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Exporter Responses to FTA Tariff Preferences: Evidence from Thailand

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ABSTRACT

This paper focuses on how exporters actually respond to the FTA preferential schemes that are mushrooming worldwide, analyzing the administrative records of FTA implementation at the product level in Thailand. Our key finding is that while there is a growing number of newly-launched FTAs with a potentially larger membership coverage in addition to existing FTAs, firms tend to intensively prioritize using these existing and bilateral FTAs instead. Only a narrow range of products were involved in applications for FTA preferential schemes. As a result, only one third of actual exports were covered by such arrangements. The key determinants for firms to apply the preferential schemes include tariff margins, the ability to compile with ROOs and economic fundamentals influencing trade. Hence, it is less likely for FTAs to open up new export opportunities for products that are either yet to be traded or of low prospective trade volume. Our estimate of the cost of complying with ROOs averages out at around 8.6 per cent of tariff equivalence. The cost is approaching zero for developed countries, but substantially higher for developing nations. The key policy inference is the export enhancing effect of FTAs being passive at best, working only after all economic fundamentals are established and sound. To harness the trade-induced effects of signed FTAs, reducing costs incurred from the presence of ROOs from both exporting and importing countries represents the prime focus required.

Key words: Free Trade Agreement, Rules of Origin, Thailand, Unbalanced Panel Data Econometric Analysis

JEL: F15, F53, O19, O53

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1. Issues

The proliferation of free trade agreements (FTAs) is one of the most notable phenomena prevailing in the world economy since the onset of the new millennium (Baldwin and Jaimovich, 2012). The number of FTAs notified to the World Trade Organization (WTO) rapidly increased from around 124 in 1994 to 625 by February 2016, nearly 70 per cent of which currently remain in force.[1] Considerations of whether and how exporters actually respond to FTA preferential schemes remain open empirical questions with immense policy implications. This is due to the fact that not all exports are eligible for such preferential schemes. Products must compile with the rules of origins (ROOs), the rules proving the origin of goods for the purpose of determining any eligibility for tariff concessions. In addition, there exists a burden induced by administrative procedures in receiving the preferential treatment. All in all, the actual impact on exports is not as straightforward as we usually expect from multilateral and/or unilateral liberalization.

While there are a number of empirical studies (e.g. Keck and Lendle, 2012; Cadot and Ing, 2015) examining the determinants of preferential scheme utilization, most of them draw on data concerning the Generalized System of Preferences (GSP) schemes offered by developed countries to developing nations. Despite useful, analyses based on GSP schemes are based on exports from many developing countries to a given developed country. The cost estimates therein would reflect the restrictiveness of rules of origin in a given GSP scheme. Administrative procedures imposed by importing countries could not be captured. Interestingly, there is increasing concern that ROOs in practice have been used as vital commercial policy instruments and eventually deter firms from using FTA preferential schemes.[2] Such concerns are highly policy relevant as a number of countries put tremendous effort into negotiating and signing FTAs with the expectation of their implementation enhancing trade opportunities.

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[1] Further details are available at: https://www.wto.org/english/tratop_e/region_e/region_e.htm

[2] There are a number of studies arguing that ROOs have been used as vital commercial policy instruments to mould ROOs to the benefit of special interest groups (Vermulst & Waer 1990, Krueger 1999, Bhagwati et al. 1999, Falvey & Reed 2002, Estevadeordal & Suominen 2004, James 2005, and Krishna 2005).

This issue has become particularly important in East Asia where many economies are enthusiastic about signing FTAs with their regional partners culminating in the zone now standing at the forefront of global FTA activity (The Economist, 2014). Interestingly, freshly-launched FTAs often surface in addition to existing agreements. For example, Thailand and Australia signed an FTA in the late 2005, known as the Thailand-Australia FTA (TAFTA). In 2010, the ASEAN-Australia-New Zealand FTA came into force, so that from 2010 onwards firms had further options when accessing preferential schemes. If the Regional Comprehensive Economic Partnership (RCEP) is successfully concluded, there will be another alternative scheme available for Thai firms when exporting to Australia. Arguably, this aims to consolidate the plethora of bilateral and plurilateral agreements and rectify existing problems found in the earlier signed FTAs. Whether the new alternatives in fact mitigate the problems faced in existing FTAs and encourage firms to use preferential schemes has rarely been examined in the literature to date.

Against this backdrop, a comprehensive analysis of exporters' responses to FTA preferential schemes is undertaken with a view to informing the policy debates outlined above. In order to indicate the responses of the private sector to FTA export creation, FTA utilization (FTAU), the ratio between administrative records and actual trade, is calculated. The calculated FTAU is further used as the dependent variable in an inter-product (unbalanced) panel data econometric analysis.

There are studies of preference utilization but their analysis is based on data concerning GSP schemes only.[3] This made impossible to examine administrative procedures that might be imposed with protectionism by importing countries. In addition, certain industry-specific characteristics which were ignored in the previous studies are incorporated in our analysis. In particular, the extent to which products are involved in global production networks and the existence of any foreign presence are included.

[3] Alternatively, there are studies examining how firms respond to FTA preferential schemes through questionnaire surveys such JETRO (2007), Takahashi and Urata (2008), Kawai and Wignaraja (2011) and the Economist (2014). Their results are likely to be subject to social desirability bias. Firm coverage that varies from study to study coverage also could have an influential impact on the outcome. See a full discussion in Kohpaiboon and Jongwanich (2015).

Thailand is suitable as a case study in this context for two reasons. Firstly, the Thai government is active in signing FTAs with trading partners. In 2015, administrative records for the FTA implementation of Thai exporters became available for the period 2001-15. This allows us to undertake a systematic analysis of FTA utilization by Thai exporters. Secondly, Thai exporters have the potential to utilize the tariff concessions offered by FTAs because the Thai manufacturing sector is relatively broad-based, compared to neighboring countries.

The organization of this paper is as follows: Section 2 discusses the development of FTAs in Thailand; this is followed by consideration of trends and patterns of the administrative records of FTA in Section 3. Section 4 presents the empirical model and the data used for econometric analysis. Section 5 additionally outlines the results of the econometric analysis. Conclusions and policy inferences are presented in the final section (Section 6).

2. FTAs in Thailand

The slowdown in WTO liberalization negotiations resulted in a switch of political attention and negotiating resources in Thailand towards preferential trade agreements and bilateral free trade accords in particular. This process accelerated as a result of a significant change in the political situation in Thailand between 2001 and 2006 where Thaksin Shinawatra's Thai Rak Thai political party came to power with a strong mandate. In particular, Thailand signed 15 FTAs initiated during the Thaksin administration period (2001–2006) and implemented without neither careful consideration, nor public consultation.

Between 2006 and May 2011 FTA enthusiasm in Thailand stalled due to the coup a coup d'etat, the 11th since the country's first coup in 1932. Under the new constitution promulgated in 2007, execution of international trade agreements is subject to parliamentary approval (Article 190) to prevent rushed conclusion of agreements without careful study and public consultation. Article 190 ensures that all international trade agreements must be carefully scrutinized and subject to countrywide public hearings. Thus, more time is now needed to enact international trade agreements, compared with the Thaksin period. This constitutional amendment had a significant impact on FTAs as not a

single bilateral FTA was ratified between 2006 and May 2011 except those that were only instigated within the Association of Southeast Asian Nations (ASEAN) 'plus' format.

From May 2011 and May 2014, Prime Minister Yingluck Shinawatra, the younger sister of former Prime Minister Thaksin Shinawatra, started to pay attention to FTA negotiations again, including negotiations with Canada in March 2012 and the expression of interest in becoming a member of the Trans-Pacific Partnership (TPP) made during the United States President Obama's visit to Thailand in November 2012. On May 2014, nonetheless, the Royal Thai Armed Forces led by General Prayut Chan-o-cha, launched a coup d'etat against the caretaker government of Thailand. As a consequence, this has stalled all FTA talks wherein developed country FTA partners including US and European countries were involved.[4]

There are only eight FTAs in which tariff cuts were substantial, covering more than 80 per cent of tariff lines and having been offered since 2010. They comprise the ASEAN Free Trade Area (AFTA), ASEAN-China FTA (ACFTA), the Thailand–Australia FTA (TAFTA), the Thailand–New Zealand FTA (TNFTA), the Japan–Thailand Economic Partnership Agreement (JTEPA), the ASEAN–Japan FTA (AJFTA), the ASEAN–Korea FTA (AKFTA), and the ASEAN-Australia-New Zealand FTA (AANZFTA).

Most of FTAs Thailand has signed so far mainly focus on goods market liberalization (Kohpaiboon and Jongwanich, 2014; Kohpaiboon et al. 2015). As revealed in Kohpaiboon and Jongwanich (2015), the preferential tariffs offered in these agreements vary across FTAs considerably, from 0.1 to 10.7 per cent with sizable exceptions. Tariff margins for the developed countries were smaller - ranging from 0.1 to 5.7 per cent. The corresponding variance for developing countries was between 2 and 10.7 per cent with a sizable number of exceptions.

3. Trend and Patterns of Administrative Records of FTA Implementation

[4] Information in this subsection is compiled from official data source. Available at http://www.dtn.go.th/index.php/forum.html by the authors. Full details are available upon the requests.

In this subsection, analysis made is based on official records of certificate of origin (c/o).[5] All exporters who want to apply for a FTA preferential tariff must complete the prerequisite documents in order to provide necessary information related to product originality. If products comply with FTA ROOs, official records of c/o will be issued. Data on c/o records (henceforth referred to preferential export) are available for the period 2001 to the present (2015). Original data of preferential exports is available at the six-digit level of the Harmonized System (HS) classification. Before 2006, there was a few FTAs signed and in effect so our following analysis will focus between 2006 and 2015. Note that the official records of TNZFTA is not available due to the adoption of paperless system so that those are excluded in the following discussion.

The dollar value of preferential exports increased over the period, from $10 billion in 2006 to $50.6 billion in 2015 (Figure 1.1). Its corresponding annual growth average was 18 per cent, with a downward trend over the considered period. In particular, the value over the past three years (i.e. 2013-15) was stagnant, hovering at around $50 billion. The rapid growth observed between 2006 and 2010 was a result of the increased number of FTAs in effect.

The ASEAN Free Trade Area (AFTA) and its successor, The ASEAN Economic Community (AEC), accounted for about 29.5 per cent of total preferential exports, averaged out between 2006 and 2015 (Figure 1.2). Even though the export value through the AEC continued to grow from $5.5 billion in 2006 to $19.2 billion in 2015, its share dropped from 55 per cent to 37.9 per cent during this period. The decreasing relative importance of the AEC emerged as a result of newly signed FTAs.

Generally, firms applying for AEC preferential schemes were seeking market access to the original ASEAN members. For example, in 2015, the total dollar value of preferential exports to AEC markets was $19.2 billion. Of the total AEC preferential export figure, 64 per cent was for market access into original ASEAN member states. Among the original ASEAN members, Indonesia accounted for the largest share, i.e. 26 per cent of total AEC preferential exports. The first and second runner-ups among the original ASEAN members were the Philippines (18.8%), and Malaysia (16.1%).

[5] Data are administered in Thailand by the Bureau of Preferential Trade (BPT), Department of Foreign Trade and The Ministry of Commerce.

Nonetheless, their relative importance declined over the period under review due to the rapid growth of preferential exports to new ASEAN member markets, i.e. Cambodia, Laos, Myanmar and Vietnam (henceforth referred to as CLMV). The dollar value of preferential exports to CLMV increased from $1.3 billion in 2006 to $5.2 and $6.9 billion in 2014-15, respectively. Hence, its share increased from 23 per cent in 2006 to 36 per cent in 2015. The most important export destination among CLMV is Vietnam.

Another interesting pattern observed within the AEC market concerns the declining value of preferential exports to Indonesia. Despite occupying the largest share among ASEAN members, Indonesia experienced not only a declining relative importance but also a decline in terms of dollar values. This could be explained by increasing protectionism sentiments and the use of non-tariff measures in Indonesia (Pantunru and Rahardja, 2015).[6]

By 2015, China had become the most important non-ASEAN, FTA partner in terms of c/o records (Figure 1.3). The c/o record of Thai corporate exports to China increased rapidly from $1.5 billion in 2006 to $11.5 billion in 2015, as a result of the progress of trade liberalization undertaken in ACFTA. This works over and above the spectacular growth performance of the Chinese economy over the past two decades.

Until 2013 Japan was the first runner-up after China in terms of the value of its preferential exports. Their value increased from $ 4.5 billion in 2008 to around $6.5 billion from 2012 onwards.[7] From 2013, preferential exports to Australia overtook Japan and became the first runner-up. Its preferential export value increased from $2.7 billion in 2006 to $8.2 billion in 2015.[8]

As outlined earlier, there are a growing number of newly launched FTAs in addition to already signed FTAs. Hence, firms have more than one FTA schemes available for a given export destination. In our data set, Australia and Japan are included in this category.

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[6] Nonetheless, a comprehensive study is needed to get a better understanding of the declining preferential exports from Thailand to Indonesia.

[7] The Figure for 2007 covered only two months (November and December) as JTEPA came in effect in November 2007. Hence, we use 2008 as the starting point for comparison purposes.

[8] While another developed country market is New Zealand, it is not brought into the discussion. This is because TNZFTA adopts a paperless system. Hence, there are no c/o records under the TNZFTA available. Measures recorded comprise transactions through AANZFTA. Hence, they do not form the same basis for comparison.

Interestingly, we find that firms are unlikely to apply such newly-launched FTAs. For example, in the case of Australia, TAFTA and AANZFTA were in effect from 2006 and 2010, respectively. Hence, by 2010 onward firms were free to choose either TAFTA or AANZFTA. In 2015, total preferential exports to Australia from Thailand amounted to $8.2 billion, of which $7.8 billion was under the auspices of TAFTA. Similarly, the total preferential export value from Thailand to Japan was $6.7 billion in 2015. The similar result was also found in the case of Japan where two alternative FTAs available for Thai firms exporting from Thailand to Japan (JTEPA and AJFTA). Such a pattern inevitably raises policy attention. In particular, even though the regional wider FTAs, like AJFTA and TANZFTA, allow for accumulation inputs across regions, they are not practical from a firm viewpoint and as such relatively unattractive to prospective companies.

Experience of India is just opposite to what happens in FTAs involved Australai and Japan. In particular, most of preferential export from Thailand to India were undertaken under AIFTA. For example, by 2015, the value of preferential export from Thailand to India was $3 billion,nearly 75 per cent of which were concluded under the banner of AIFTA. This is due to the fact that there has not been any progress in negotiations. By contrast, in 2010, AIFTA was in effect with a clear time schedule concerning tariff cuts, i.e. 80% in 2016 for India and original ASEAN members.

The c/o records of ASEAN-Korea FTAs grew remarkably after signing in 2008, from $0.9 billion in 2010 to $2.2 billion in 2011. From then on, the value of preferential exports to Korea remained roughly constant at around $2 billion a year.

3.2 Product Concentration

This subsection examines the extent to which product lines benefiting from FTA preferential schemes. As revealed in Table 1, a number of products applying for FTA preferential schemes vary vastly across FTA partners. The number was high for major FTA partners, such as Australia, Indonesia, Japan, Korea, Malaysia, Philippines, and Vietnam average out at around 1,000 product lines. These numbers remained roughly constant over the period considered. In response to the tariff cuts undertaken in gradual steps in ACFTA, the number of products affected increased gradually over time, from 269 in 2006 to 1,270 product lines in 2015. The figures for India were similar to those of China

to a certain extent. With other FTA partners, the numbers of product lines were much smaller.

The number of products applying for FTAs as a (per cent) ratio of the total volume of products Thailand actually exports to a given FTA partner was around 40 per cent for major FTA partners. It was much lower for other partners at around ten per cent. The observed low ratio reflects the nature of highly concentrated product lines that benefit from FTAs. This is supported by the cumulative share of preferential exports of top-ten products (revealed in last three columns of Table 1), which was high over the period under consideration. For example, the top ten products accounted for 77 per cent of total preferential exports from Thailand to Australia in 2015, increasing from 72 and 61 per cent in 2006 and 2012, respectively. The cumulative share of other major FTA partners was more or less the same as Australia. The lowest cumulative share was in the case of Vietnam with a noticeably increasing trend. Their share increased from 39 per cent in 2006 to 44 per cent in 2015. All in all, FTA preferential schemes tend to benefit a rather narrow range of product lines. As argued in Kohpaiboon and Jongwanich (2015), these products are dominated by four sectors, i.e. automotive (both vehicles and auto parts), electrical appliances, petrochemical products, and processed foods, all of which share the following characteristics. Firms in these sectors are generally large in size. Their products exhibit high levels of local content. Interestingly, the tariff margins in these product are substantial. All of these characterisitcs matter when it comes to firms' decision to apply FTA preferential schemes as elaborated below.

3.3 Utilization

To illustrate the use of FTAs, the ratio of preferential exports to actual export value is calculated. There is ongoing debate on what the appropriate denominator in calculating the ratio should be when the rather aggregate indicator is concerned.[9] In particular, whether the denominator in calculating the FTA utilization ought to entail total value or the value of non-zero tariff items only. There are many items whose tariff is already zero so that there is no incentive for firms to use FTAs. Including them in the denominator would lead

[9] There problem is less severe when the analysis is undertaken at the disaggregate level, i.e.4 digit or 6 digit.

to underestimating FTA utilization. Hence, it would be more appropriate to use non-zero-tariff item values in the denominator. On the other hand, there are at least three reasons running against the use of non-zero tariff items as the denominator. Firstly, in every FTA negotiation, the potential trade highlighted in press is often based on total trade, regardless how many products are tariff-free.[10] Hence, to reveal the relative importance of FTAs, total trade should be the benchmark. Secondly, negotiation in designing ROOs is undertaken on all HS items, regardless of their existing most-favored-nation (MFN) tariff. If zero-tariff items are not relevant for FTA uses, ROO negotiation should focus on non-zero tariff items only. This is not true in ROO negotiation practice nowsdays. Finally, the appropriate definition of non-zero-tariff items remains unclear when there are other tariff exemption schemes in place. For example, in an export processing zones where tariffs of inputs used for export can be exempted, . If so, it is very difficult to exclude them in practice. Therefore, in the following discussion, which focuses on aggregate analyses, total actual exports are used in the denominator in calculating utilization rates.

Figure 2 presents an overall assessment of how firms utilized FTA preferential schemes between 2006 and 2015. When all partners are combined, the utilization rate[11] was rather low, averaging out at 32.6 per cent from 2006 to 2012 (Figure 2.1). In other words, about one-third of total export value to FTA partners applied for FTA preferential schemes. It increased from 15.4 per cent in 2006 to around 43.7 and 32.6 per cent in 2014 and 2015, respectively. It is presently too early to make inferences concerning the drop in the 2015 utilization rate, but this development should be noted for further investigation in the future.

[10] See, for example, the EU-Thailand FTA press release, usually referring to total trade between two partners worth of 32 billion EURO, available at http://europa.eu/rapid/press-release_MEMO-13-179_en.htm.

[11] The terminology used here is in line with Plummer et al (2010) in which the measures concerning how much FTAs are used by firms are classified into three categories. They are utilization rate, utility rate and usage rate. Utilization rate is referred to as the ratio of dutiable imports that use FTA preferences to total imports. When the denominator is changed to dutiable imports (MFN greater than zero), it is referred to as utility rate. Usage rate is the ratio of dutiable imports that use FTA preferences to dutiable imports with MFN tariff rate greater than FTA rate.

Utilization rates seem to vary across FTA partners. Among ASEAN members, Indonesia had the highest utilization rate. From 2006 to 2015, it stood in the range between 50.9 and 67.9 per cent (Figure 2.2). The Philippines and Vietnam constitute first and second runners-up in applying for AEC preferential schemes. The average of their utilization rates during the period of 2006-2015 were 55.2 and 46.6 per cent, respectively. There is no clear pattern observed among these ASEAN top-three nations in FTA utilization over the period considered. Malaysia, another major economy in ASEAN, recorded rather low utilization rates at around 24.3 per cent between 2006 and 2015. The low utilization rate found in Singapore was not surprising given the fact that the country is tariff-free. Turning to Cambodia, Laos and Myanmar utilization rates registered at less than ten per cent, on average, between 2006 and 2015. This would be due to their gradual adjustment to tariff reduction.

When non-ASEAN partners are concerned, utilization rates were slightly lower. The average figure during the period of 2006-2015 was 35 per cent, with an accompanying increasing trend being observed (Figure 2.3). Utilization rates were highest in the case of Australia, fluctuating between 51.9 and 81.2 per cent. This suggests the presence of tariff peak items in developed countries like Australia. These items were actually liberalized under FTAs. For other non-ASEAN FTA partners, utilization rates exhibited a continuously upward trend. This is especially true for China and India.

4. Determinants of FTA Utilization

So far the main finding from the analyses above is that FTAs are beneficial to a narrow range of products. This occurs even in developed country partners whose MFN tariff average is already low. Therefore, there is likely to be certain product- and industry-specific factors that play an influential role in firms' decision-making in applying preferential schemes. To gain a better understanding, econometric analysis of FTA determinants at the disaggregated product levels is undertaken.

4.1 Empirical Model

There is no fully developed theory examining the determinants of inter-product FTA utilization. We, therefore, have developed our empirical model employing an eclectic approach, informed by relevant theories and empirical regularities in previous studies. In the empirical model, the FTA utilization rate of product *i* to country *j* $\left(FTAU_{ij,t}\right)$ at time *t* is used as a dependent variable in the analysis. It is calculated at the four digit HS disaggregation level. See in Section 4.3 of discussion concerning the choice of disaggregation level.

The first explanatory variable is tariff margins, measured by the difference between general (most-favored-nations) and preferential tariffs, $\left(t_{ij,t} - t_{ij,t}^{FTA}\right)$ (referred to direct measure, henceforth). While the tariff margin is measured as a percentage of its corresponding MFN tariff rates in some studies, its main shortcoming is the effect of a tariff margin on a firms' decision tends to be negligible at the high MFN tariff rate level. This seems to be counter-intuitive. In fact, it would not matter what the combination of tariff margin. [12] What really matters is how much tariff margin itself, indicating the benefit firms could get from preferential schemes. Hence, our preferred choice here is the direct measure. A positive relationship between tariff margin and FTA utilization is expected.

The second explanatory variable concerns the local content of products, as a proxy of the ability to comply with rules of origin (ROO) in a FTA. In absence of a direct measure of the ability to comply with any form of ROO, the local content could be employed. With respect to goods, where firms intensively procure raw materials and intermediates locally, final products tend to be categorized in different HS classifications at the disaggregate level (e.g. subheadings). In this study, local content is measured by the backward linkages index of product *i* at time *t* $\left(BLI_{i,t}\right)$ based on the Leontief inter-industry accounting framework. It indicates the total units of output required, directly and indirectly, from all sectors (including the unit of output delivered in response to final demand by the given sector) when the demand for product i^{th} rises by one unit. In general, we expect that the higher

[12] For a given tariff margin at 5 per cent, it could come from several combination between MFN and preferential tariff rates, e.g. (5,0), (10,5), (20,15), etc., respectively.

the $BLI_{i,t}$, the greater the ability a product i^{th} possesses in complying with ROOs. Thus, a positive sign of coefficient corresponding to $BLI_{i,t}$ is expected.

However, the relationship between $BLI_{i,t}$ and $FTAU_{ij,t}$ might be non-linear. That is, when the local content of a product surpasses a certain level, the role of $BLI_{i,t}$ in deciding to use FTAs becomes less important. To address a possible non-linear relationship, a squared term of *BLI* is introduced in the empirical model.

The third explanatory variable encapsulates the historical export records of the actual exports of product *i* exporting to country *j* at time *t* $\left(HEX_{ij,t}\right)$. It is added to examine whether or not FTAs could open up new export opportunities for products that have heretofore not been traded. A statistical significance of the corresponding coefficient would suggest that products that have not been exported (i.e. where the historical export value is equal to zero) are less likely to apply for a FTA preferential scheme. Hence, the expected sign of the corresponding coefficient between $HEX_{ij,t}$ and $FTAU_{ij,t}$ could be either positive or zero. In this study, a historical export record is measured by the average of the past three years export values.

The extent to which foreign firms; and multinational enterprise affiliates in particular, participate in a given industry forms the fourth explanatory variable in the model. It is likely that foreign firms behave differently from local enterprises in a number of aspects, including applying for FTA tariff concessions. Foreign firms tend to be larger in size, so that it is more likely that they will absorb administrative costs as opposed to local firms. Thus, a positive relationship between foreign presence and utilization rates is expected. Nevertheless, as argued in the multinational enterprise and product fragmentation literature (e.g. Jones, 2000; Jones & Kierzkowski, 2001), efficiency-seeking FDI has become increasingly important in East Asia over the past two decades. More importantly, these multinational enterprises (MNEs) tend to be located in export processing zones in order to receive input tariff exemption. Therefore, foreign firms might not be attracted to FTA tariff concessions. The relationship between foreign presence and FTA utilization could be negative. Hence, the relationship between foreign presence $\left(FOR_{i,t}\right)$

and $FTAU_{ij,t}$ is ambiguous. Foreign presence ($FOR_{j,t}$) is measured by the proportion of the output share of foreign firms to that of the industry as a whole.

The final explanatory variable is represented by the share of the parts and components trade in the total trade of the industry *i* at time *t* $\left(PC_{i,t}\right)$. This is due to examine whether products traded under global production sharing utilize the offered FTA tariff preferences. This is highly policy relevant for East Asian economies where global production sharing, the breakup of production processes into geographically separated stages, is far more important in East Asia than elsewhere (Athukorala & Kohpaiboon, 2015). One consequence of the increasing importance of global production sharing is the rapid expansion of P&C trade across countries. As the whole when the production process is broken up and located in several locations, the domestic content tends to be lower than the final goods trade. This would make it more difficult for P&Cs to comply with the rules of origin. Hence, a negative coefficient is expected for $PC_{i,t}$

All in all, the empirical model of the determinants of *FTAU* is as follows;

$$FTAU_{ij,t} = f\left(t_{ij,t} - t_{ij,t}^{FTA}, BLI_{i,t}, BLI_{i,t}^2, FOR_{i,t}, HEX_{ij,t}, PC_{i,t}\right) \quad (1)$$

where $FTAU_{i,t}$ = FTA utilization (the ratio between the official record of FTA implementation and actual exports) in industry i^{th} at time *t*

$t_i - t_i^{FTA}$ (+) = the margin between general and preferential tariff rates in industry i^{th}

$BLI_{i,t}$ (+) = the degree of backward linkage index of industry i^{th} as a proxy of the ability of products to comply with ROOs

$BLI_{i,t}^2$ (-) = the squared term of $BLI_{i,t}$

$FOR_{i,t}$ (+/-) = the degree of foreign presence in industry i^{th} at time *t* proxied by the employment share of foreign firms

$HEX_{ij,t}$ (+) = the historical export value averaged the past three years of product *i* to country *j* at time *t*

$PC_{i,t}$ (-) = the ratio of the parts and component trade in total trade of product *i* at time *t*

(The theoretical expected signs are in parentheses)

4.2 Data Cleaning

To measure FTA utilization, preferential exports must be matched with their corresponding actual exports. This is done at the disaggregate level. Nonetheless, there are two main problems in the matching process. The first problem is that there are c/o records whose HS codes do not match with the official HS codes due to human error (i.e. code mismatching).[13] Perhaps the errors revealed reflect the difficulty firms face in identifying their HS codes in applying c/os. Nevertheless, the number of records experiencing HS code mismatching is rather small and their corresponding value is negligible.[14] Such items are consequently dropped from our analysis.

The second problem concerns another form of mismatching found in the data set. It occurs when the value of c/o records exceeds their corresponding actual export value (i.e. value mismatching). In theory, c/o records should not exceed their corresponding actual exports because firms are allowed to apply c/o in advance (i.e. 3 months in most) to gain flexibility in expediting business initiatives. As a result, they might overestimate their true demand for c/o and c/o records could slightly exceed their corresponding actual exports in practice. In addition, this might be as a result of errors in the data collection process.

The problems which take place occupy two extremes. One extreme is that there are non-zero c/o records which are associated with zero actual export value. The numbers of records falling in this extreme were relatively small.[15] Hence, records in this extreme were dropped from our analysis. In another extreme, there are c/o records whose values far exceed their actual export value. While such an extreme should be dropped, it is difficult in practice as there is no clear cut criterion to justify when such a measure should be

[13] For example, the administrative records reported export values of HS 200890, 321010 and 350210 from Thailand to Indonesia in the 2003 records. Such items do not have corresponding actual export data.

[14] For example, in 2015, there were 61 error records in the case of Australia, accounting for three per cent of total product lines applying for the preferential scheme (TAFTA). Their total value was about $0.3 million. Other major FTA partners experienced more or less the same situation.

[15] For example, in 2015, there are 34 records, with a total value of $13.7 million. They accounted for around 0.2 per cent of total preferential exports.

regarded as an extreme. Hence, sensitivity analysis is undertaken. We found that 30 per cent as a cutting point is chosen in order to preserve the integrity of observations in our analysis. Interestingly, two types of mismatching dropped significantly when the data is aggregated into a four digit classification. To maximize the number of records, the original records are aggregated at the four digit level.[16]

4.3 Sample Coverage and Variable Measurements

While there are 17 individual FTA partners in total, only eight major partners were covered in the analysis as tariff cuts under corresponding FTAs covered more than 80 per cent for the period before 2010. They include Australia (2006), Indonesia (2006), Malaysia (2006), Philippines (2006), Vietnam (2006), Japan (2007), China (2010) and Korea (2010). These preferential schemes have long been available. Hence a comparison of these observations decently reflects firms' decisions in applying preferential schemes, instead of reasons beyond this consideration, such as differences in the scope, scale, and progress in FTA negotiations. Note that for a country when there is more than one FTA preferential schemes available, the scheme firms used intensively is selected in our econometric analysis. That is, data on TAFTA and JTEPA are used for Australia and Japan, respectively. Other ASEAN members (i.e. Brunei, Cambodia, Laos and Singapore) are excluded mainly because of the negligible value of their preferential exports. New Zealand is excluded due to the absence of data as a result of the adoption of a paperless system. In cases of India, Chile and Peru, their tariff cuts began with items which are of high potential to be traded under FTA preferential schemes, so including them in the sample could result in an upward bias on the effect of tariff margins on firms' decision making.

Our econometric analysis focuses on manufacturing products defined as HS25-97 which account for around 75% of exports from Thailand to Australia, Indonesia, Japan, Malaysia, the Philippines and Vietnam. Agricultural products are excluded because many of these products are subject to specific tariffs. Converting them into ad valorem equivalence would be problematic. Besides, these products are less likely to be affected

[16] Full detail is availabe upon the requests of the authors.

by any forms of ROO as they are usually obtained wholly from an exporting country. This represents a notably different scenario from that facing manufacturing products.

As mentioned earlier, preferential export values that were originally at a six digit HS classification were aggregated to four digit HS marks. The corresponding tariff margin comprises the weighted average within a four digit HS, using the actual export value as the weight. Backward linkage index $\left(BLI_{i,t}\right)$ is constructed for two years according to the availability of Thailand's input-output tables, 2005 and 2010. Hence, $BLI_{i,2005}$ is used for data between 2006 and 2009, whereas $BLI_{i,2010}$ is used for data from 2010 onwards. Data of $FOR_{i,t}$ is obtained from two industrial censuses of Thai manufacturing (2006 and 2012). The 2006 census is used for observations from 2006 to 2011, while 2012 data is used for 2012 onwards. $FOR_{i,t}$ are originally classified according to the International Standard of Industrial Classification (ISIC), so that the standard concordance between HS and ISIC classification is used. Finally $HEX_{ij,t}$ representss the annual export value over the past three years at the four digit HS level. To construct $PC_{i,t}$,we use the list of parts and components developed in Athukorala & Kohpaiboon (2009), which is much more comprehensive than those listed under Sections 42 and 53 in the Board Economics Classification (BEC).[17] Originally, the original list at the six-digit HS classification is aggregated to four-digit. Table 2 provides a summary of the variables used in the econometric analysis (Panel A) and the matrix of correlation coefficients.

5. Results

5.1 Baseline Estimation

Initially, all samples are pooled and estimated using ordinary least squares (OLS). The country-specific, zero-one binary dummy is also introduced in the pooled cross-sectional analysis. Specifically, zero-one binary dummy variables for Indonesia, Malaysia,

[17] In fact, the list of parts and components developed in Athukorala & Kohpaiboon (2009) use those listed in the BEC as a point of departure. Additional lists of parts are included based on interviews with representatives of particular firms cited in Kohpaiboon (2009).

the Philippines, Vietnam, Japan, China and Korea are introduced to capture any country-specific factors. Australia is selected as the control group. Since the dependent variable, $FTAU_{ij,t}$, is censored, i.e. we do not observe values of $FTAU_{ij,t}$ less than zero (the left censoring) and greater than 100 per cent (the right censoring), OLS estimation would be biased and inconsistent. Hence, a random-effect Tobit (weighted maximum likelihood) estimator is used to obtain unbiased, consistent and efficient estimates. In order to provide a robustness check of the estimation results, the corresponding fixed- and random-effect estimators are also reported.

Table 3 presents the estimation results, namely pooled OLS, random-effect, and fixed-effect, and random-effect Tobit estimations. All equations pass the overall statistical significance benchmark at the one per cent level. Clearly, the estimation results are insensitive to choices of estimation methods. Nevertheless, because of the nature of censored dependent variables, the following discussion is based on random-effect Tobit model estimation (Column 3.4). All coefficients are statistically significant at the five per cent level or better with theoretical expected signs. The coefficient corresponding to $t_{ij,t} - t_{ij,t}^{FTA}$ is significant at the one per cent level, implying that the tariff margin does matter for the private sector in deciding whether or not to apply for FTA tariff concessions. It also implies that applying for such tariff concessions is costly to a certain extent. Otherwise, a positive relationship would not be revealed.

Both coefficients corresponding to $BLI_{i,t}$ and $BLI_{i,t}^2$ are statistically different from zero at the one per cent level with the theoreticall expected signs. Firms with products which have high local content are likely to apply for a FTA preferential scheme. When $BLI_{i,t}$ surpasses certain levels, its effect on $FTAU_{ij,t}$ is diminishing. The observed statistical significance of $HEX_{ij,t}$ is that it is less likely for FTAs to open up new export opportunities for products that are either yet to be traded or are of potentially low sales volume. This highlights the potential role of FTAs in facilitating, instead of creating, trade. While tariff margins could influence firms' decisions to use, their influence is constrained by prevailing economic fundamentals in both countries influencing trade.

The coefficient corresponding to $PC_{i,t}$ is revealed to be negative, but statistically insignificant, except in the case of fixed-effect estimates. *Cetaris paribus*, any decisions

to apply FTA preferential schemes are not statistically different between products traded under MNE production networks and other manufacturing products. As long as there are adequate tariff margins to cover the costs incurred by ROOs and economic fundamentals are supportive, these products can be traded through preferential schemes like FTAs.

It seems that products with intensive foreign firm involvement are more likely to apply for FTA preferential schemes. The coefficient corresponding to $FOR_{i,t}$ is positive and different from zero at the one per cent level of significance. This reflects the long experience of multinationals in dealing with various government agencies in operating their affiliates in Thailand. They become familiar with the system as opposed to indigenous and relatively smaller firms. This issue becomes even more sensitive about revealing any information related to cost structure.

Table 4 illustrates the Tobit regression by individual countries as a robustness check to the multi-country regression outlined above. Clearly, estimates by individual countries provide more or less the same inferences regarding FTA determinants. $t_{ij,t} - t_{ij,t}^{FTA}$, $BLI_{i,t}$, $BLI_{i,t}^2$, and $HEX_{ij,t}$ are the key factors driving firms' decisions to apply for FTA preferential schemes.

An interesting pattern emerging from Table 4 concerns the magnitude of the estimated coefficient corresponding to $t_{ij,t} - t_{ij,t}^{FTA}$, varying greatly across FTA partners. Generally, the estimated coefficient of developed country-FTA partners is either lower than that of developing countries (Australia) or statistically insignificant (Japan and Korea). The coefficient for the major ASEAN FTA partners of Thailand ranges from 0.8 to 1.4. The coefficient in the case of China was 0.825 per cent. Interestingly, the coefficient in the Vietnamese case was 0.26.

The difference in estimated coefficients could be largely due to differences in products applying for preferential export status and those in tariff margins offered. The magnitude of coefficient would indicate dollar costs complying with rules of origin, including administrative costs from importing countries in principle. The larger the coefficient, the more difficulties the firm will face in obtaining c/os. This is further examined in the following sub-section.

5.2 Assess Cost of Complying with ROOs

To further elaborate on the cost of complying with ROOs possibly varying across countries, a series of experimental runs are performed. In theory, the cost of complying with ROOs could be borne by the exporting, importing or both countries combined. As argued in Kohpaiboon and Jongwanich (2015), the cost is fixed so that any decision to apply for a preferential scheme could positively depend on the tariff margin being up to a level where the benefit from such a tariff margin surpasses the fixed costs. When a tariff margin is beyond this level, firms would apply to maximize benefits derived from the preferential scheme. It does not matter how large the tariff margin is beyond this level.

Given such a rationale, Equation 1 is re-estimated with various sub-samples according to the magnitude of tariff margin. Particularly, Equation 1 is estimated by random-effect Tobit estimation in a sample whose tariff margin is greater than X %. The value of X starts from 0.1 per cent and increases by 0.1 per cent, e.g. 0.1, 0.2, 0.3…. The largest X % in the experimental run is 15 per cent. The estimated cost of complying with ROO is X^* which is a positive indicator that the statistical significance of $t_i - t_i^{FTA}$ disappears. It indicates tariff margin equilavence for firms to apply FTA preferential.

Figure 4 reports *z*-stat corresponding to each experimental run. We use 10 per cent level of statistical significance at one tail as the cutting point to identify X^*. When all FTA partners are concerned, the statistical significance of coefficient corresponding to $t_i - t_i^{FTA}$ occurs up until 8.6 per cent, implying that the cost of complying with ROOs would be around 8.6 per cent on average. At individual FTA partners (i.e. Australia, Indonesia, Malaysia, the Philippines, Vietnam and China)[18], our econometric results are in line witht the above finding that the costs in complying with ROOs vary from country to country and are lower in developed countries. In Australia, the statistical significance quickly disappears at around the 0.1-0.3 per cent of tariff margin, suggesting that the cost of complying with ROOs on importing countries like Australia tends to be at a minimum level and that the majority of such expenditure would involve sunk and fixed costs. With respect to the three original ASEAN members (Indonesia, Malaysia and the Philippines), the

[18] The experimental runs are not applied for Japan and Korea because the tariff margin variable is found to be statistically insignificant at any tariff margin level

results vary noticeably. The coefficient associated with the tariff margin variable turns out to be statistically insignificant when X exceeds 3.6, 5.1 and 10.3 per cent, respectively, in the cases of Indonesia, the Philippines and Malaysia. The corresponding per cent of Vietnam and China are 12.6 and 14.1 per cent, respectively.

Note that the low tariff margin equivalence in the case of Indonesia must be interpreted with caution. It must be considered together with the fact that Indonesia is the only country whose preferential exports have declined since 2013. This went hand-in-hand with actual exports, so that utilization rates have remained more or less constant over the past few years. This is especially true for vehicles which dropped noticeably in the past few years. Hence, the result would reflect some element of self-selection where products that are less likely to be adversely affected by the growing protectionist sentiments are traded under preferential schemes with moderate costs incurred by the presence of ROOs. For those under heavily protectionist constraints, costs are likely to be high and not attractive for firms to apply for.

Besides, the considerable difference between Malaysia and the other two original ASEAN members is likely to reflect costs incurred at the border of importing countries. This seems to be sensible when viewed in light of the fact that preferential exports from Thailand to Malaysia are dominated by vehicles which were long subject to heavy cross-border protection until recent years.

6. Conclusions

This paper focuses on how exporters actually respond to the FTA preferential schemes that are mushrooming worldwide. Administrative records of FTA implementation at the product level from Thailand are analyzed. Our main finding is that while Thailand is active in signing FTAs, the dollar value of preferential exports has stalled in the past few years (2013-15). While there are a growing number of freshly-launched FTAs, on top of already signed FTAs, they are hardly utilized by firms. Firms tend to intensively use earlier signed and bilateral FTAs instead. In addition, the benefit of market access from FTA tariff cuts is only beneficial within a narrow range of products, dominated by four sectors, i.e. automotives (both vehicles and auto parts), electrical appliances, petrochemical products, and processed foods.

The inter-product cross-country econometric analysis suggests that the key determinants for firms to apply preferential schemes include tariff margins, the ability to comply with ROOs and economic fundamentals driving trade. The statistical significance of tariff margins suggests that applying for such tariff concessions is costly to a certain extent. Otherwise, a positive relationship would not be revealed. Companies whose products have a high local content are likely to apply for FTA preferential schemes. The role of economic fundamentals measured by prior-actual export values point to the fact it is relatively unlikely that joining an FTA will open up significant, new export opportunities for companies whose products are either previously untraded or involve relatively low sales volumes.

There is not statistically difference between products traded under MNE production networks and other manufacturing products when it comes to the decision to use FTA preferential schemes. As long as there are adequate tariff margins to cover the costs incurred by ROOs and economic fundamentals are supportive, these products can be traded through preferential schemes like FTAs. Foreign firms firmly established in production and trading within a particular country are more likely to apply to FTA preferential schemes due to their pronounced experience in dealing with various government agencies.

Our estimate of the cost of complying with ROOs averages out at around 8.6 per cent of tariff equivalence. The lowest figure is approaching zero and found among developed countries. This rather suggests that most of the cost of complying with ROOs in developed countries is subsumed under the banner of sunk and fixed costs. As these FTAs have been in effect for prolonged periods, the fixed costs have long been covered and accounted for. Hence, firms are able to apply for preferential schemes in products with low tariff margins. The cost is substantially high for developing countries. In some cases, such as Vietnam and China, the cost estimate reaches double digits, 12.6 and 14.1 per cent, respectively. Among ASEAN countries, the cost is lower. Indonesia registered the lowest cost of 3.6 per cent, whereas Malaysia was highest with 10.3 per cent. The Philippines occupied the middle ground, registering a mark of 5.1 per cent. Nonetheless, such cost estimates must be interpreted with care as both other factors and product composition in particular should be taken into consideration when compiling measurements.

Three policy inferences can be drawn from this paper. Firstly, the export enhancing effect of FTAs is passive at best, working only after all economic fundamentals are established and sound. Promoting exports by maximizing the number of FTAs, while ignoring the nature of FTA partners, is unlikely to be successful. Secondly, while there has been a concerted recent effort to launch new FTAs with an enlarged membership compared to existing agreements in order to facilitate ongoing regional supply chains, the evidence from Thailand suggests that this initiative has been unsuccessful to this point. Again, in managing supply chains stakeholders must take into consideration a range of factors far beyond presence of tariff margins. Thirdly, for those who have less faith in the prospects of first-best, world-wide liberalization through World Trade Organization negotiations and the advocacy of FTAs as a mode for further liberalization, policy emphasis to harness the trade-induced effects of signed FTAs should be placed on reducing the costs incurred from the presence of ROOs. Lowering such costs needs the cooperation of both exporting and importing countries. There is room for inter-government cooperation to mitigate any cumbersome obstacles preventing firms from making use of available FTAs.

Table 1

Analysis of Product Concentration under FTA Preferential Schemes.

	Number of Product Lines Applying for FTA Preferential Schemes			Per cent to Number of Product Lines Actually Traded			Top-10 Cummulative Share (%)		
	2006	2012	2015	2006	2012	2015	2006	2012	2015
Australia	975	1173	1085	42.2	42.8	42.4	72	61	77
Brunei	90	165	160	10.8	17.9	16.6	77	73	64
Cambodia	25	186	356	1.4	8.2	14.3	88	77	70
Chile			56	n.a.	n.a.	6.6			91
China	269	1076	1270	11.0	34.8	42.6	86	65	55
India	41	659	890	2.0	25.0	34.2	96	60	47
Indonesia	840	1140	1330	40.2	43.4	50.8	56	53	49
Japan	719*	1151	1197	22.6*	32.9	35.5	55*	53	47
Korea		864	998	n.a.	36.6	43.7	n.a.	51	34
Laos	90	256	303	3.7	9.4	10.1	81	71	59
Malaysia	1254	1288	1321	45.7	40.3	42.9	48	46	46
Myanmar	35	116	345	1.6	4.2	11.7	94	81	73
New Zealand		179	245	n.a.	10.5	14.4	n.a.	53	67
Peru		20	40	n.a.	3.7	6.2	n.a.	99	94
Philippines	841	991	1026	42.3	42.0	43.6	62	51	63
Singapore	404	470	492	14.2	13.9	15.3	62	64	74
Vietnam	1264	1356	1522	50.8	44.0	49.9	39	34	44

Note: * indicates figure of 2007.
Source: Authors' calculations, using preferential exports from Bureau of Preferential Trade, Ministry of Commerce.

Table 2
Variables Description

Panel A: Data Summary

Variable	Obs	Mean	Std.	Min	Max	Nature
$t_{ij,t} - t_{ij,t}^{FTA}$	38,140	0.1	0.1	0.0	1.5	Varying across tariff cut commitment
$PC_{ij,t}$	38,552	0.1	0.2	0.0	0.7	2006-2015
$FOR_{i,t}$	38,450	0.2	0.1	0.0	0.6	2005,2011
$HEX_{ij,t}$	38,222	13.1	2.9	-1.1	22.1	2003-15;
$FTAU_{ij,t}$	38,552	0.3	0.3	0.0	0.8	2006-15
$BL_{i,t}$	38,450	1.1	0.2	0.4	1.8	2005, 2010

Panel B: Correlation Coefficient Matrix

	$FTAU_{ij,t}$	$FOR_{i,t}$	$BLI_{i,t}$	$HEX_{ij,t}$	$t_{ij,t} - t_{ij,t}^{FTA}$	$PC_{ij,t}$
$FTAU_{ij,t}$	1					
$FOR_{i,t}$	-0.0627	1				
$BLI_{i,t}$	-0.1093	0.4593	1			
$HEX_{ij,t}$	0.2601	0.1512	0.1641	1		
$t_{ij,t} - t_{ij,t}^{FTA}$	0.1384	-0.0845	-0.0153	-0.0097	1	
$PC_{ij,t}$	-0.0721	0.2198	0.3442	0.0891	-0.0561	1

Source: Authors' calculation.

Table 3

Inter-product Panel-data Econometric Analysis

	3.1 Pooled-Cross-sectional		3.2 Fixed-effect		3.3 Random-effect		3.4 Tobit-random-effect	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	z-stat
INTERCEPT	-0.25***	(-6.37)	-0.75***	(-4.30)	-0.53***	(-5.81)	-0.55***	
$t_{ij,t} - t_{ij,t}^{FTA}$	0.60***	(14.5)	0.33***	(5.39)	0.35***	(5.77)	0.35***	(19.1)
$BLI_{i,t}$	0.47***	(7.44)	0.84***	(2.95)	0.81***	(5.47)	0.82***	(6.10)
$BLI_{i,t}^2$	-0.29***	(-11.4)	-0.22*	(-1.93)	-0.36***	(-6.09)	-0.36***	(-6.38)
$HEX_{ij,t}$	0.03***	(65.7)	0.03***	(18.3)	0.03**	(21.2)	0.03***	(43.2)
$FOR_{i,t}$	-0.02	(-1.39)	0.13***	(4.11)	0.08***	(3.17)	0.09***	(4.60)
$PC_{i,t}$	-0.05***	(-7.73)	0.03**	(2.20)	-0.01	(-0.51)	-0.004	(-0.32)
IND	-0.03***	(-5.78)	-0.02**	(-2.48)	-0.03**	(-2.53)	-0.03***	(-5.65)
MAL	-0.14***	(-30.3)	-0.13***	(-12.7)	-0.13***	(-13.1)	-0.13***	(-29.3)
PHI	-0.06***	(-11.4)	-0.06***	(-6.16)	-0.06***	(-6.08)	-0.06***	(-14.1)
VIE	-0.13***	(-21.1)	-0.09***	(-8.16)	-0.10***	(-8.56)	-0.10***	(-20.7)
JAP	-0.12***	(-21.2)	-0.12***	(-8.80)	-0.12***	(-8.86)	-0.12***	(-23.5)
CHI	-0.08***	(-13.1)	-0.08***	(-6.06)	-0.07***	(-5.65)	-0.08***	(-13.4)
KOR	0.03***	(5.18)	0.02	(1.45)	0.03**	(2.09)	0.03***	(4.49)
N	37739		37739		37739		37739	
R-sq	0.157		0.078		0.131			
F	506.6		51.70					
Wald- χ^2					3338.68		3294.3	

Note: *, **, and *** indicate 10%, 5% and 1% level of statistical significant
Source: Authors' Estimation.

Table 4: Inter-product Panel-data Econometric Analysis of Individual Countries

	Australia		Indonesia		Malaysia		the Philippines	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	z-stat
INTERCEPT	-0.85***	(-5.23)	-0.76***	(-4.96)	-0.37***	(-3.02)	0.16	(1.05)
$t_{ij,t} - t_{ij,t}^{FTA}$	0.63***	(4.11)	0.80***	(5.64)	1.09***	(13.76)	1.40***	(5.91)
$BLI_{i,t}$	1.3***	(4.80)	1.09***	(4.31)	0.63***	(3.18)	-0.37	(-1.47)
$\overline{BLI}_{i,t}$	-0.59***	(-5.18)	-0.47***	(-4.50)	-0.26***	(-3.20)	0.12	(1.17)
$HEX_{ij,t}$	0.03***	(17.1)	0.03***	(16.1)	0.01***	(5.51)	0.02***	(12.8)
$FOR_{i,t}$	0.01	(0.48)	0.16***	(4.05)	0.003	(0.09)	0.06*	(1.76)
$PC_{i,t}$	0.02	(0.86)	-0.03	(-1.17)	-0.02	(-1.01)	-0.08***	(-3.85)
N	5063		5619		5988		5292	
Wald-χ^2	352.02		367.75		246.4		227.7	

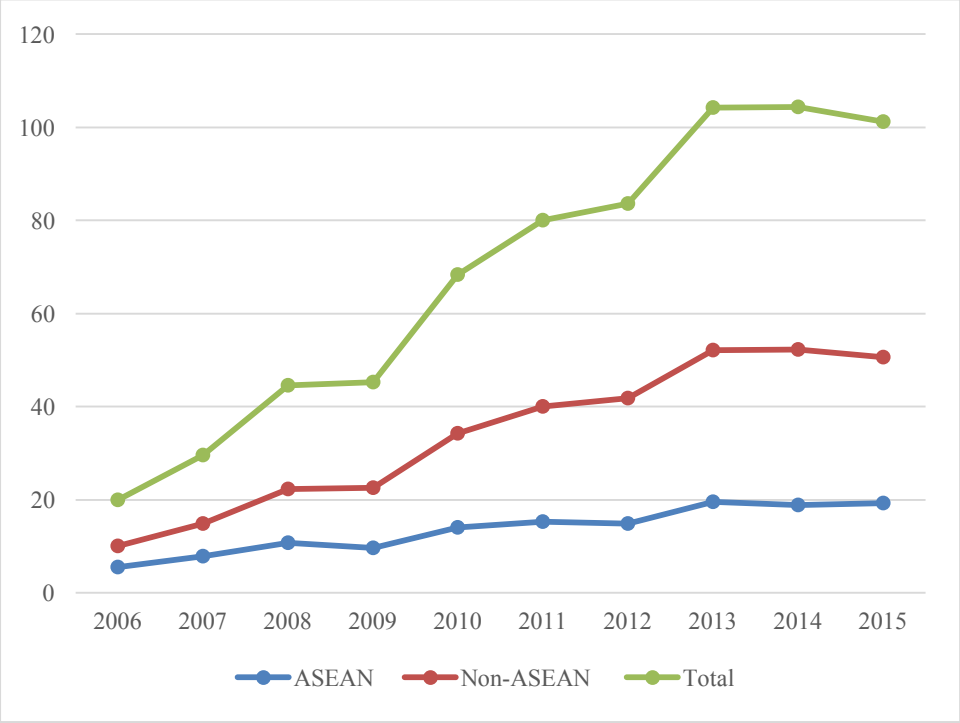
	Vietnam		Japan		China		Korea	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	z-stat
INTERCEPT	-0.57***	(-4.19)	-1.41***	(-6.45)	-0.49**	(-2.03)	-0.06	(-0.24)
$t_{ij,t} - t_{ij,t}^{FTA}$	0.26***	(7.40)	0.09	(0.51)	0.83***	(5.95)	-0.07	(-0.53)
$BLI_{i,t}$	0.80***	(3.54)	2.42**	(6.46)	0.89**	(2.23)	0.39	(0.90)
$\overline{BLI}_{i,t}$	-0.35***	(-3.70)	-1.04***	(-6.40)	-0.54***	(-3.21)	-0.32*	(-1.71)
$HEX_{ij,t}$	0.02***	(12.62)	0.02***	(7.62)	0.03***	(11.3)	0.03***	(9.69)
$FOR_{i,t}$	0.16***	(4.27)	0.19***	(4.19)	0.16***	(2.99)	0.18***	(2.74)
$PC_{i,t}$	0.01	(0.66)	-0.01	(-0.42)	-0.01	(-0.27)	-0.03	(-0.46)
N	6118		4164		3015		2480	
Wald-χ^2	267.1		127		209.1		124.6	

Note: *, **, and *** indicate 10%, 5% and 1% level of statistical significant

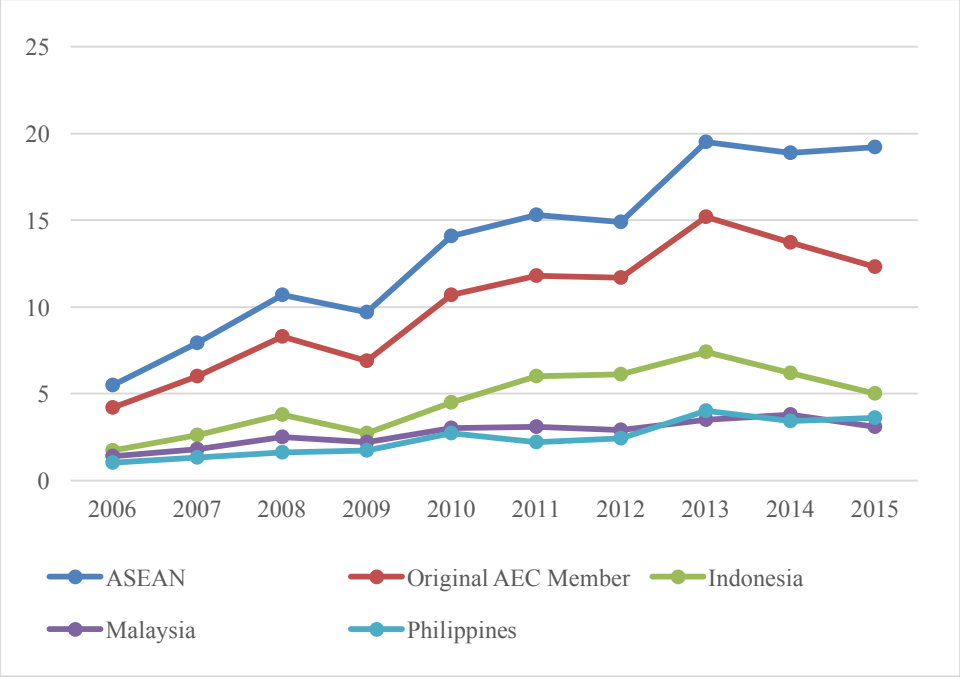
Source: Authors' Estimation.

Figure 1
Preferential Export Value (Billion USD)

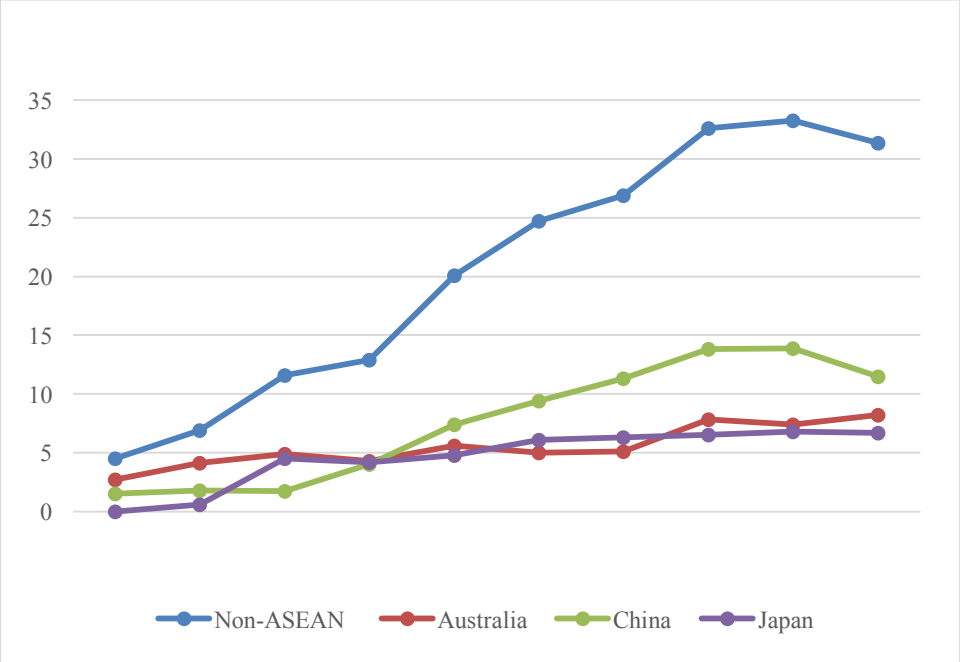
1.1 All Countries



1.2 ASEAN members



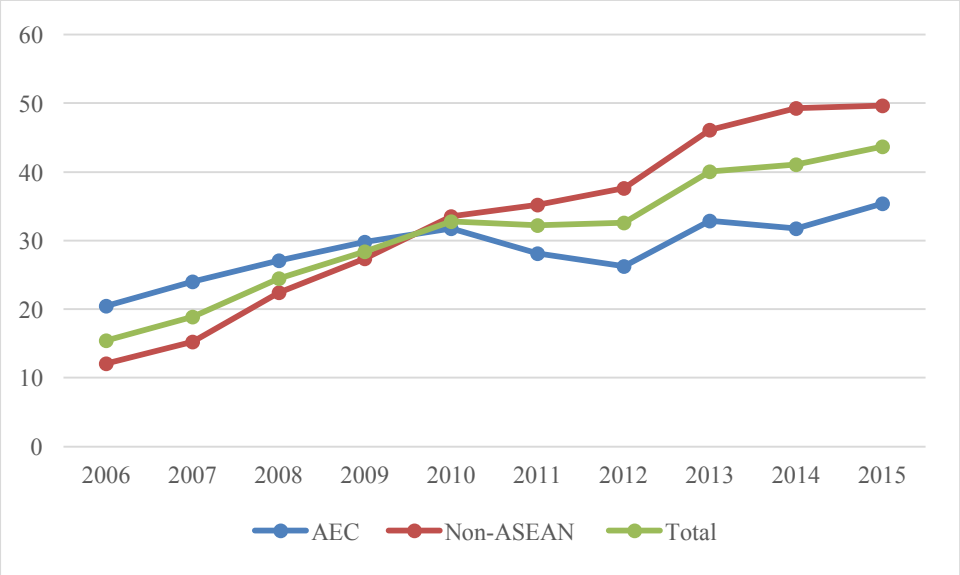
1.3 Non-ASEAN Countries



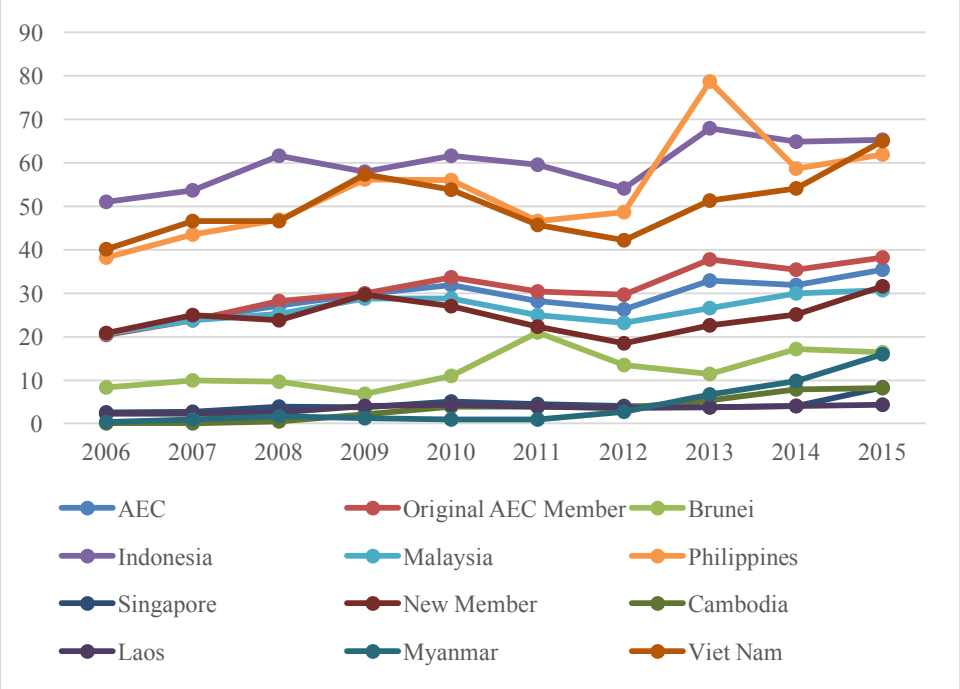
Sources: Authors' calculation from official data sources: preferential exports from Bureau of Preferential Trade, Ministry of Commerce

Figure 2
Aggregate FTA Utilization Rate (% of Export Value from Thailand to FTA Partners)

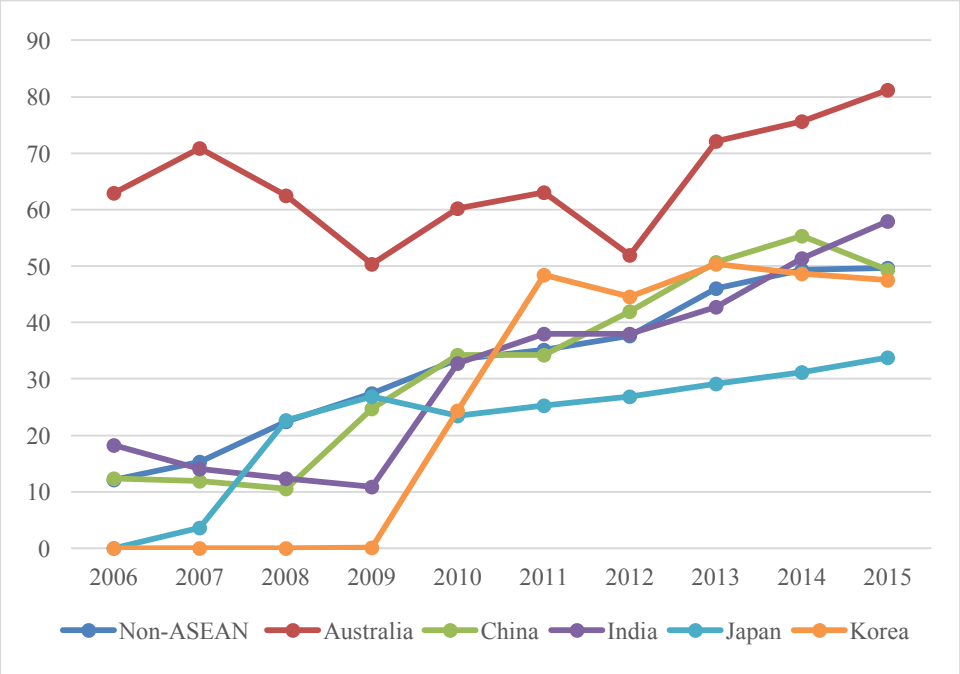
2.1 All Countries



2.2 ASEAN



2.3 Non-ASEAN countries

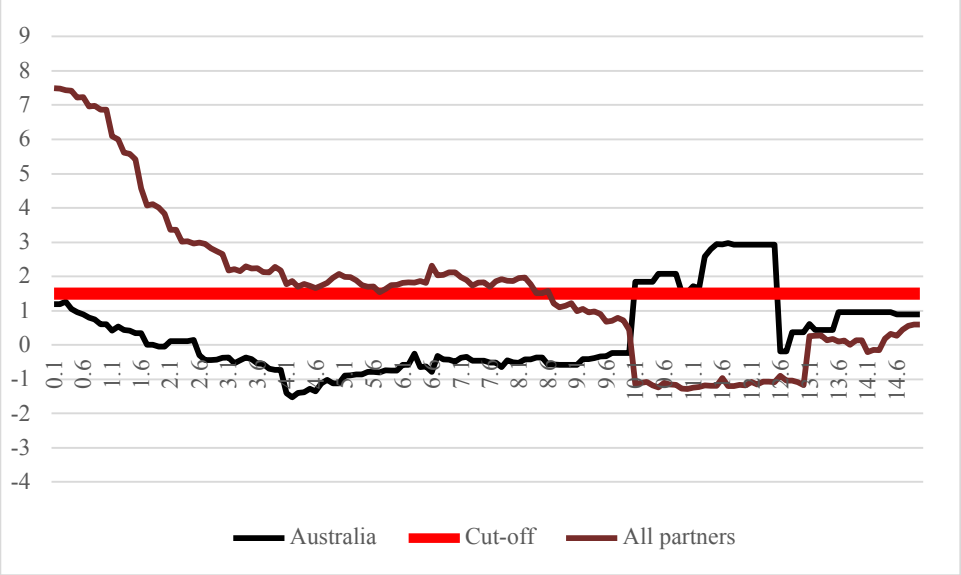


Sources: Author's calculation from official data source: preferential exports from Bureau of Preferential Trade, Ministry of Commerce, trade data from UNComtrade

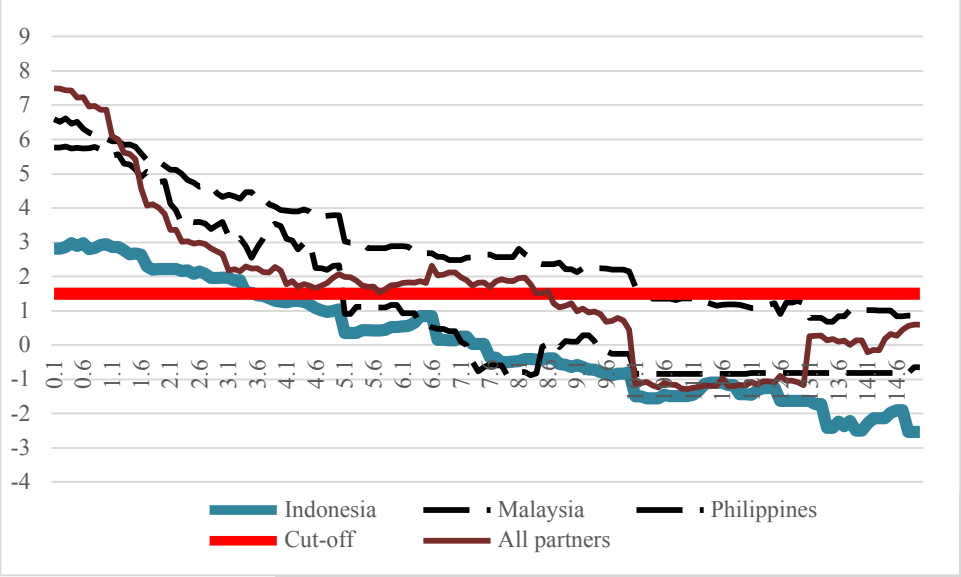
Figure 3

Experimental Runs according to tariff margin of Selected Countries

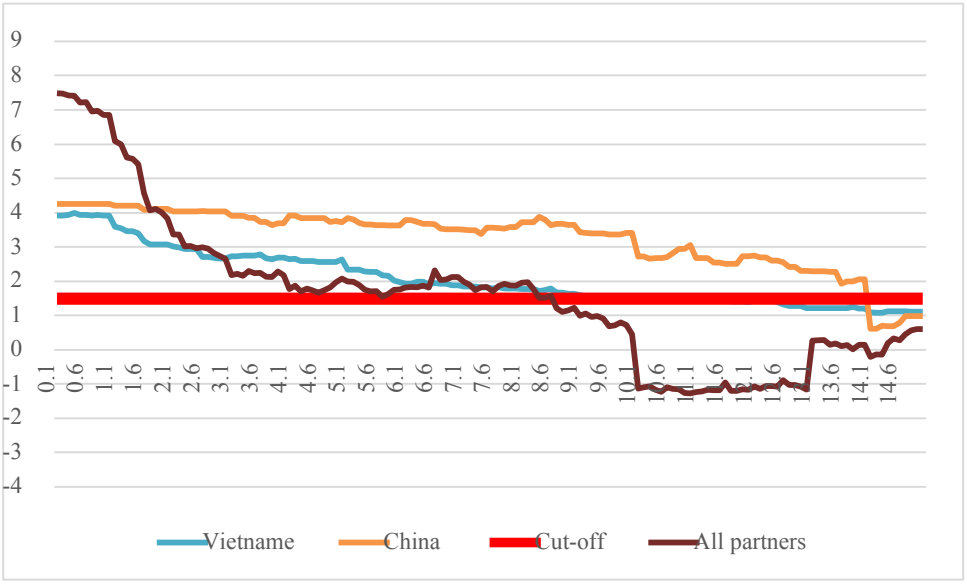
3.1 Australia



3.2 Indonesia, Malaysia, the Philippines



3.3 Vietnam and China



Note: vertical axis refered to z-stat whereas horizontal one is *X* per cent

Source: Author's calculation using data sources discussed in text.

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