008 “Annual: Average” in Table 4. Unlike the above analysis, we investigate only average differences in FTA utilization. Our independent variables are as follows. First, we include dummy variables on RoOs. We classify all the RoOs into five broad types; CTC, CTC&RVC, CTC/RVC, RVC, and WO. CTC, RVC, and WO indicate a change-in-tariff classification, regional value content rule, and wholly-obtained, respectively. “/” and “&” indicate “or” and “and,” respectively. Second, export country dummy variables (i.e., Australia, China, or Japan) are introduced. Third, we include dummy variables on FTA utilization status (i.e., full utilization, no utilization, and partial utilization). Last, we introduce industry dummy variables.

The estimation results using the ordinary least-squares method are presented in Table 6. First, the results of RoOs dummy variables show that, compared with CTC, only CTC/RVC and RVC have significantly high costs for FTA utilization. Such relatively high costs in the case of RVC-related rules may be because RVC rules require exporters to report prices for each input, though the coefficient for CTC&RVC is insignificant. In particular, they need to submit invoices and/or contract documents for each input as attachments, incurring higher costs to collect the required information. In contrast, the utilization costs for WO rules will be relatively low because these require exporters to certify only all-or-nothing in production. These differences may result in the differences in FTA utilization costs across RoOs.

=== Table 6 ===

Second, the coefficient for Japan is estimated as being significantly positive. In

contrast to the above results derived using the stochastic dominance approach, FTA utilization costs in Japan are significantly higher not only than those in Australia but also than those in China. This result reflects the fact that we investigate the differences in FTA utilization costs only in terms of means in this table. Consistent with this result, Table 4 shows a higher mean of FTA utilization costs in Japan than in China.

Third, compared with the case of products with full utilization status, those with no utilization status have low FTA utilization costs while the costs are high for products with partial utilization status. As explained in Section 2, our method of calculation differs significantly according to this status. Such a difference may yield significant differences in calculated costs. Indeed, the method of calculation will be better in the case of partial utilization since this range of utilization costs does not include zero or infinity as shown in Section 2. If so, our results on status dummy variables indicate that our method is likely to underestimate FTA utilization costs for products with either no or full utilization status.

Finally, while some industries have significantly lower FTA utilization costs than live animals, those costs are highest in the transport equipment industry. These relatively high costs in transport equipment might reflect this industry's need to input a relatively large number of parts and components and thus the costs are much greater to collect the required information to certify the RoO.

5. Concluding Remarks

In this study, we measured the cost of FTA utilization for exporting to Thailand from Australia, China, and Japan. To do so, we employed shipment-level Customs data for Thai imports, which enabled us to identify not only the importing firm, source country, and commodity but also the tariff scheme used for such imports. We proposed several measures to serve as proxy for FTA utilization costs, including the minimum amount of firm-level savings on tariff payments. The median costs for FTA utilization in 2008 are estimated at approximately US$2,000 for exporting from China, US$300 for exporting from Australia, and $1,000 for exporting from Japan. These estimates are lower than those in previous studies, which showed approximately US$3,000 to 4,000 of preference utilization costs in Bangladesh and Chile.

We also showed differences in FTA utilization costs in terms of various dimensions. In particular, we found relatively high utilization costs in RVC-related rules and industries requiring a large number of parts and components, e.g., transport equipment. It is widely believed that RVC rules are relatively business-friendly in terms

of low need to adjust inputs to comply with RoOs, compared with WO, for example. In contrast, our results indicate that RVC rules incur higher documentation costs because those require invoices and/or contract documents to be reported for each input. In short, RVC rules may incur lower variable costs (i.e., lower input adjustment costs) but higher fixed costs for FTA utilization (i.e., documentation costs to certify origins). This fact has important policy implications that have not been publically acknowledged. First, the introduction of RVC rules does not necessarily increase the number of FTA users because of the relatively high fixed costs for FTA utilization. Second, it is important to design RoOs so as to reduce both variable and fixed costs for FTA utilization. In other words, it will be effective not only to introduce RVC rules but also to reduce or simplify documentation requirements for compliance with RVC rules.

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Table 1. CoO Fees as of 2013 (US Dollars)

	Fee	Notes
Australia	21-57	Different according to industrial member status
Brunei	1.6	
Cambodia	50	15 for small quantity
China	6.3	
India	7	In addition to on-site examination fee
Indonesia	0.5	
Japan	25.1	
Korea	0	
Lao PDR	5-12.5	Different according to invoice values
Malaysia	0.4	Paper charge
Myanmar	3.9	
New Zealand	28	
Philippines	3.1	
Singapore	5.98	Online case. 8 for manual
Thailand	0	Online case. 1 for manual
Viet Nam	1	Paper charge

Source: Research by the Japan External Trade Organization.

Table 2. Import Firms, Import Values, and FTA Utilization

	# of Eligible Products	# of Import Firms			Import Values (Bil. THB)			Average Import Values (Mil. THB)			FTA Utilization (Denominator)	
					(I)	(II)	(III)					
		MFN	FTA	Others	MFN	FTA	Others	MFN	FTA	Others	(I)+(II)	(I)+(II)+(III)
From China												
2007	2,415	9,922	358	2,147	39	3	24	4	7	11	6%	4%
2008	2,415	10,511	1,901	2,418	30	23	30	3	12	13	44%	28%
2009	4,897	18,068	4,083	2,763	90	53	82	5	13	30	37%	23%
2010	5,893	19,992	8,380	2,718	108	126	135	5	15	50	54%	34%
2011	5,893	20,716	10,392	2,723	128	185	138	6	18	51	59%	41%
From Australia												
2008	5,783	2,802	459	1,145	15	11	5	5	25	5	43%	36%
From Japan												
2008	5,147	9,426	563	5,062	196	70	219	21	124	43	26%	14%

Source: Customs Department, Kingdom of Thailand.

Notes: This table reports the number of importing firms, total import values, average firm-level import values, and FTA utilization rates. The numerator of FTA utilization rates is the import values under FTA schemes (II). These statistics are reported according to years and export countries.

Table 3. Transaction-Level Import Values

	# of Eligible Products	# of Transactions			Average Import Values (Thousand THB)		
		MFN	FTA	Others	MFN	FTA	Others
Annual Data							
From China							
2007	2,415	46,406	1,885	8,551	830	1,395	2,846
2008	2,415	46,180	10,458	7,512	643	2,209	4,041
2009	4,897	99,966	27,622	12,026	895	1,905	6,817
2010	5,893	113,684	52,231	15,311	951	2,413	8,810
2011	5,893	117,667	61,922	15,123	1,091	2,982	9,110
From Australia							
2008	5,783	10,644	1,343	3,431	1,422	8,434	1,584
From Japan							
2008	5,147	81,486	1,494	25,040	2,409	46,704	8,742
Daily Data							
From China							
2007	2,415	162,011	13,540	51,851	238	194	469
2008	2,415	158,867	64,352	48,952	187	359	620
2009	4,897	353,266	140,081	122,208	253	376	671
2010	5,893	422,480	273,340	169,923	256	461	794
2011	5,893	445,254	320,717	163,129	288	576	845
From Australia							
2008	5,783	23,000	7,305	7,547	658	1,551	720
From Japan							
2008	5,147	383,666	15,072	187,307	512	4,629	1,169

Source: Customs Department, Kingdom of Thailand.

Notes: This table reports the number of eligible products, number of firm-product-level import transactions, and average firm-product-level import values. These statistics are reported according to years, export countries, and types of data (annual or daily data).

Table 4. Costs for FTA Utilization (THB)

		N	Mean	S.D.	Median	Max
Annual: Average						
From China	2007	1,631	710,767	3,006,593	96,755	76,432,312
	2008	1,603	535,595	2,916,685	74,795	69,864,600
	2009	3,491	445,356	2,685,181	59,053	104,703,112
	2010	4,423	510,195	2,786,689	57,363	86,636,016
	2011	4,456	671,263	4,889,575	54,384	162,310,880
From Australia						
	2008	2,311	312,356	4,312,859	8,606	154,949,296
From Japan						
	2008	3,470	1,082,108	11,517,825	42,123	528,184,896
Daily: Average						
From China	2007	1,631	178,402	651,723	50,399	12,650,138
	2008	1,603	161,122	1,079,148	36,096	30,307,076
	2009	3,491	141,022	993,172	26,829	32,026,924
	2010	4,423	116,489	680,423	26,467	29,772,672
	2011	4,456	170,496	2,359,053	27,373	150,129,968
From Australia						
	2008	2,311	96,850	1,230,824	6,432	49,542,440
From Japan						
	2008	3,470	124,244	542,923	18,799	14,742,154
Annual: Maximum under MFN						
From China	2007	1,631	956,691	3,564,357	124,094	76,432,312
	2008	1,603	800,647	3,910,272	102,590	93,720,904
	2009	3,491	705,757	3,993,753	80,551	133,982,128
	2010	4,423	834,888	4,245,509	84,308	160,963,440
	2011	4,456	1,020,716	6,112,144	81,680	162,310,880
From Australia						
	2008	2,311	166,147	1,329,091	6,418	43,562,052
From Japan						
	2008	3,470	693,688	15,202,548	24,011	873,356,672
Annual: Minimum under FTA						
From China	2007	1,631	464,844	2,819,143	24,639	76,432,312
	2008	1,603	270,543	2,591,387	4,851	69,864,600
	2009	3,491	184,955	2,149,087	2,661	104,703,112
	2010	4,423	185,501	2,221,297	1,900	86,636,016
	2011	4,456	321,810	4,491,667	1,870	162,310,880
From Australia						
	2008	2,311	239,251	2,372,318	9,074	77,542,104
From Japan						
	2008	3,470	887,898	11,574,483	40,238	587,914,112

Source: Authors' calculation.

Notes: This table reports the number of sample products, average, standard deviation, and maximum values of the calculated costs for FTA utilization. These statistics are reported according to years, export countries, and types of data (annual data or daily data). The panel "Maximum under MFN" reports utilization costs in the case of using the maximum value of tariff saving evaluated for imports under MFN schemes when calculating the utilization costs for partial utilization. In the panel "Minimum under FTA," we use the minimum value of tariff savings evaluated for imports under FTA schemes. The panel "Average" shows the utilization costs in the case of using the average of these two values.

Table 5. Kolmogorov-Smirnov Tests

Comparison groups (F vs. S)		$F = S$	$F \leq S$	$S \leq F$
China vs. Australia	D-statistics	0.355	0.355	-0.001
	p-values	0.000	0.000	0.999
China vs. Japan	D-statistics	0.130	-0.130	0.011
	p-values	0.000	0.000	0.766
Australia vs. Japan	D-statistics	0.232	-0.001	0.232
	p-values	0.000	0.998	0.000

Note: This table reports the results of Kolmogorov-Smirnov tests for FTA utilization costs based on "Annual: Average" in 2008 in Table 4.

Table 6. Correlation with Various Elements

		Coef.	S.E.	
RoO Dummy (Base = CTC)				
	CTC&RVC	-0.157	0.143	
	CTC/RVC	1.059	0.112	***
	RVC	1.141	0.238	***
	WO	0.917	0.981	
Exporter Dummy (Base = Australia)				
	China	0.156	0.249	
	Japan	0.773	0.100	***
Status Dummy (Base = Full)				
	No	-1.386	0.223	***
	Partial	0.578	0.223	***
Industry Dummy (Base = Live animals)				
	Vegetable products	-0.760	0.187	***
	Animal/vegetable fats and oils	-0.618	0.299	**
	Food products	-0.342	0.182	*
	Mineral products	-0.139	0.320	
	Chemical products	-0.182	0.182	
	Plastics and rubber	-0.337	0.231	
	Leather products	-0.410	0.281	
	Wood products	-1.258	0.257	***
	Paper products	-1.948	0.382	***
	Textiles	-0.518	0.161	***
	Footwear	-0.949	0.239	***
	Plastic or glass products	-0.127	0.210	
	Precision metals	-0.417	0.348	
	Base Metal	-0.214	0.179	
	Machinery	-0.146	0.167	
	Transport equipment	1.121	0.215	***
	Precision machinery	-0.470	0.193	**
	Others	-0.856	0.187	***
Constant		10.282	0.257	***
Number of observations		7,382		
R-squared		0.2242		

Notes: The dependent variable is a log of FTA utilization costs based on “Annual: Average” in 2008 in Table 4. We estimate this model by ordinary least-squares. ***, **, and * indicates 1%, 5%, and 10% significance, respectively. “S.E.” indicates the robust standard error.

Appendix A. Applying Ulloa and Wagner Method to Our Dataset

In this appendix, we examine the validity of the method proposed by Ulloa and Wagner (2013) by applying it to our import transaction data for Australia and Japan in 2008. Although their approach first estimates the cumulative export density function, we estimate the cumulative import density function because of the lack of firm-level export data in export countries. In order to assure a sufficient number of observations, we restrict sample products to those having more than 100 transactions. Then, by applying FTA utilization rates to this function, we solve for "cutoff imports." These estimations and calculations are conducted at the product-level. Furthermore, we do not include imports under other schemes. On the basis of this value of cutoff imports, we define a binary variable that takes the value of one if imports are greater than cutoff imports and zero otherwise. Last, we estimate the simple probit model wherein the dependent variable indicates actual FTA utilization and the independent variable includes the above binary variable. The estimation results are shown below. Consequently, import transactions with a value greater than the computed cutoff imports have a 4% to 7% higher probability of FTA utilization.

Probit Estimation Results (Marginal Effect)

	AUS	JPN
Cutoff	0.065***	0.039***
	(0.017)	(0.002)
Number of Products	14	413
Number of Transactions	3,568	117,094
Pseudo R-squared	0.0638	0.0551
Log pseudolikelihood	-265.9	-7149.7

Notes: *** indicates 1% significance. Parenthesis indicate the robust standard error.

Appendix B. FTAs for Thailand

FTAs	Members	Implementation
ASEAN Free Trade Area (AFTA)	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Viet Nam, and Thailand	1993
Thailand-India FTA (TIFTA): Early harvest	India and Thailand	2004
Thailand-Australia FTA (TAFTA)	Australia and Thailand	2005
ASEAN-China FTA (ACFTA)	Brunei, Cambodia, China Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Viet Nam, and Thailand	2005
Thailand-New Zealand Closer Economic Partnership Agreement (TNZCEP)	New Zealand and Thailand	2005
Japan-Thailand Economic Partnership Agreement (JTEPA)	Japan and Thailand	2007
ASEAN-Japan Comprehensive Economic Partnership (AJCEP)	Brunei, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Singapore, Viet Nam, and Thailand	2009
ASEAN-Republic of Korea FTA (AKFTA)	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Korea, Singapore, Viet Nam, and Thailand	2010
ASEAN-Australia-New Zealand FTA (AANZFTA)	Australia, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, New Zealand, Philippines, Singapore, Viet Nam, and Thailand	2010
ASEAN-India FTA (AIFTA)	Brunei, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Viet Nam, and Thailand	2010
Thailand-Peru Closer Economic Partnership Agreement (TPCEP)	Peru and Thailand	2012

Source: Authors' compilation.