Impact of the ASEAN Trade in Goods Agreement (ATIGA) on Intra-ASEAN Trade

Economic Research Institute
for ASEAN and East Asia

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FOREWORD BY THE PRESIDENT

One of the vehicles to foster economic integration by regional groupings all over the world is through free trade agreements. The Association of Southeast Asian Nations (ASEAN) is no different. In pursuit of the goal of establishing a single market and production base with free flow of goods, ASEAN Member States (AMS) signed the ASEAN Trade in Goods Agreement (ATIGA) in 2009. ATIGA is a result of almost 2 decades of trade integration efforts amongst the AMS, starting with the signing of ASEAN Free Trade Area (AFTA) in 1993.

ATIGA, which is the forerunner of the ASEAN Plus 1 FTAs, including the recently signed Regional Comprehensive Economic Partnership (RCEP) agreement, consolidates and streamlines the provisions in the Agreement on the Common Effective Preferential Tariff (CEPT) and other relevant ASEAN agreements, and broadens its scope. The ATIGA goes beyond tariff reductions and contains specific provisions on rules of origin (ROO), non-tariff measures (NTMs), trade facilitation, and sanitary and phyto-sanitary (SPS) measures.

In 2019, the Coordinating Committee on the Implementation of ATIGA (CCA) requested the Economic Research Institute for ASEAN and East Asia (ERIA) to conduct a quantitative assessment of the impact of ATIGA on intra-ASEAN trade, as a contribution to the CCA's general review of ATIGA. This public version of the report, 'Impact of the ASEAN Trade in Goods Agreement (ATIGA) on Intra-ASEAN Trade', presents the outcome of the study. It is a result of the partnership and collaboration between ERIA, the AMS through the Coordinating Committee on the Implementation of ATIGA (CCA), and the ASEAN Secretariat.

This report finds that as a direct consequence of ATIGA, tariffs on intra-ASEAN trade have been reduced to zero for almost all tariff lines. The assessment has shown that commitments for tariff liberalisation under ATIGA have mostly been achieved. These liberalisation efforts have brought ASEAN closer to its goal of becoming a 'single market and a production base', which was one of three goals of AFTA as laid out in 1993.

But ATIGA exists in a context of unilateral liberalisation by AMS as well as the existence of alternative tariff preferences such as those enshrined in the World Trade Organization's Information and Technology Agreement and the ASEAN Plus One FTAs. Thus, only a limited number of tariff lines offer a margin of preference (MOP) high enough to incentivise firms to utilise ATIGA when trading within ASEAN because many AMS have set MFN tariffs to zero or at low levels. Furthermore, the cost of compliance with ATIGA provisions reduces the likelihood of utilisation due to low MOP. For these reasons, the impact of ATIGA is limited to sectors and products where MOP remains high (due to high MFN tariffs), mostly agriculture, processed food, and automotive. In these sectors, we find increasing utilisation of ATIGA preference over time. Gravity analysis also shows that only a handful of products show a trade creation effect of ATIGA, and that the trade creation effect is positively related to the MOP and FTA utilisation rate.

As AMS further liberalise their economies unilaterally and as new multilateral agreements (e.g. RCEP) enter into force, ATIGA needs to be updated to remain relevant. The key focus of reform should be on reducing the cost of compliance by, amongst other things, enhancing the rules of origin and the procedures for issuance of the certificates of origin that would help reduce cost and encourage utilisation. This would ensure that even the small margins offered by ATIGA continue to be valuable to traders. Furthermore, the sectors where ATIGA is most effective due to high MOP are those where small and medium-sized enterprises (SMEs) are involved. So, ATIGA can continue to be an important driver of SME engagement in intra-ASEAN trade. But to ensure ATIGA's success in doing so, specific information on barriers to utilisation of ATIGA by these firms needs to be collected and underlying issues need to be addressed.

As we continue progressing in deepening and strengthening regional economic integration through the ATIGA and the various ASEAN Plus 1 FTAs and RCEP, ERIA remains committed to continuing this fruitful partnership and collaborative work with ASEAN.

Professor Hidetoshi Nishimura
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The opinions expressed are solely those of the study team and do not represent the official view of any ASEAN bodies, AMS, or ERIA.

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CHAPTER 1

INTEGRATIVE CHAPTER

As mandated in the ASEAN Economic Community (AEC) 2025 Blueprint, the Association of Southeast Asian Nations (ASEAN) is undertaking a Midterm Review of the Blueprint to take stock of achievements and identify remaining gaps and issues to be addressed in realising the AEC by 2025. At this mid-point, an important issue is an assessment of how implementation of the ASEAN Trade in Goods Agreement (ATIGA) has performed, especially in terms of its impact on trade flows. ATIGA is the successor to the agreement on the Common Effective Preferential Tariff (CEPT) Scheme of the ASEAN Free Trade Area (AFTA) and entered into force in 2010. The ATIGA consolidates and streamlines the provisions in the CEPT Agreement and other relevant ASEAN agreements, and broadens its scope. The ATIGA goes beyond tariff reductions and contains specific provisions on rules of origin (ROO), non-tariff measures (NTMs), trade facilitation, and sanitary and phyto-sanitary (SPS) measures. It is the main instrument in realising the goal of establishing a single market and production base in ASEAN, a key pillar of the AEC.

The Coordinating Committee on the Implementation of ATIGA (CCA) assists the Senior Economic Officials' Meeting (SEOM) and the AFTA Council in ensuring the effective implementation of the ATIGA. The CCA oversees and monitors the implementation of ATIGA, particularly on tariff liberalisation commitments, ROO, NTMs and trade facilitation, and other activities related to the realisation of free flow of goods in the AEC. In 2019, the Economic Research Institute for ASEAN and East Asia (ERIA) was tasked by the CCA to conduct a quantitative assessment of the impact of ATIGA on intra-ASEAN trade. This report presents results of that analysis. This chapter integrates and summarises the key issues, themes, and findings of the report.

The remainder of the chapter is organised as follows. Chapter 2 provides an outline of the report, with a brief overview of each of the chapters. The key results of the quantitative analysis, the main output of the report, are presented in Chapter 3. Chapter 4 considers how these results should be interpreted in the context of ASEAN. It looks more closely at the underlying factors that might be driving the results, and what this means for the

assessment of the performance of ATIGA. In light of this, it looks to the way forward, with regard to changes that need to be implemented to ensure that ATIGA realises its objectives.

A. Structure of the Report, and Overview of Chapters

The report is organised in seven chapters. Chapters 2 to 4 provide background and set the stage for the key chapters of the report that provide a quantitative assessment of the performance of ATIGA on trade in ASEAN. Chapter 2 sets out the objectives of the study, as well as the approach taken in realising the objectives, and provides a brief history and context of ATIGA. In Chapter 3, the theoretical underpinnings for the analysis are provided, focusing on trade creation and trade diversion effects, as well as a literature survey of the empirical work previously undertaken. In particular, it looks at issues that need to be considered in analysing the possible ways in which ATIGA can affect trade flows, and what this means for the efficacy of different methodologies. A special feature of trade in ASEAN is the high share of product fragmentation as a result of pervasive supply chains that link the countries of the region together. Therefore, Chapter 4 considers the role that ATIGA can play in the growth and development of supply chains, in light of other arrangements that are already in place.

Chapters 5, 6, and 7 present the results of the original quantitative analyses undertaken in the study. In Chapter 5, the results from a primary analysis of the margin of preference, defined as the difference between ATIGA and MFN rates, using a combination of confidential data provided by ASEAN Member States (AMS) and publicly available information, is presented. This includes findings relating to various correlations between changes in margins of preference, utilisation rates, and trade flows. Chapter 6 reports on the results of gravity model analysis, the key methodology employed in assessment exercise. The objective of the analysis in this section it to try and isolate the impact of reductions in ATIGA tariffs on the evolution of intra-ASEAN trade. Finally, Chapter 7 presents more detailed and disaggregated results from an analysis of nine key product groupings within ASEAN's eleven Priority Integration Sectors (PIS). The PIS initiative was adopted in 2004 to fast-track integration towards the realisation of the AEC.

B. Key Findings of the Study

Margins of Preference and Utilisation Rates of ATIGA

A direct measure of how ATIGA may be affecting trade flows is to measure its utilisation rate. The utilisation rate is a measure of the percentage of intra-regional trade that is undertaken using the preferences of the agreement and can provide a relatively simple and tractable approach to assessing how a trade agreement seems to be influencing trade flows. In this study, ATIGA's utilisation rate is measured as the amount of intra-regional imports undertaken using Form D as a (percentage) share of total intra-regional imports, for tariff lines where the margin of preference is positive and non-zero. It has become increasingly common in the literature to exclude tariff lines that have zero or negative margins and to focus instead on tariff lines where there is a positive margin of preference that can potentially be utilised.

The analysis of utilisation rates also partly overcome the so-called attribution problem – to link any changes in trade directly to the existence of ATIGA. It does not, however, indicate that the associated trade would not have taken place in the absence of ATIGA. In other words, while it cannot overcome the perennial problem associated with the 'unobserved counterfactual,' the fact that trade takes place using the ATIGA strengthens the case for a possible causal relation, especially in the presence of a strong correlation between free trade agreement and trade flows. It is also, at best, a partial indicator as there may be other factors at play that a bilateral correlation may not be able to capture. Notwithstanding these limitations, it is nevertheless a useful starting point.

The decision on whether to utilise an FTA is basically an outcome of a cost–benefit calculation. Therefore, it is important to first identify and measure the factors affecting benefits and costs of utilising the ATIGA. On the benefit side, margins of preference (MOPs) for ATIGA should be measured as the difference between preferential ATIGA tariff rates and the lower or lowest of other FTA preferential and MFN rates. The presence of multiple and often overlapping FTAs further erode the MOP of ATIGA when MFN rates are non-negligible. However, the measurement of MOPs in this study is based on the difference between ATIGA preferential rates and MFN rates, due to lack of data on other tariff preferences and utilisation of other FTAs by ASEAN countries. So, these represent the most optimistic scenario in terms of MOP offered by ATIGA. On the cost side, often complex ROO, burdensome documentary requirements, and limited information and lack of firm-level skills to comply with requirements can discourage the use of ATIGA. As a rule of thumb, previous studies that have tried to consider factors affecting utilisation rates of FTAs estimate that these costs usually equate to about a 5% MOP or higher. This can of course vary by FTA, and the analysis in this study points to a slightly lower cut-off of

about 3%. After weighing expected benefits against potential costs, a firm decides to use an FTA if there is a net benefit in doing so.

The findings of this study are broadly consistent with the existing evidence of relatively low utilisation rates at the aggregate level. This is explained by several facts about intra-ASEAN trade. First, a large fraction of trade takes place in products where MFN is zero or MOP is very small. The number varies across countries but is quite large (above 80%) for Brunei Darussalam and Malaysia, and above 40% for Indonesia, the Philippines, Thailand, and Viet Nam. While Cambodia, Lao PDR, and Myanmar have greater MOP, their share in total ASEAN trade is still very small. Second, products that do have large MOP tend to constitute a small fraction of AMS imports. Only about 20% of AMS imports have MOP over 10%. Third, even if products have high MOP, the ASEAN share of these products are not necessarily high. The decision of whether to source from within ASEAN depends on many factors such as availability of suppliers, supply chain decisions by manufacturers, etc. MOP is one of many factors firms have to consider. These facts explain why overall ASEAN shares and FTA utilisation rates are not very high in ASEAN. Nonetheless, recent surveys by JETRO show that Japanese multinational firms based in ASEAN are increasingly using FTAs, which is encouraging.

Although ATIGA utilisation rates may be low on average, the study highlights a few interesting aspects that differ from this general finding. First, there is strong evidence that reduction in ATIGA tariffs did stimulate FTA utilisation. This is confirmed by examining what happened to products that were liberalised due to ATIGA during a major liberalisation episode in 2015 mostly by Cambodia, Lao PDR, Myanmar, and Viet Nam. As shown in Figure 5-15, the greatest increase in FTA utilisation between 2014 and 2016 was observed in products for which MOP was zero in 2014 but had increased by 2016 due to reductions of ATIGA tariffs to zero in 2015. Second, as demonstrated in Figure 5-13, utilisation rates have been increasing over time for countries such as Malaysia, Myanmar, Thailand, and Viet Nam. Third, there is significant variation in utilisation rates across product categories. At the 2-digit HS level, there are a number of products with utilisation rates above 90%. This is related to a small but quite heavily traded group of products for which the MOPs are quite significant. Some examples include: fertilizers (HS Chapter 31) imports by Indonesia; beverages, spirits and vinegar (HS Chapter 22) imports by Cambodia; preparations of cereals, flour, starch or milk (HS Chapter 19) imports by Malaysia and the Philippines; edible vegetables (HS Chapter 7) imports by Thailand; and edible fruit and nuts (HS Chapter 8) imports by Viet Nam. Fourth, the study finds that a greater share of products with the highest margin of preference within 2-digit HS levels are positively correlated with the average annual growth in intra-ASEAN imports. This correlation is further supported by the regression analysis that finds an average positive

coefficient for these product categories. Thus, ATIGA's tariff liberalisation does seem to have encouraged intra-ASEAN trade in some product groups.

Econometric Analysis

The time series and cross-sectional data employed in the gravity model attempts to isolate the impact of reductions in ATIGA tariffs (or alternatively, increases in the margin of preference) on changes in intra-ASEAN trade flows. The empirical analysis employing the gravity approach consists of two steps. The first step is to quantify the impact of ATIGA on intra-ASEAN trade by estimating a gravity equation that includes data for 222 countries at the 3-digit HS level (for analytical convenience) covering the period 1995–2018. Dummy variables are introduced to represent pairs of countries that are members of the AFTA/ATIGA, as well as those that are members of other FTAs/RTAs. Although this allows us to estimate the magnitude of the trade creation effect of the AFTA/ATIGA, it does not link it to the utilisation of the agreement. This is done in the second step, where the trade creation effects are related to the actual utilisation of the ATIGA regime in intra-ASEAN trade through regression analysis. None of the ASEAN+1 FTAs are considered at this stage, because data on utilisation rates are only available for ATIGA. The data enables computation to be undertaken at the 3-digit HS level for the years 2010, 2014, and 2018.

The aggregate results for the first step are mixed, with ATIGA and ASEAN+1 FTAs with Australia and New Zealand, and India reporting negative mean values in both 2010 and 2018. The standard deviation for ATIGA is quite high, however, indicating that there may be significant difference in the magnitude of the coefficients across products. These results indicate that large trade creation effects are present with the FTAs with the so-called 'Plus Three' countries (China, Japan, and the Republic of Korea) compared to ATIGA, at the aggregate level.

Looking more closely at the industry level results, the study finds that the mean value of coefficients remains negative in sectors where supply chains dominate, such as machinery and other electrical and electronic equipment. Most of the product fragmentation trade in ASEAN involves these sectors, and trade emanating from them are already travel duty-free or at very low tariffs across the region because of the Information Technology Agreement (ITA), a plurilateral agreement of the World Trade Organization (WTO) implemented on a most-favoured nation (MFN) basis. Therefore, ATIGA and other FTA preferences for these products do not provide any additional benefit to firms and may account for the negative values reported. Given the size and importance of these sectors in total trade, they may also be affecting the negative results in the aggregate. If this is the case, then the negative coefficient at the aggregate level should not be surprising and should not be interpreted negatively as far as ATIGA's performance is concerned.

We now turn to the second step, where the study examines how computed utilisation rates affect trade creation. At the aggregate level, we find a positive and significant coefficient for the utilisation variable, implying that an increase in its rate leads to greater trade creation effects.The results suggest that changes in the utilisation rates of ATIGA and other FTAs account for the increase in intra-ASEAN trade of around 15% in 2010, around 25% in 2014, and about 35% in 2018. Most of this increase in intra-ASEAN trade between 2010 and 2018 is based on the increase in the utilisation rate of ATIGA rather than the other FTAs. Looking more closely at the sectoral breakdown, the study finds that a few key product categories are driving most of these results. The highest utilisation effects are found for agricultural goods and food products, sectors where many countries have comparative advantage. Chemical products and plastic/glass products also have relatively high utilisation effects. This again reinforces the notion that ATIGA's success should be assessed on a narrower set of products rather than aggregate intra-ASEAN trade.

The results suggest that on average, a one-percentage-point rise in tariff preference margins raises the ATIGA utilisation rate by about 0.2 percentage points. The results also provide an indirect estimate of compliance costs associated with using ATIGA tariff preferences. It appears that firms require a tariff margin to be greater than at least 3% before they are willing to consider using ATIGA. As noted earlier, this is lower but broadly in line with previous studies that estimate compliance costs of using FTAs.

One of the issues that need to be considered is the sharp increase in trade with China over the estimation period, which may have introduced downward bias in the estimated coefficients. For instance, other studies have found that increases in ASEAN imports from China between 2000 and 2015 reduced intra-ASEAN trade by around 20%. Does this apparent displacement effect also affect the second step results of this study? It appears that these results are robust enough not to be affected by the China factor. When we adjust for this effect by introducing the average share of imports from China out of total imports from the world, we find that the overall results for utilisation is not significantly changed.

Priority integration sectors

Finally, in Chapter 7 of the study, a closer examination is undertaken of nine sectors from ASEAN's Priority Integration Sectors. These sectors are: (1) agriculture, (2) processed agriculture, (3) electronics, (4) automotive, (5) textiles & apparels, (6) fisheries, (7) healthcare, (8) rubber-based products, and (9) wood-based products. These nine sectors can be broadly grouped into either supply-chain related sectors or agriculture/resource-

based sectors. (Healthcare is the exception as a service-related sector, however, and falls outside these two broad group.) Amongst these, processed agriculture, automotive, electronics, and textiles & apparel are the largest in terms of trade volume, with electronics making up about 30% of the trade. The fact that electronics is also the sector with lowest MFN tariffs is another reason for low overall impact of ATIGA, as ATIGA is unlikely to have a large impact on this sector in presence of other trade provisions. In addition, the relative importance in trade of these sectors vary across AMS, which also means that ATIGA's effect on these sectors would depend on country-specific situation.

Agriculture remains one of the most heavily protected sectors in ASEAN, as well as globally. High levels of protection can also be found in a number of the resource-based sectors. Although a regional FTA like ATIGA can play a role in liberalising sectors such as these, the issues are complex and progress can be slow. Nevertheless, the study finds that FTA utilisation rates in agriculture increased dramatically between 2012 and 2018 in Philippines, Thailand, and Viet Nam where MOPs were significant.

MOPs are higher still for some processed agricultural products, leading to high rates of FTA utilisation. For processed agriculture as a whole, utilisation rates were above 60% in 2018 in Cambodia, Malaysia, the Philippines, Thailand, and Viet Nam. The high MOPs were due mainly to MFN tariffs remaining stubbornly high. They were above 17% for five ASEAN countries, with sharp increases between 2010 and 2018 for Indonesia and Thailand. Just as ATIGA should not be judged a failure for not promoting regional trade when MFN rates are low, it should equally not receive too much credit for high utilisation rates if it is mainly driven by high MFN rates. In these cases, the real challenge for reform lies in bringing down MFN rates over time. A multilateral effort involving the WTO would be better suited to addressing issues standing in the way of this kind of reform. It may also be worth noting that some sectors or sub-sectors will always remain sensitive and so the extent of overall liberalisation possible may be lower than that feasible with other sectors.

We noted earlier how the perverse negative result for machinery and electronics-related products may have been due to the ITA, which provides duty-free treatment for trade in parts and components related to the electronics sector. There are weak or unexpected signs for variables in the results for some of the sectors other than electronics where product fragmentation trade also dominates. Products not covered by the ITA may still enjoy preferential treatment or duty-exemption if multinational corporations involved operate out of export processing zones (EPZs), free trade zones (FTZs) or industrial estates. In order to attract FDI into the country, these zones or estates usually provide quite generous incentives to foreign firms, including tax holidays of varying durations but which almost always involve duty free import privileges. Many of the electronics and non-

electronics firms involved in the processing of parts and components within supply chains can be found in the numerous EPZs, FTZs or industrial estates throughout ASEAN.

Even if they do not operate out of EPZs, FTZs or industrial estates, various duty-drawback or bonded warehouse schemes that provide for duty-free trade in parts and components may be available as countries compete to attract FDI.

All of these factors suggest that tariff preferences may have a limited role to play in promoting product fragmentation trade. Once again, the fact that other schemes operate to provide the same benefits as ATIGA should not be judged as a failure of ATIGA to perform.

Conclusion and way forward

In assessing regionalism, it has become customary to look to the European experience to serve as a benchmark against which all other regional integration programmes are judged. This is probably because Europe is the most highly integrated region in the world, and therefore serves as a de facto model, worthy of emulation. But ASEAN is different. Compared to Europe, it is outward- rather than inward-looking, market rather than government driven, and institution light rather than heavy. There are other differences as well. All of these differences reflect the separate motivations and objectives of the two regional programmes. ASEAN's success lies in its almost unique achievement of using regionalism to promote globalisation. This being the case, the metrics that we use to assess regionalism must reflect these special features. For instance, widely used indicators such as changes over time in the shares of intra-regional trade and investment not only fail to capture the real story, but they can point in the wrong direction.

The same is true when it comes to trying to link intra-regional flows to a programme of preferential liberalisation such as ATIGA. The fact that the econometric analysis may not produce the expected results is neither a failure of the methodology nor of the performance of the liberalisation programme. ASEAN could be using ATIGA as a means towards greater ends. It could be using regionalism to pursue globalism. This occurs when preferential tariffs are multilateralised and offered to non-members on a non-discriminatory basis. This could account for the preponderance of tariff lines with MOPs of zero. In addition, it should be noted that ATIGA negotiation helped AMS prepare for engagement with ASEAN Plus One partners. For instance, in the area of ROO, the reforms that were earlier made contributed to AMS being more open or engaging in the application of a more trade facilitative ROOs.

If this is the case, then ATIGA could be indirectly inducing the increase in trade with non-members as well. Whether the reductions in MFN rates in line with ATIGA rates are causal or coincidental, the traditional metrics and conventional methods to assess the impact of FTAs may be inappropriate in the case of ATIGA. That is, even if the reductions in MFN rates have not been driven by rapidly falling ATIGA rates, the fact that they have taken place concurrently still implies that traditional ways of assessing performance may not be appropriate in this case.

Traditional measures such as changes in intra-regional trade flows or shares that we use in the econometric analysis are useful as a starting point, but may not fully or accurately capture the trade changing impact of ATIGA. In fact, in this case, a lack of association between ATIGA and intra-regional trade over time may be a positive outcome, reflecting the absence of trade diversion. If the results were not interpreted in a broader context by taking these special features into account, it could also provide a misleading overall assessment of the performance of ATIGA.

That is, while multilateralisation of preferences may have subdued or limited the increase in intra-regional trade, it may have promoted rapid growth in overall trade, raising ASEAN to be the fourth largest exporting region in the world, next only to the European Union, North America, and China. Although ASEAN accounts for only about 3.5% of world gross domestic product (GDP), it produces more than double that in terms of world exports. Therefore, to the extent that the ATIGA has contributed to the overall reduction in tariff rates, then it can claim some of the credit for increasing overall trade, even if intra-regional trade flows have remained relatively stagnant.

In this regard, the utilisation of preferences is no longer the only, or the main, factor in determining the trade impact of ATIGA. In fact, to the extent that low utilisation rates are a result of low MOPs from multilateralisation of preferences, they actually contribute to an overall increase in total trade. That is, the increase in extra-regional trade as a result of the decline in overall tariff rates more than offsets the lack of increase in intra-regional trade because MOPs are often low or zero. But if ATIGA is not driving the fall in MFN rates, then at the very least the lack of increase in intra-regional flows is not a failing of ATIGA, even if it cannot be credited with the growth in external trade.

This study has also demonstrated that different products or sectors may be better analysed and understood using different approaches. For example, although FTA utilisation analysis may not be particularly relevant in the aggregate when most tariff lines have an MOP of zero, there are still some heavily traded products where MOPs are quite high. For these products, understanding issues affecting FTA utilisation may complement

other approaches, and provide a better overall picture of the impact of ATIGA on these products or sectors.

As noted above, a lot of the trade that takes place within ASEAN consists of product fragmentation trade as a result of pervasive supply chains. We also noted that tariff preferences provided by FTAs like ATIGA have a very limited role to play in promoting this type of trade because they are largely redundant, having been superseded by the ITA, duty-free privileges of EPZs or FTZs and various other duty-drawback or bonded warehouse schemes.

So, how can ATIGA be expected to promote product fragmentation trade, going forward? Even though ATIGA may not have much of a role to play in supporting product fragmentation trade through its tariff reduction programme, it can play a potentially bigger role by addressing NTBs and barrier effects of NTMs in the region. This is particularly important going forward because there is evidence that suggests that while tariffs have been falling in ASEAN, NTMs have been rising concurrently. Whether or not NTBs and NTMs have been rising because tariffs have been falling, in an attempt to restore protection, is unclear. Whatever the reason for the rise in NTBs and NTMs, addressing them should be a priority for ATIGA.

ATIGA deals with some but not all NTBs. With regard to NTBs, ATIGA focusses mainly on trade facilitation. The evidence suggests that reducing trade costs by addressing trade facilitation and logistic costs can have a significantly greater impact on product fragmentation trade than tariffs. But progress with trade facilitation with ATIGA has been ongoing but with room for improvement. This needs to be highlighted in a mid-term review of ATIGA. There is potential to significantly increase its impact on product fragmentation trade if reforms in this area can be accelerated.

ASEAN is not the only forum trying to address trade facilitation issues or the myriad of other behind-the-border reforms. The recently signed Regional Comprehensive Economic Partnership (RCEP) agreement has simplification of ROO, harmonisation of rules and standards and regulatory convergence as key objectives. In RCEP, there were some notable improvements like providing more options to traders in complying with the product specific rules, alternative and co-equal rules, and simplification of procedures such as declaration of origin. On the ROO, there are agreed product specific rules that will provide more options for the traders to use, such as the chemical reaction and process rule. On simplification and streamlining of procedures and documentary requirements, there is implementation of declaration of origin by approved exporters, where the requirements are streamlined that will lower the cost of compliance. These enhancements are significant improvement that could eventually be considered and adopted in ATIGA

that will encourage utilisation and reduce the cost for traders, especially because, with tariff reductions of RCEP, MOPs will reduce further. Therefore, even though product fragmentation trade can be increased by addressing trade facilitation and other behind-the-border issues more so than by focusing on tariffs, it need not be done by ATIGA alone. Working with other forums like RCEP and the WTO in a complementary fashion and as part of a joint effort is likely to produce a better outcome in the long run.

An important conclusion of this study that should guide future policy formulation in relation to ATIGA is to look beyond traditional metrics and focus on impacts and outcomes, and how they affect welfare. After all, it is how much trade that takes place, and on what terms, that matters for welfare, and not necessarily who you trade with. Who you trade with can matter, but usually in an undesirable way, when the trade is driven by artificial preferences, which is welfare-reducing. ASEAN has been able to largely avoid this and should not reverse its approach simply to hit targets on metrics such as intra-regional trade shares, which are not only inappropriate, but can be counterproductive.

If the share of intra-ASEAN trade is to increase in the future, it should be driven by factors other than just preferences. When intra- or extra-ASEAN trade increases as a result of factors such as efficiency or productivity gains resulting in comparative cost advantage, through enhanced product differentiation or increased economies of scale or scope, then this growth is welfare enhancing. There is also great potential to increase trade in services by reducing barriers, that remain the second highest in the world, in a non-discriminatory manner. Any increase in intra-ASEAN trade resulting from these factors would be welfare-enhancing. And this is how the performance of ATIGA thus far should be assessed and should guide how changes to the programme are made, going forward.

At the same time, AMS must continually work to improve the working of ATIGA. Because discussion of ASEAN integration can be overly dominated by global sectors due to its large volume, it is worth emphasising that ATIGA can play an important role in enabling small and medium-sized enterprises to expand their market regionally. These firms have smaller profit margins, so any reduction in tariffs they can obtain by accessing preferential tariffs will be immensely beneficial. While further liberalisation of MFN tariffs would certainly be the first best option for micro, small, and medium-sized enterprises (MSMEs) as they do not need to incur the cost of compliance, a better functioning ATIGA in the meantime is still something that can be aimed at. Our study indicates that focusing on possible issues in implementation of ATIGA in sectors that do not have high volume of trade, but nevertheless provide opportunities to SMEs, should be investigated and solved. The issues often tend to be trade partners and product-specific, so a thorough investigation using both qualitative and quantitative methods is warranted to ensure that ATIGA is working as envisaged.

Finally, effective monitoring of ATIGA requires not only examining the patterns of trade flow, but directly looking into firm behaviour related to utilisation of the FTA, their cost of compliance, and how they use the FTA in their production and output decisions. At the national level, this requires coordination between the different agencies that collect relevant data. Firm data is collected by national statistical agencies, trade data including FTA utilisation is collected by Customs, and certificates of origin (CO) data is collected by issuing agencies. Currently, there is no system for combining the three sets of information to investigate how ATIGA is affecting the economy. Thus, AMS should work towards a system that creates a uniform national database that can be analysed to understand how ATIGA is working going forward. Furthermore, a regional level agreement on common data collection approach for monitoring of ATIGA could be established for comparability across AMS.

CHAPTER 2

BACKGROUND AND OBJECTIVES

The ASEAN Trade in Goods Agreement (ATIGA) is a culmination of almost 2 decades of trade integration efforts amongst the AMS. The process started in 1993 when Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand signed the ASEAN free trade area (AFTA) agreement. Viet Nam joined soon after in 1995, followed by Lao PDR and Myanmar in 1997 and Cambodia in 1999. The AFTA contributed to reducing or eliminating tariff rates in ASEAN trade by introducing the Common Effective Preferential Tariff (CEPT) scheme within ASEAN. Subsequently, to pursue the goal of establishing a single market and production base with free flow of goods, ASEAN Member States (AMS) signed the ASEAN Trade in Goods Agreement (ATIGA) in 2009, which entered into force in 2010.

ATIGA expanded CEPT–AFTA to contain additional comprehensive coverage of commitments related to trade in goods and mechanisms for its implementation as well as institutional arrangements. The commitments for tariff liberalisation have mostly been achieved. Overall, over 98% of the tariff lines have ATIGA tariff rate of 0% in 2018, an increase from 69% in 2009. The original AFTA signatories had eliminated import duties on 99 per cent of tariff lines by 2010. For Cambodia, Lao PDR, Myanmar, and Viet Nam, over 97% of the tariff lines was already at 0% in 2018, a dramatic increase from 45% in 2009. These liberalisation efforts have brought ASEAN closer to its goal of becoming a 'single market and a production base,' which was one of three goals of AFTA as laid out in 1993. These tariff reductions provide an advantage to ASEAN-based firms by creating a margin of preference over applied Most Favoured Nation (MFN) tariff rates on those tariff lines where MFN remains positive.

In addition to tariff liberalisation, ATIGA included commitments to address other sources of trade distortions. The provisions of non-tariff measures (NTM) have been enhanced further through codification of measures, as well as establishment of a mechanism to monitor the committed elimination of non-tariff barriers. The ATIGA include provisions relevant to ensuring transparency and management of NTMs, including the responsibility

to notify NTMs which can potentially affect the ATIGA's operation, the publication of trade-related information through national trade repositories and ASEAN trade repository and establishment of an ASEAN NTM database. ASEAN Ministers also endorsed the Guidelines for the Implementation of ASEAN Commitments on Non-Tariff Measures on Goods, which provide a general framework to improve the transparency and management of NTMs. The recently adopted non-binding guidelines provide for operationalising key ATIGA elements and provisions related to NTMs. These strong commitments on addressing behind-the-border issues makes ATIGA one of the most comprehensive free trade agreements, and their full implementation is likely to greatly enhance intra-ASEAN economic growth through expansion of trade.

The implementation of ATIGA is supported by a strong institutional arrangement. The Coordinating Committee for the Implementation of ATIGA (CCA) was established in accordance with Article 90 (Institutional Arrangements) of the ATIGA. The CCA is tasked with assisting the Senior Economic Officials' Meeting (SEOM) and the ASEAN Free Trade Area (AFTA) Council in the performance of their functions in ensuring the effective implementation of the ATIGA. Amongst the functions of the CCA is to oversee and monitor the implementation of ATIGA, particularly on tariff liberalisation commitments, rules of origin, non-tariff measures, and trade facilitation, including those other activities related to the realisation of free flow of goods in the ASEAN Economic Community (AEC). Aside from providing regular analysis of the impact of ATIGA on AMS, it also provides recommendations on possible improvements on the ATIGA based on the current trends and development in regional and international trade, as well as recommendations to relevant ASEAN Working Bodies on trade-in-goods issues under the negotiations with FTA partners.

The CCA also coordinates and monitors the implementation progress of ATIGA related activities of working groups, committees and/or sub-committees under the CCA, and serve as a forum for consultation on ATIGA-related matters raised by member states or the private sector (through the appropriate National AFTA Unit). With consent from all AMS, the private sector, particularly representatives of ASEAN sectoral industry associations, can participate in CCA meetings to get feedback, disseminate recent developments in the implementation of the ATIGA, and/or discuss any proposals with a view to further facilitate business in the region. The CCA which reports to the AFTA Council through the SEOM, is led by heads of the AMS National AFTA Unit and delegations may include officials from relevant government agencies and meets three times a year. The CCA's Chairmanship and vice-chairmanship are rotated annually amongst the AMS in alphabetical order.

In 2019, the CCA requested the Economic Research Institute for ASEAN and East Asia (ERIA) to conduct a quantitative assessment of the impact of ATIGA on intra-

ASEAN trade. It has been 10 years since ATIGA came into force, so the time was ripe for systematically assessing its impact on intra-ASEAN trade. The rationale behind regional trade agreements (RTA) such as ATIGA is that they contribute to increasing trade amongst member countries or parties by reducing tariff rates for intra-regional trade and increasing the margin of preference vis-à-vis non-regional trade partners. However, it is important to note that tariff elimination does not automatically increase trade. In fact, intra-ASEAN trade has been consistently around 25% of ASEAN trade with the world, indicating that it has not grown any faster than ASEAN's total trade. Domestic firm productivity, market demand conditions, and remaining non-tariff trade cost all influence the pattern of trade following tariff reduction. Trade is more likely to be boosted in products in which regional suppliers have a cost and quality advantage over non-regional suppliers. Furthermore, it is also important to consider the tariff advantages conferred by the RTA vis-à-vis other trade agreements that the members of the RTA may be party to. Likewise, in an era of international production networks, trade within RTA partners may be instrumental for trade with non-RTA members. Thus, a deeper analysis is necessary to truly understand the impact of RTAs such as ATIGA.

The objectives of the ERIA study are as follows:

- To provide quantitative assessment of change in intra-ASEAN trade since ATIGA came into force in 2010, relative to the baseline trade prior to 2010 and compared to AMS trade with non-ASEAN partners. The assessment will also cover utilisation of ATIGA per AMS including details of product coverage.
- To examine how trade in selected sectors have been enhanced by the implementation of ATIGA. The sectors to be analysed include: (1) electronics, (2) automotive, (3) processed agriculture, (4) textiles & apparels, (5) agriculture, (6) healthcare and (7) rubber-based products, (8) wood-based products, and (9) fisheries.
- To assess how ATIGA has contributed to strengthening/creation of regional value chains by examining specific sectors.

To achieve the objectives of ERIA study, we take the following approaches:

- Survey of literature to generate insights regarding the impact of FTAs on regional trade, including trade creation and trade diversion and possible mechanisms through which such effects manifest themselves
- Discuss the role of FTAs in formation of regional supply chains
- Review of the history and context of ATIGA and its key provisions, with an in-depth analysis of the margin of preference offered by ATIGA over MFN tariffs
- Analysis of ATIGA Form D data to understand the utilisation of ATIGA preference in intra-ASEAN trade
- Analysis of trade data to estimate the impact of ATIGA on each AMS' trade

To implement this study, AMS submitted data on the imports under ATIGA Form D and total imports from each AMS partner, as well as applied MFN and ATIGA Tariff rates for the 2009–2018 period at 8-digit ASEAN Harmonized Tariff Nomenclature (AHTN) level. Due to various reasons, not all the requested information could be submitted. Where possible, missing information was supplemented from ASEAN Secretariat's database ASEANStats.

A. History and context of ATIGA

In pursuing the goal of establishing a single market and production base with free flow of goods by 2015 for the ASEAN Economic Community, policymakers in ASEAN felt a need for a more integrated and holistic approach. This called for the integration and inclusion of existing and additional measures relevant to the trade in goods initiative under one umbrella. To achieve this, the ASEAN Economic Ministers agreed in August 2007 to enhance the Agreement on the Common Effective Preferential Tariff Scheme for the ASEAN Free Trade Agreement (CEPT–AFTA) into a more comprehensive legal instrument. This led to the signing of the ASEAN Trade in Goods Agreement (ATIGA). The ATIGA was signed on 26 February 2009 and entered into force on 17 May 2010 with a transition period of 180 days to ensure a smooth transition from the CEPT scheme into the ATIGA. After the entry into force of the ATIGA, certain ASEAN agreements relating to trade in goods such as the CEPT Agreement and selected Protocols were superseded.

The ATIGA consolidates and streamlines all the provisions in the CEPT Agreement and other relevant ASEAN agreements, protocols, and AEM/AFTA Council decisions related to trade in goods. While the CEPT Agreement focused on tariffs, the ATIGA contains broader and more specific provisions on ROO, NTMs, trade facilitation, and SPS. Annex 2 of ATIGA provides the full tariff schedule of all member states and spells out the tariff rates to be applied on each product which makes it transparent for the business community.

Before the decision to have a comprehensive agreement to replace the CEPT Agreement was made, the prospect of creating the Consolidated CEPT Agreement was being considered. The proposed Consolidated CEPT Agreement would be a revised/amended version of the CEPT Agreement, which would merely incorporate all the existing provisions related to the implementation of the CEPT–AFTA that were scattered over a number of Agreements/Protocols and decisions of the AFTA Council or the AEM, into one legal document. However, since some provisions in the existing agreements were outdated, contradictory, and vague, they could not constitute a comprehensive agreement for AFTA. As such, ASEAN decided to have a comprehensive agreement consisting of all necessary provisions to address all aspects related to the flow of goods within the region, e.g. Customs, MRAs (Mutual Recognition Arrangements) under Standards and

Conformance, and SPS and trade defense measures (i.e. safeguards, anti-dumping, and countervailing measures) and could accommodate new developments.

As a precursor to ATIGA, the CEPT Scheme had already moved forward the agenda of ASEAN economic integration. The 1992 CEPT Agreement initially provided that the tariffs for intra-ASEAN trades on manufactured products and processed agricultural products shall be reduced to 0%–5% over 15 years from 1 January 1993 to 1 January 2008. Unprocessed agriculture products were excluded from this Agreement. In 1992 when the CEPT Agreement was signed and there were only six ASEAN members. Viet Nam signed the protocol to join the CEPT Scheme in December 1995 and started implementing the CEPT Agreement on 1 January 1996. Lao PDR and Myanmar signed the protocol to join the CEPT Scheme in July 1997. and started implementing the CEPT Agreement on 1 January 1998. Cambodia signed the protocol to join the CEPT Scheme in April 1999 and started implementing the CEPT Agreement on 1 January 2000.

The CEPT Scheme itself was undergoing many changes during this period. In December 1995, the CEPT Agreement was amended to reduce the time frame from 15 years to 10 years, i.e. to 1 January 2003. The 1995 amendment also broadened the coverage of the CEPT Scheme to include not only manufactured and processed agriculture products but also unprocessed agriculture products. The tariff reduction schedules for these unprocessed agriculture products were provided under the Protocol on the Special Arrangement for Sensitive and highly Sensitive Products which was signed in September 1999. With this protocol, unprocessed agriculture products were divided into two groups – a sensitive list (SL) and highly sensitive list (HSL). The end dates for the phasing-in of SL products into the CEPT Scheme are 2010, 2013, 2015, and 2017, respectively for ASEAN-6, Viet Nam, Lao PDR and Myanmar, and Cambodia, respectively, with the ending rate are at 0%–5%. For HSL products, which only exist in Indonesia, Malaysia, and the Philippines, the ending rate was initially 20% and the ending date was by 2010. With regard to rice and sugar, there is a special consideration which allows Indonesia, Malaysia, and the Philippines to request for waivers from the obligations imposed under the CEPT Agreement. By this special consideration which is provided for by the Protocol to Provide Special Consideration for Rice and Sugar, signed in August 2007, the ending rates for rice and sugar are now at 5%–25% and the ending date is 2015.

In November 2000, the e-ASEAN Framework Agreement was signed by which the tariffs and non-tariff barriers on intra-ASEAN trade in ASEAN ICT products were to be eliminated by 1 January 2005 for ASEAN-6 and by 1 January 2010 for CLMV. In September 2002, Economic Ministers, in the Roadmap for the Integration of ASEAN, recommended that 80% of tariff lines would be at 0% by 2007 for ASEAN-6. In January 2003, the CEPT agreement was amended such that import duties of all products except

in the SL and HSL were eliminated 1 January 2010 for ASEAN-6 and by 1 January 2015 with flexibility by 1 January 2018 for CLMV. In November 2004, the ASEAN Framework Agreement for the Priority Integration Sectors (PIS) was signed by which the CEPT rates of the PIS products, other than those in the SL, HSL, GEL, and the negative list of the PIS Products, were to be eliminated by 1 January 2007 and 2012 for ASEAN-6 and CLMV, respectively.

During the implementation of the CEPT Scheme, the MOP offered by the Agreement was actually very small. Until 2005, only 63% of tariff lines of ASEAN-6 had zero CEPT tariffs, while the percentage was only 10% for CLMV. At the same time, other trade liberalisation efforts were ongoing. During this period, the MOPs for the original members of ASEAN have been falling over the years. Analysis at the time showed that MOP was significantly reduced, and often eliminated. More than 90% of tariff lines had a margin of preference of zero (see also Feridhanusetyawan, 2005), and more than 70% of intra-ASEAN trade was conducted at MFN zero. In a comparison of external tariffs of major regional trade agreements, the World Bank (2005) found that only the North American Free Trade Agreement or NAFTA had lower external tariffs than AFTA. Thus, one potential effect of ATIGA's tariff reduction schedule was to increase the margin of preference in intra-ASEAN trade by increasing rate of liberalisation within ASEAN as compared to non-ASEAN partners.

Reforms of the Rules of Origin (ROO) has been one of the key achievements of ATIGA in reducing cost of compliance for businesses. Mattoo et al. (2020: 274) noted that 'Before ATIGA was created, the region's trade rules were set by the ASEAN Free Trade Agreement–Common Effective Preferential Tariff (AFTA–CEPT), which adopted the regional value content (RVC) rule. Over time, however, the change in tariff classification (CTC) approach became dominant due to some practical problems with implementing the RVC approach, due to exchange rate fluctuation and difficulty in complying the origin criteria because of the nature of the final goods and the intermediate inputs. ATIGA introduced further improvements to liberalise and simplify the ROOs and has refined them on a product-by-product basis rather than reforming the overall framework.'

In case of ASEAN under ATIGA, preferential ROO are applied for purposes of claiming preferential tariff treatment. Prior to the adoption of ATIGA, business sectors, through their government representatives in ASEAN's ROO task force and working groups, have instituted certain reforms to help ensure that the ROO are trade-facilitative and easily complied with and its Operational Certification Procedures (OCP) are user-friendly. These changes to the CEPT–AFTA ROO include adopting co-equal and alternative rules of Regional Value Content 40% value added or a change in tariff classification or process rules for key priority product sectors like garments and textiles, iron and steel, etc. On

OCP, streamlining of documentation requirements, such as those related to minimum data requirements for application of Certificate of Origin was implemented. In addition, OCP provisions were amended to provide further clarity in the interpretation of certain provisions to avoid goods being stuck at the ports of importing parties due to differences in understanding of customs authorities. These changes prior to 2010 were incorporated in the ATIGA.

A proliferation of PTAs in East Asia has added complexity to the region's ROO regimes, notably through trade agreements signed with extra-regional partners. The changes in ATIGA were not only pursued because of clamor from the business sector, but also to take into account the developments taking place in the ROO of ASEAN Plus 1 FTAs, where some of the provisions are more 'trade-facilitative' than what is being applied in the ATIGA, such as the application of chemical reaction and process rules in the product specific rules.

Notwithstanding, the reforms made in some of the ASEAN Plus 1 FTAs on ROO and OCP were not automatically adopted by ASEAN as there were concerns from certain AMS. This did not discourage members of the Sub-Committee on ATIGA Rules of Origin (SCAROO), the responsible body on ROO in ASEAN, to formulate changes to the ROO and OCP. At the 27th ASEAN Free Trade Area (AFTA Council) Meeting in August 2013, the AFTA Council endorsed the recommendation to implement the removal of the FOB price in the ATIGA CO Form D in case where Wholly Obtained (WO), Change in Tariff Classification (CTC) or Process Rule is applied. A new Rule 25 in the OCP was added and amended box 9 of the CO Form D. Subsequently, further reforms were made under ATIGA, such as the implementation of the unified ASEAN Wide Self-Certification (AWSC) on 20 September 2020. The AWSC allows exporters who have demonstrated competence and understanding in complying with ATIGA ROO requirements, known as 'certified exporters', to self-certify the origin status for their goods to be eligible and claim for ATIGA tariff preferences. The AWSC unified the two pilot projects on self-certification earlier implemented by AMS. In early 2020, AMS also implemented the 'live' operation of the ASEAN Single Window on ATIGA e-Form D, that allows the transmission and exchange of ATIGA e-Form D to claim preference instead of the paper-based CO Form D.

ASEAN's success in promoting economic integration amongst its members stands out when compared to other regional blocs mostly comprising of developing and middle-income countries (and thus excluding the EU and NAFTA). The Southern Common Market, also known as Mercosur, is an economic and political group made up of Argentina, Paraguay, Uruguay, and Venezuela (currently suspended). In place since 1991 (as long as AFTA has been around), in 2019 their combined GDP amounted to about US$3.4 trillion

with total trade of US$574 billion and a population of 295 million people. While it was considered to be a successful integration effort amongst its members in the first decade after its establishment, its progress has been stagnant over the past 2 decades due to economic problems of its members and failure to coordinate their trade policies towards countries outside Mercosur (Campos, 2016).

Another one is the Economic Community of West African States (ECOWAS). Comprising 15 west African countries and established in 1975, ECOWAS is the biggest trading bloc on the African continent with a combined GDP of US$689 billion in 2019, total trade of US$216 billion, and a population of 386 million people. The fact that the agreement has been in place for almost 5 decades allows pundits to study the effectiveness of the agreement periodically. After the first 2 decades of its existence, ECOWAS was deemed by some to have been unsuccessful in promoting regional integration due to incoherent national policy stances amongst its members and similar comparative advantages between its members (Iqbal and Khan, 1998; Hanink and Owusu, 1998). On the contrary, von Uexkull, (2012) found that ECOWAS has had a positive effect on West African countries' trade diversification and the provision of good jobs for people in manufacturing sectors.

CHAPTER 3

ECONOMIC EFFECTS OF FREE TRADE AGREEMENTS

A. International Trading Architecture

To properly account for the role of ATIGA on intra-ASEAN trade, we need to place it in the context of international trading architectures, each of which offer firms with different tariff rates and thus influence their choice related to exporting destination, sourcing strategy, and utilisation of preference. ATIGA is one of approximately 500 Free Trade Agreements (FTA) or Regional Trade Agreements (RTA) that have currently been reported to the World Trade Organization. Although RTAs go against the WTO's most-favoured nation (MFN) treatment principle, they are allowed if they observe conditions and requirements stipulated under Article XXIV of the General Agreement on Tariffs and Trade(GATT), to ensure complementarity. Their growing popularity since the 1990s is perceived as a response to a combination of failure of multilateral trade negotiations to deepen commitments, and reduced confidence in globalisation, to alleviate poverty.

Due to an 'open regionalism' approach to international trade taken by the AMS, ATIGA is situated within a very complex international trading architecture. All AMS are now members of the WTO, with Viet Nam and Lao PDR being the most recent to join (in 2007 and 2013 respectively). In addition to ATIGA, ASEAN collectively has signed trade agreements with six regional trade partners (Australia–New Zealand, China, Hong Kong, India, Japan, and the Republic of Korea). The Regional Comprehensive Economic Partnership (RCEP), which was signed in November 2020 and awaiting ratification by the signatory states, was built-upon these existing ASEAN Plus 1 FTAs to broaden and deepen parties' engagement to enhance trade and investment activities that will contribute to further economic integration of the region.

Table 3-1. AMS' FTA/RTAs with non-regional partners

AMS	FTA/RTA (In Force)	FTA/RTA (Status other than "In Force")
Brunei Darussalam	Brunei Darussalam – Japan; Trans-Pacific Strategic Economic Partnership	
Cambodia		Cambodia – China; Cambodia – Republic of Korea
Indonesia	Indonesia – Chile CEPA; Indonesia – Pakistan PTA; Indonesia – Japan EPA; Indonesia – Australia CEPA; Indonesia Palestine Trade Facilitation for Certain Products.	Indonesia – EFTA CEPA; Indonesia – EU CEPA; Indonesia – Mozambique PTA; Indonesia – Korea CEPA; Indonesia – Turkey CEPA; Indonesia – Pakistan TIGA; Indonesia – Bangladesh PTA; Indonesia – Tunisia PTA; Indonesia – Iran PTA; Indonesia – Mauritius PTA; Indonesia – Morocco PTA.
Lao PDR	Asia Pacific Trade Agreement (APTA); Asia Pacific Trade Agreement (APTA) - Accession of China	
Malaysia	Turkey – Malaysia; Malaysia – Australia; Chile – Malaysia; India – Malaysia; New Zealand – Malaysia; Pakistan – Malaysia; Japan – Malaysia	EU – Malaysia
Myanmar	N.A.	
Philippines	EFTA – Philippines; Japan – Philippines; Protocol on Trade Negotiations (PTN)	Philippines – EU; Philippines – Korea
Singapore	EU – Singapore; Turkey – Singapore; Singapore – Taiwan (Agreement between Singapore and the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu on Economic Partnership (ASTEP)); Gulf Cooperation Council (GCC) – Singapore; Costa Rica – Singapore; Peru – Singapore; China – Singapore; Panama – Singapore; Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP); Trans-Pacific Strategic Economic Partnership; Republic of Korea – Singapore; Jordan – Singapore; India – Singapore; United States – Singapore; Singapore – Australia; EFTA – Singapore; Japan – Singapore; New Zealand – Singapore; Sri Lanka – Singapore; United Kingdom – Singapore	Ukraine – Singapore; Canada – Singapore
Thailand	Chile – Thailand; Japan – Thailand; Thailand – New Zealand; Thailand – Australia; Thailand – India (Early Harvest Scheme); Thailand – Peru (Early Harvest Scheme)	EU – Thailand
Viet Nam	Eurasian Economic Union (EAEU) – Viet Nam; Republic of Korea – Viet Nam; Chile – Viet Nam; Japan – Viet Nam, Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP); EU – Viet Nam, United Kingdom – Viet Nam Free Trade Agreement; Global System of Trade Preferences amongst Developing Countries (GSTP)	EFTA – Viet Nam

Note: Status refers to the classification provided in the WTO RTA database, except for Cambodia-China and Cambodia-Korea which were not recorded in WTO RTA database as of March 2021. Status other than "In Force" means those FTAs/RTAs which may be under negotiations, concluded, or signed.Source: Authors' compilation from WTO database.

Source: Authors' compilation from WTO database.

In addition, individual AMS have signed as many as 62 bilateral trade agreements with non-regional partners. Likewise, many AMS are also involved in so-called mega RTAs such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Table 3-1 shows the list of bilateral and multilateral FTAs involving AMS with non-ASEAN countries recently signed or already in force. The many intra-regional trade agreements that AMS are engaged in makes it challenging to isolate the effect of ATIGA.

B. Trade diversion and trade creation

Theoretically, preferential trade agreements (PTAs)[1] such as ATIGA can lead to trade creation (PTA members expand trade) and trade diversion (PTA members trade with each other at the expense of non-PTA countries). Trade creation takes place when the removal of trade barriers allows greater specialisation according to comparative advantage, lowering prices so that trade can expand. So firms in one AMS could profitably export goods to another AMS due to the lowering of tariffs by ATIGA. Trade diversion occurs when demand shifts from a lower cost producer outside the PTA to one inside the PTA because of the preferential tariff. In other words, due to ATIGA firms within ASEAN gain a cost advantage due to lower tariffs as compared to firms outside ASEAN, and thus start trading in goods that were previously imported from outside ASEAN.

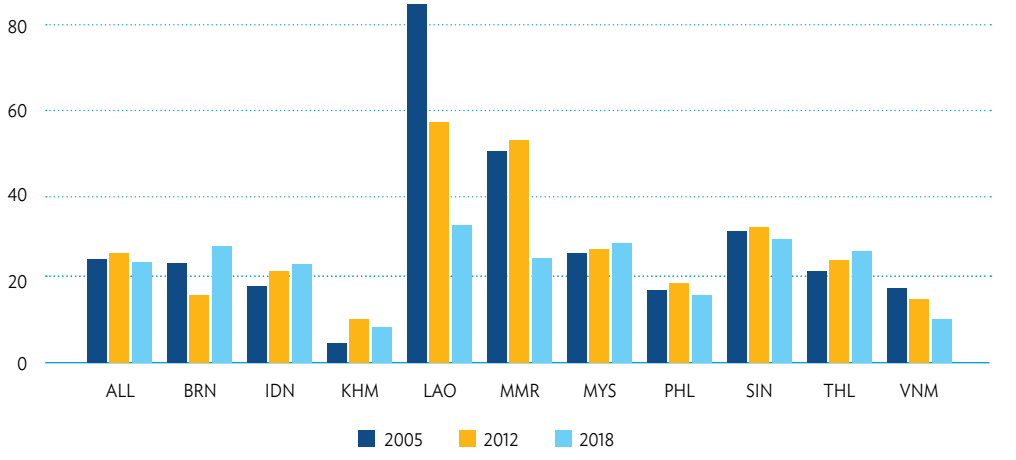
Studies of the trade diversion and trade creation impact of PTAs have been yielding inconclusive results. While most economists had shown that PTAs are effective in promoting trade between their member states, PTAs' effect on the trade diversion has been producing mixed result. An example of the success of an FTA in creating trade within its members is the establishment of European Union (EU) that has maintained intra-EU exports and imports above 60% as a proportion of their trade with the world from 2001–2019 and the establishment of the North America Free Trade Agreement (NAFTA) that has helped the region to maintain intra-NAFTA trade at around 50% of their total trade. While the basic data on trade creation is easier to find, the trade diversion effect is not as straightforward as both the EU and NAFTA countries are increasing their trade with Asian countries within the same period without having any formal FTAs.

In the case of ASEAN, there is strong growth in trade between AMS. Imports from within ASEAN has seen double digit annual average growth in Cambodia, Lao PDR, Myanmar, and the Philippines between 2012 and 2018 in nominal terms, while Viet Nam's imports grew by 5% per year on average. Likewise, export volumes to ASEAN increased by 8% per year from Cambodia, 10% from Lao PDR, and over 4% from Viet Nam. Other AMS have seen slow or even declining imports and exports with other AMS. Even then, their trade with Cambodia, Lao PDR, Myanmar, and Viet Nam have been rising quite fast. In fact, CLMV's share in intra-ASEAN exports increased from 7% to 9% between 2012 and 2018, while their share in intra-ASEAN imports expanded from 10% to 16% over the same period. The emergence of these four countries has been one of the most important features of ASEAN's recent growth experience.

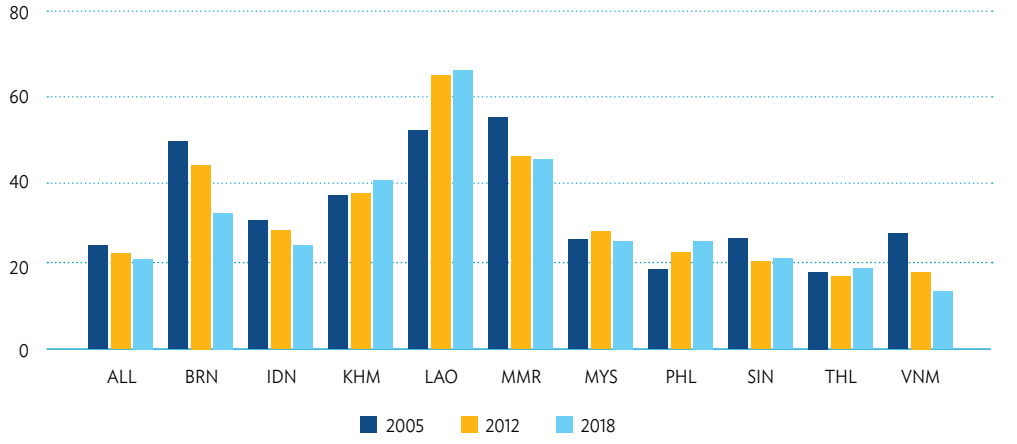
[1] Various descriptors of trade agreements between two or more countries include Free trade agreement (FTA), regional trade agreements (RTA), and preferential trade agreements (PTA). These terms are used interchangeably in this report.

However, the overall share of ASEAN in imports have not changed significantly in the past 13 years since 2005 and consistently stayed just above 20%. FIGURE 3-1 displays ASEAN's share in AMS imports and exports for the years 2005, 2012, and 2018. Amongst individual AMS, Brunei, Indonesia, and Viet Nam have seen significant decline whereas Cambodia, Lao PDR, and the Philippines have seen an increase in the ASEAN share of their imports. In 2018, the highest share was for Cambodia, Lao PDR, and Myanmar at above 40%; the rest of the AMS had shares between 20% and 30% except Viet Nam with a share below 20%. On the export side, there was actually a dramatic decline in ASEAN share of exports for Cambodia, Lao PDR, Myanmar, and Viet Nam between 2005 and 2018. A lot of factors go into the determination of ASEAN's share, including AMS' trade with non-ASEAN partners. Increasing openness of AMS on a multilateral basis and increased sophistication of their product demand due to economic growth means that trade with external partners is likely to grow faster than trade within ASEAN.

Table 3-1. ASEAN share in trade of AMS



(a) Exports



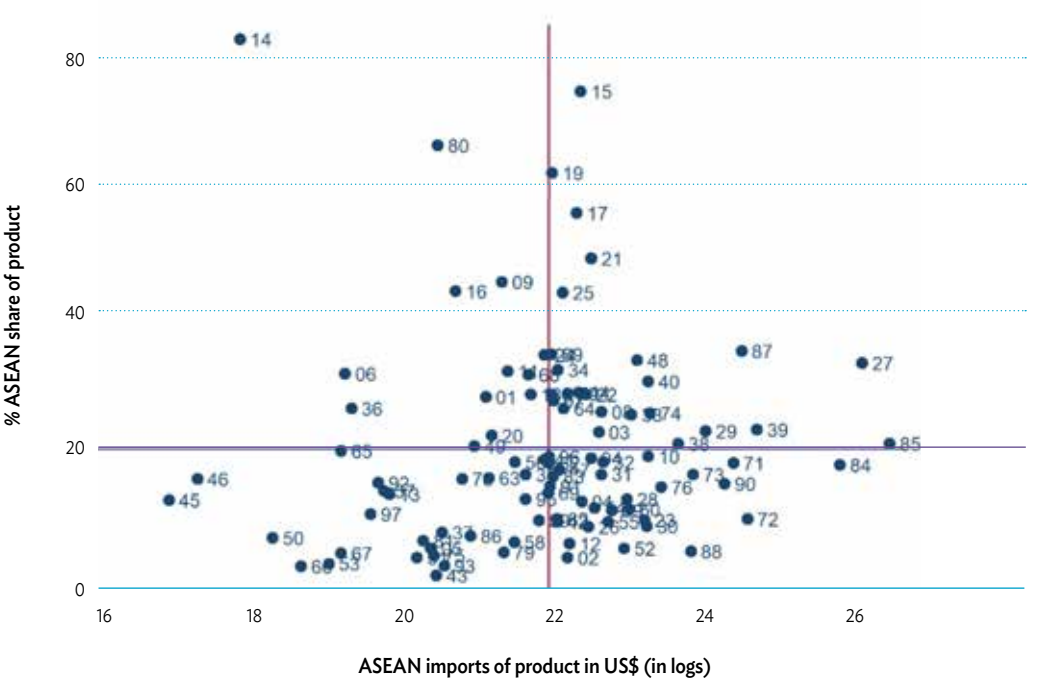
(b) Imports

Source: Authors' compilation from ASEANStats data.

Trade creation and diversion mostly occurs through the tariff advantage conferred by the FTA to its members, called the margin of preference (MOP). But in presence of multiple FTAs, the actual MOP of ATIGA may be quite low for many product lines. To complicate matters further, not only are AMS involved in multiple RTAs, many RTAs involving AMS overlap, such that firms based in AMS have a choice between using MFN, ATIGA or one of the Plus One FTAs when importing from another AMS. Hayakawa et al. (2018) noted that as many as seven RTA regimes are available for Thai importers looking to trade within ASEAN. Firms can thus optimise based on their individual circumstances (especially fulfilling the requirements of the rules of origin) and may use regimes other than ATIGA for trading. Therefore, the determinant of trade flows of AMS reverts to the 'fundamental' cost advantage conferred by productivity, competitiveness, efficient logistics, behind-the-border costs, etc. This is not to say that ATIGA is not beneficial, but that it is one of the many factors that determine intra-ASEAN trade.

Another reason for the low overall ASEAN share is AMS' comparative advantage in primary products which tend to have lower trade volumes relative to imports from non-ASEAN sources. This is illustrated in FIGURE 3-2 which shows the position of each HS 2-digit product along two dimensions – the product's total imports on the horizontal axis (expressed in logarithm scale) and the ASEAN share of the product, which is the total imports of the product that come from within ASEAN, on the vertical axis. We find that products with the highest ASEAN share (those clustered towards the top of the graph) tend to have mid-level import volumes (the red vertical line represents average trade volume across products). In fact, the product with the highest ASEAN share (HS Chapter 14) had one of the lowest import volumes in 2018.

Figure 3-2. Correlation between import share of product and ASEAN share

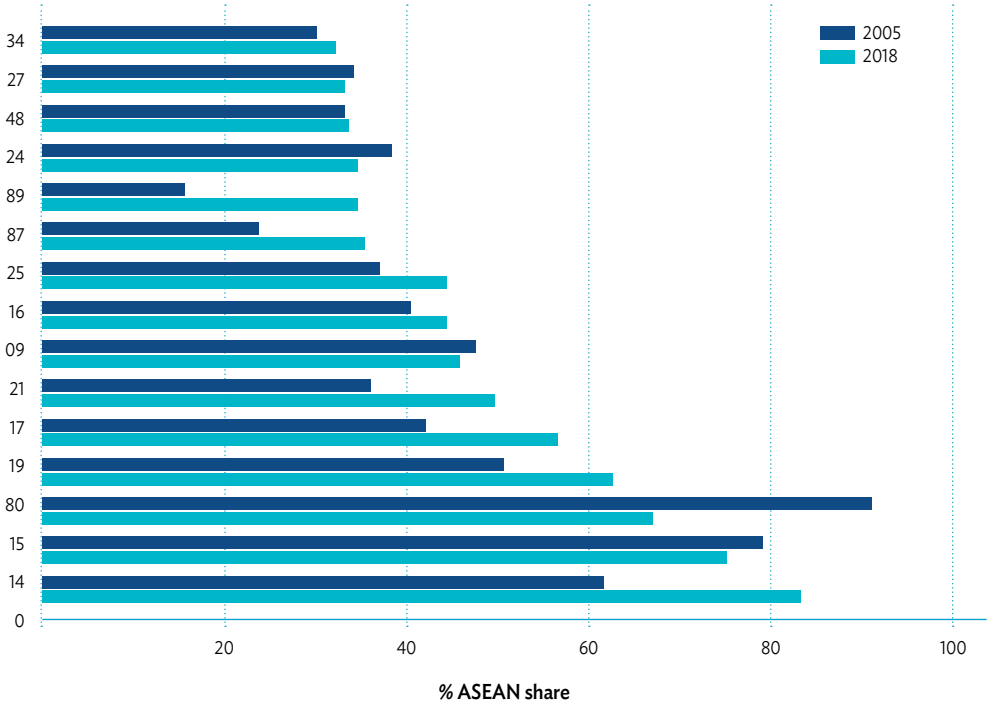


Note: Data is for 2018.

Source: Authors' calculation from ASEANStats data.

When viewed at a more disaggregated level, it is clear that the strength of intra-ASEAN trade has been in processed agriculture for a long time. FIGURE 3-3 depicts the top fifteen HS 2-digit chapters by ASEAN share in 2018, aggregated across all AMS' imports, and examines their 2005 and 2018 ASEAN shares. Seven of the ten chapters are processed agriculture products, and many of these products have seen an increase in ASEAN share since 2005. The non-agricultural products that appear on this list are Chapter 80 (tins and articles thereof); Chapter 87 (vehicles); and Chapter 89 (ships). In fact, the ASEAN share in vehicles trade increased from 23% in 2005 to just under 37% in 2018, which is a strong indication of the important role of international production linkages in ASEAN's economic integration. Thus, the aggregate ASEAN share is not a good metric for assessing intra-ASEAN integration. We need a more nuanced analysis of trade patterns at a more disaggregated level to fully understand the success of the ASEAN integration agenda through ATIGA and other initiatives.

Figure 3-3. HS chapters with highest ASEAN share in imports in 2018



Note: The HS chapters are: 09 Coffee, tea, mate and spices; 14 Vegetable plaiting materials; vegetable products not elsewhere specified or included; 15 Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes; 16 – Meat, fish or crustaceans, molluscs or other aquatic invertebrates; preparations thereof; 17 – Sugars and sugar confectionery; 19 – Preparations of cereals, flour, starch or milk; pastrycooks' products; 21 – Miscellaneous edible preparations; 24 – Tobacco and manufactured tobacco substitutes; 25 – Salt; sulphur; earths, stone; plastering materials, lime and cement; 27 – Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes; 34 – Soap, organic surface-active agents; washing, lubricating, polishing or scouring preparations; artificial or prepared waxes, candles and similar articles, modelling pastes, dental waxes and dental preparations with a basis of plaster; 48 – Paper and paperboard; articles of paper pulp, of paper or paperboard; 80 – Tin; articles thereof; 87 – Vehicles; other than railway or tramway rolling stock, and parts and accessories thereof; 89 – Ships, boats and floating structures.

Source: Authors' calculation from ASEANStats data.

C. Method of analysis

Policymakers and academics alike are interested in better understanding the impact of an FTA, and a number of analyses have been conducted, including those of CEPT and ATIGA. Three major methodologies are utilised for such analysis, each with their strengths and weaknesses. These include computable general equilibrium (CGE) models, the gravity model, and analyses of data on FTA utilisation. CGE is a simulation analysis of how various scenarios, including tariff reductions due to FTA implementation, change economic outcomes. CGE models can estimate both direct and indirect impacts of an FTA on various aspects of the economy, including trade volumes and economic welfare. In a CGE model, implementation of an FTA is typically measured by tariff reduction/elimination (Plummer, Cheong, and Hamanaka, 2010; Okabe and Urata, 2013; Menon, 2013, 2014). If most of the impact of ATIGA on trade flows is indirect and operates

through changes in extra-regional rather than intra-regional flows, then a CGE model that capture such interdependencies would be appropriate.

While CGE uses simulation approach, gravity model applies statistical model to real world trade data to investigate the impact of FTA membership. In a gravity approach, trade flow between two FTA members is compared with other pairs of countries in the same sector/product category to determine whether membership of FTA stimulates trade. An indicator variable is added to the basic model specification to capture the effects of an FTA on trade flows (Plummer, Cheong, and Hamanaka, 2010; Trotignon, 2010). However, there is great variation in specification, estimation method, data, and other aspects, and care should be taken to ensure that these issues address the particular question being investigated.

Finally, analysis of FTA utilisation can reveal to which extent the tariff provision of a FTA is being used by traders. FTA utilisation is calculated as the percentage of an FTA partner's imports from other FTA partners that was imported under the FTA regime. Although FTA utilisation analyses may not be particularly relevant when tariff lines have a MOP of zero, there are still some heavily traded products where MOPs are quite high. For these products, understanding issues affecting FTA utilisation may complement other approaches, and provide a better overall picture of the impact of ATIGA on these products or sectors.

CGE Model

What do existing studies say about the impact of ATIGA? Previous analyses of AFTA/ATIGA using the CGE approach has shown a small impact of the agreement. One of the earliest studies to use CGE modelling to analyse the impacts of ASEAN trade integration was DeRosa (1995). The model accounted for the elimination of both tariff and non-tariff barriers in Indonesia, Malaysia, the Philippines, Singapore, Thailand, and their major trading partners. DeRosa's analysis revealed that AFTA would only result in small improvements in economic welfare in the five ASEAN countries. Moreover, although there would be a small gain in intra-ASEAN trade, the gains from an alternative policy of unconditional MFN liberalisation would be more than three times larger.

More recent studies have used CGE models to estimate the impacts of the ASEAN Economic Community (AEC), and ASEAN's integration with its '+1' partners (Francois and Wignaraja, 2008; Kawai and Wignaraja, 2011; Lee and Plummer, 2011; Estrada et al., 2011). Two common findings of these studies are that the aggregate welfare benefits of ASEAN's FTAs would be significantly larger (i) if they involve more trading partners and (ii) if tariff reductions are complemented by measures to reduce non-tariff barriers

and other trade costs, as well as increased competition and improved infrastructure (for a fuller review of the CGE literature on ASEAN FTAs, see Estrada et al., 2011).

While CGE models can assess the net welfare effect of FTAs, it is subject to several limitations which make them primarily useful only for ex-ante analysis (Plummer, Cheong, and Hamanaka, 2010; Kohpaiboon and Jongwanich, 2015). More robust analytical results can be obtained from studies using ex-post methodologies that rely on real-word data. Given that the ATIGA have been in effect for some time, this study focuses primarily on ex-post analysis using gravity model and exploration of trade data, including FTA utilisation.

Gravity estimation

The gravity model is a workhorse model for empirical analysis of international trade and uses data on actual trade flows between trade partners. The unit of analysis is bilateral trade partners, and an indicator variable denotes whether the trade partners were members of an FTA. The gravity model can be used to estimate what would have happened in a counterfactual scenario where there had been no FTA. However, the estimated effect of an FTA is largely dependent on data quality and specification of the gravity model related to omitted variables or measurement error (Plummer, Cheong, and Hamanaka, 2010). Notwithstanding the limitations, the gravity model remains the most appropriate tool to analyse the impact of ATIGA on intra-ASEAN trade.

Wang and Winters (1992) and DeRosa (2008) used this approach to investigate the impact of membership in several regional FTAs. Their results reveal that not only did AFTA have a positive and significant impact on intra-ASEAN trade flows, it was also one of the most effective regional groupings amongst those covered in the studies. In studies using a single regional dummy variable, the resulting coefficient would only estimate the FTA's effect on total trade flows, but not indicate whether this effect is due to pure trade creation, trade diversion, or both. To separate these effects, the model specification would need to include additional dummies to test trade between AFTA and non-AFTA members (Plummer, Cheong, and Hamanaka, 2010; Trotignon, 2010). A number of recent studies have extended the specification to include three dummy variables that simultaneously test the effects of FTAs on intra-bloc trade, extra-bloc exports and extra-bloc imports, following Trotignon (2010). Per Trotignon's typology, an FTA remains a building block for wider trade liberalisation if it creates more trade than it diverts (Guilhot, 2010).

Elliot and Ikemoto (2003) used a modified gravity equation to examine intra- and extra-ASEAN trade before and after the signing of AFTA, from 1982 to 1999. Their findings

revealed that both types of trade flows were not significantly affected in the years immediately following the signing of AFTA. In the long term, AFTA actually increased both intra- and extra-ASEAN trade, given ASEAN's continued openness to external partners.

Guilhot (2010) used a panel-data gravity model with three dummy variables over the period 1985–2007 to assess the impact on intra-regional and extra-regional trade of AFTA and ASEAN's FTAs with China and the Republic of Korea. The results indicate that AFTA stimulated trade amongst member countries, but that its impact on trade with the rest of the world varies according the type of trade flow: it is positive in the case of exports and negative in the case of imports. However, the absolute values of the coefficients show that the creation of exports to the rest of the world outweigh the diversion of extra-regional imports. Therefore, the overall impact of the AFTA on multilateral trade is still positive. Similar results were obtained by Wong, Liew, and Arip (2017) in a study investigating the effects of AFTA on the bilateral manufacturing trade between ASEAN-10 and 39 of their trading partners. Their results suggest that AFTA has generated pure trade creation effects in terms of exports, while its trade creation effects in imports outweighs it import diversion effects.

Gravity models that use an FTA dummy to study the impact of FTAs tend to suffer from a couple of limitations. First, the effect of the FTA is assumed to take place as soon as the agreement is signed. In reality, however, AFTA's liberalisation follows a phased and gradual approach, with liberalisation commitments pushed back in the case of sensitive products. There are also significant differences in liberalisation schedules across countries (Kohpaiboon and Jongwanich, 2015; Okabe and Urata 2013). The second and even bigger limitation is that they fail to fully capture the impacts of tariff preferences, with the exception of a handful of studies.

Manchin and Pelkmans-Balaoing (2007, 2008), included fifteen variables in their regression to capture the importance of preference margins on trade flows in ASEAN. Their results reveal that the preference margin only seem to matter when it reaches at least 25 percentage points. The authors reckon that at lower margins, the costs of requesting the preferences and the complying with the rules of origin (ROO) outweigh the benefits obtained from preferential treatment. However, their analysis also reveals that the significance of preferences seems to weaken at very high differential margins. The authors suggest that this could be due either to the presence of non-tariff measures, or the tendency of ASEAN members to offer high preferences on products that have little relevance to ASEAN trade.

By contrast, a more recent analysis by Okabe and Urata (2013) using preferential margins found that AFTA has had positive and significant trade creation across a wide range of

products. Out of 53 products, positive and significant coefficients were found in 39 products in the case of imports, and 35 products in the case of exports. Their analysis also revealed that the elasticity of tariff reduction on imports tends to be much larger than that on exports, likely due to differences in the time it takes for supply and demand to adjust to price changes. Although their results show that AFTA has been successful in promoting intra-ASEAN trade, the authors emphasise that further expansion may be achieved by increasing the use of AFTA and by pursuing efforts to reduce non-tariff barriers and harmonise or mutually recognise product standards.

Despite the use of actual tariff data in the aforementioned studies, they still rely on normal intra-regional trade flows and assume full utilisation of preferences, in the absence of extensive data on actual preference utilisation rates (Menon, 2013 and 2014; Manchin and Pelkmans-Balaoing, 2007 and 2008). If actual preference rates were used, the impact of AFTA on intra-ASEAN trade flows are likely to be more muted. Despite the growing evidence on low preference utilisation rates, very few studies have actually factored in more realistic preference rate estimates into model specifications.

FTA utilisation

A direct and apparently obvious way to understand the impact of FTA is to examine its utilisation. In the trading process, qualified traders can avail themselves of preferential tariff rates during customs clearance, which results in FTA utilisation. To a certain extent, analysing FTA utilisation would overcome the so-called 'attribution problem' i.e. being reasonably confident that a given trade would not have taken place had preferential tariffs not been provided by the trade agreement. This is exactly the question we are trying to answer in assessing the trade impact of ATIGA. Unfortunately, analysing FTA utilisation does not fully overcome the attribution problem. This is because there is no definitive way of determining that such trade would not have occurred anyway. This is because we cannot observe what would have happened if there had been no trade agreement in place (the 'counterfactual' scenario). Nevertheless, utilisation rates can provide a strong basis to suggest that an FTA is promoting trade, especially if they are accompanied by increases in intra-regional trade shares over time.

Therefore, the next question that we need to address relates to the factors that affect a firm's decision to use an FTA. The main factor affecting FTA utilisation is arguably the margin of preference (MOP) – the difference between the preferential rate for FTA members and the applied MFN rate. The MOP is only half the story, however, as it needs to be compared with the costs of compliance. These include all the costs associated with utilising the FTA, ranging from preparation of documentation to complying with the rules

of origin (ROO). Previous studies have found that other factors such as importer's border efficiency and size of demand also explains FTA utilisation. Studies also found that FTA is used mostly in the case of large transaction volumes, which confers a large absolute advantage even with a small MOP (Hayakawa et al., 2018). Thus, the use of FTAs is likely to be concentrated in few products. To a large extent, the question of whether FTAs lead to increased trade will depend on the relative costs and benefits of compliance.

The higher the MOP for a particular product or tariff line, the greater the likelihood that the FTA will result in a change in trade patterns and volumes, shifting sources of supply from outside the region to countries within the FTA. The MOP has to be sufficiently high to make it profitable to switch sources, based on the difference in landed, duty-paid prices of imports from within and outside the FTA bloc. The higher the MOP, the higher the likelihood of trade diversion. In a 2009 JETRO survey of Japanese firms in ASEAN, the majority of firms indicated that a preference margin of at least 3% will be necessary to utilise an FTA, with a substantial number of firms indicating that a 10% margin will be necessary. So, if the MOP is high enough to justify a switch in import sources, then any excess beyond this threshold will increase the benefit to exporters of utilising the FTA, holding costs of doing so constant. In the next sections, we discuss the MOP of ATIGA tariffs vis-à-vis MFN tariffs in detail.

We turn next to discussing the issue cost of compliance. Some researchers have attempted to quantify the cost of compliance and express it in terms of equivalent tariff rates. A review of the literature on the costs of FTA utilisation by Hayakawa, Laksanapanyakul, and Urata (2015) showed that the tariff equivalent costs of using FTAs are estimated to range from 3%–4.5%. Kohpaiboon (2010) estimated the cost of complying with ROO as equivalent to a tariff in the range of 2% to 10%. Cadot and Ing (2016), on the other hand, estimated that these ROO impose costs equivalent to a tariff of around 3.4% on all goods, and the equivalent of a trade-weighted average tariff of 2.09%. They also found that restrictiveness differs from sector to sector, and tends to be highest in sectors like fats, leather products, textile and apparel, footwear, and automobiles.

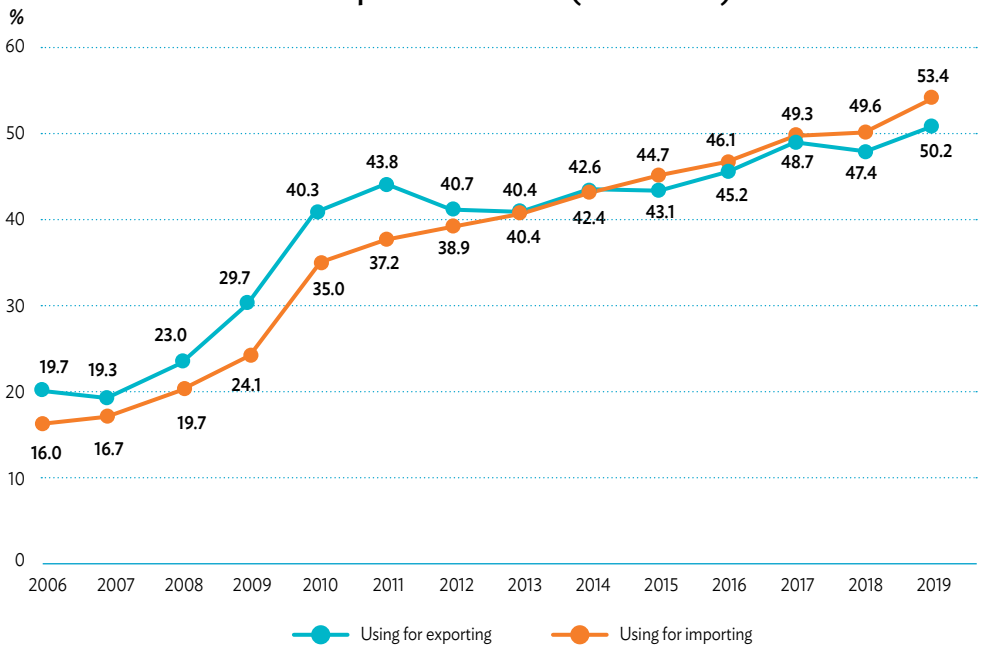
In short, the costs of compliance are certainly non-negligible and can be quite significant depending on the sector. Thus, even with positive MOP, FTA utilisation may be low in presence of these costs. This suggests that a lot more work needs to be done to have a more trade facilitative ROO and simplify documentation requirements to reduce compliance costs. Apart from the complexity of ROOs, surveys reveal other factors such as the lack of information and limited internal expertise also impede their use by raising costs (Hayakawa et al., 2015; Kawai and Wignaraja, 2011; Kohpaiboon and Jongwanich, 2015).

What do we know about utilisation of ASEAN FTAs by firms? Using either firm-level surveys or shipment level customs data, a number of studies shows that preference rate utilisation by ASEAN countries used to be generally low by international standards, with a large divergence across trading partners. Baldwin (2007) cited data from the late 1990s which revealed low utilisation of AFTA preferences, with less than 3% of intra-ASEAN trade benefiting from the same. Kawai and Wignaraja's survey of preference usage by firms across a selected number of ASEAN countries and East Asian trading partners revealed that FTA preference utilisation ranges from a low of 17% in Singapore to a high of 45% in China. Analysis by Kohpaiboon (2010) covering Thailand's exports showed utilisation rates ranging from 22.7% to 62.5%. Low preference utilisation rates have been attributed to a number of factors, including low margins of preferences, high administrative costs, complex RoO, and insufficient information about preferences (Yi, 2015; Hayakawa et al., 2013; Kawai and Wignaraja, 2011; Athukorala and Kohpaiboon, 2011).

Research by Kohpaiboon and Jongwanich (2015) on the use of FTAs in Thailand found that certificate of origin records have significantly increased; however, their value remains less than one-third of total trade. The analysis also reveals that goods traded under preferential rates are highly concentrated in a few products, namely vehicles and auto parts, electrical appliances, petrochemical products, and processed foods. Consistent with Manchin and Pelkmans-Balaoing (2007, 2008), the authors found that products traded under preferential rates tend to have high MOPs, suggesting the presence of significant utilisation costs to firms. Moreover, they found that firms availing of preferences are generally large in size, a result that is also reported in Hayakawa et al. (2013) and Kawai and Wignaraja (2011).

For more recent analysis, one of the most consistent sources of FTA utilisation data is the survey done by JETRO of Japanese affiliates in ASEAN. The share of firms that reported utilising at least one FTA/EPA for imports and exports are reproduced in FIGURE 3-4. The figure shows that the trend rose steadily between 2011 and 2019. For example, while 35% of Japanese affiliates were utilising FTA for importing in 2010, 53% of the firms were doing so in 2019. However, not all Japanese companies in ASEAN may be utilising ATIGA, especially when they source their inputs from outside the ASEAN region.

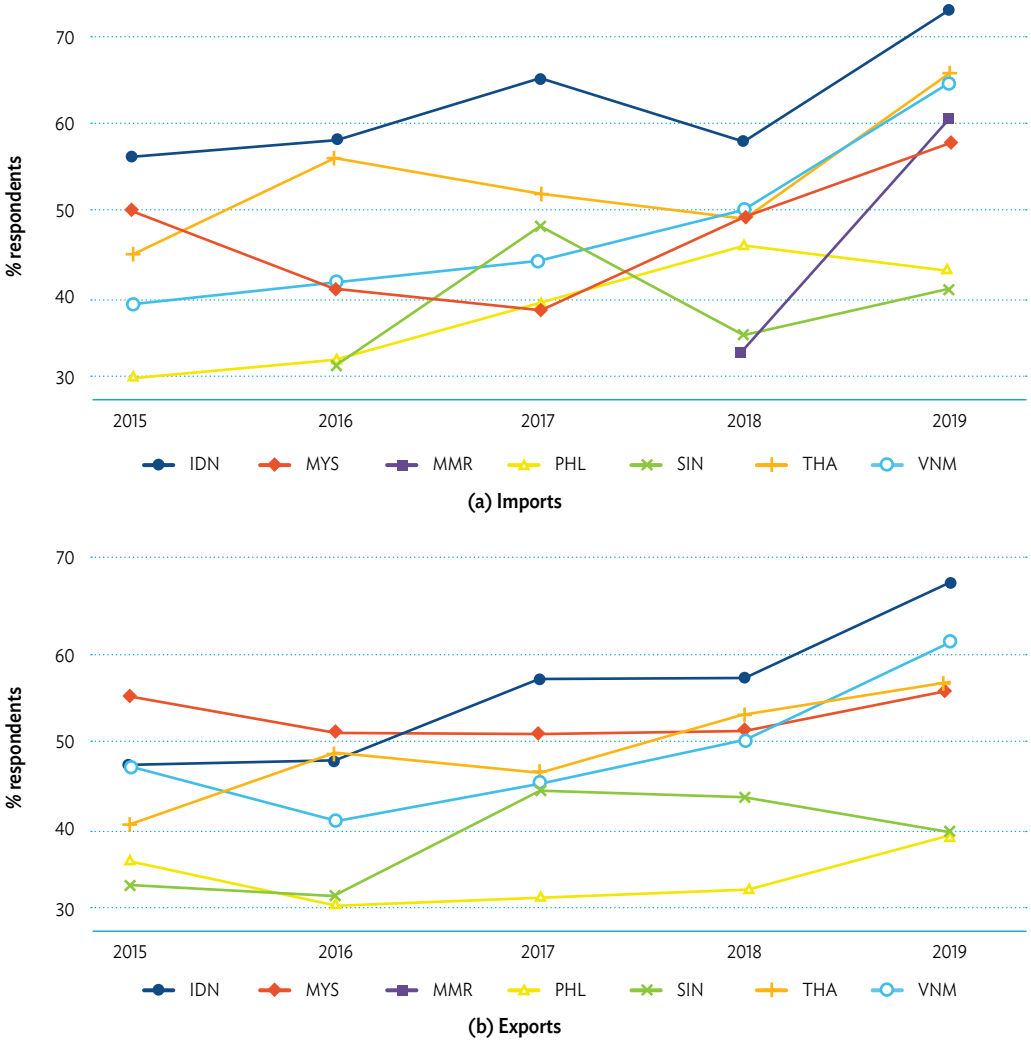
Figure 3-4. Trends in FTA/EPA utilisation by Japanese-affiliated companies in ASEAN (2006–2019).



Source: JETRO Report, p.64 (https://www.jetro.go.jp/ext_images/en/reports/survey/pdf/rp_firms_asia_oceania2019.pdf)

For more recent years, JETRO also collected information on FTA utilisation by affiliates based in individual AMS that import or export within ASEAN. The trend in FTA utilisation by Japanese affiliates for imports from ASEAN between 2015 and 2019 is shown in FIGURE 3-5. If we just focus on Japanese-affiliated countries importing or exporting within ASEAN, the share of companies that utilise FTA is usually above 50%, except for firms based in Singapore and the Philippines. At 70%, firms based in Indonesia are most likely to report FTA use for both imports and exports within ASEAN. The survey also revealed an upward trend in FTA utilisation for trade within ASEAN. A strong upward trend is also observed amongst companies based in Viet Nam, where FTA utilisation for imports increased from below 40% to almost 65%. Likewise, 44% of Japanese-affiliated firms based in Thailand had used an FTA when importing from ASEAN in 2015, but this share had increased to above 66% by 2019. Firms based in Myanmar also reported a sudden jump in FTA use for imports between 2018 and 2019. However, it should be noted that this information is only indicative of actual utilisation rates because we do not know the share of total trade that is conducted under FTAs.

Figure 3-5. Percentage of Japanese-affiliated firms based in AMS that utilise FTA/RTA for trade from within ASEAN.



Source: Authors' illustration from JETRO data.

Another caveat in the above discussion is that it is unclear which FTA is being used. As mentioned above, ASEAN firms have a choice of multiple FTA regimes. Nonetheless, other studies have found a high popularity of ATIGA for intra-ASEAN imports. A survey of manufacturing firms carried out by the Economic Research Institute for ASEAN and East Asia found that 32.5% of manufacturing firms in ASEAN used ATIGA for exports in 2013 (Ing et al., 2015). In another study using transactions level customs data for Thai imports from other AMS in 2014, Hayakawa et al. (2018) reported ATIGA to be by far the most popular regime choice after MFN. Out of 2 million transactions recorded in their data, almost 0.5 million transactions (23%) used ATIGA. In terms of import value,

ATIGA's share is even larger, accounting for B210 billion out of total imports of B676 billion. This gives us some confidence that the rising trend in use of FTA by Japanese affiliates based in ASEAN is most likely due to increased use of ATIGA.

Some studies have tried to include FTA utilisation when estimating the impact of FTA using CGE and gravity models. Amongst CGE-based studies, Menon (2013 and 2014) assumed a more realistic utilisation rate of 25% and then compares impacts under various scenarios. These scenarios consider and contrast both complete (Scenario 1, or S1) and incomplete (25%) utilisation (S2); multilateralisation of preferences by members (S3); an attempt at moving towards a global optimum by linking with a rest-of-the-world (ROW) FTA, but again with complete (S4) and incomplete (S5) utilisation; and finally a global free trade scenario (S6), which could be achieved by all countries pursuing multilateralisation of preferences. His findings showed that actual (incomplete) utilisation rates significantly diminish the benefits from preferential liberalisation, but in a nonlinear way. In general, when members extend their preferential reductions to non-members on a non-discriminatory basis, welfare is enhanced because of three primary effects: (i) the extent of the liberalisation is greater, (ii) the broader liberalisation undoes the welfare-reducing trade diversion resulting from the preferential liberalisation, and (iii) the increase in productivity from more efficient allocation of scarce resources within each member country across its industries.

As for gravity equation-based studies, Jongwattanakul's (2014) study on the impact of Thailand's FTAs included actual tariff margins as well as an estimate of costs associated with RoO. His analysis confirms a difference in the results obtained from using the adjusted tariff margin versus the binary FTA dummy variable, confirming that the latter tends to overestimate the trade-enhancing effects of FTAs. The disaggregation of products into manufacturing and machinery and transport equipment (SITC 7) by Jongwattanakul (2014) also confirmed that products under production networks dominated by parts and components are less likely to utilise preferences due to already minimal tariff margins.

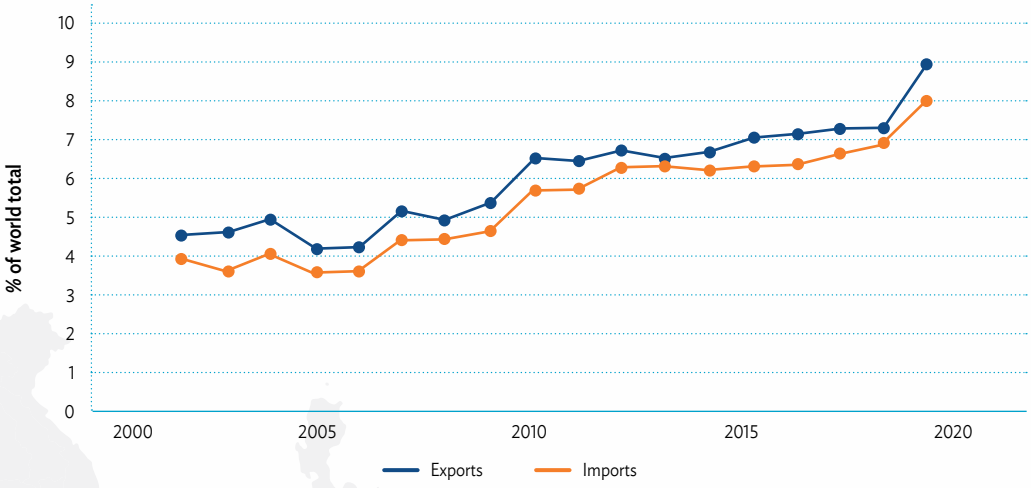
In assessing whether ATIGA has affected trade flows, it is important to go beyond a simple comparison of MOPs and compliance costs, or indeed just an analysis of FTA utilisation rates. We need to look more closely at what is driving these outcomes, and the factors underlying the changes in MOPs in particular. Data shared by the AMS on import values under FTA and import values under MFN, as well as data from the ASEAN Statistics allows us to present the most accurate and up-to-date analysis of FTA utilisation under ATIGA.

CHAPTER 4

THE ROLE OF FTAS IN ESTABLISHING SUPPLY CHAIN LINKAGES

During the period of AFTA/ATIGA, ASEAN has become more prominent in international trade. ASEAN's share in world exports and imports rose from below 5% in 2005 to about 8% in 2019 (see FIGURE 4-1). The rising share indicates that ASEAN's trade has been growing faster than the world as a whole over the past 2 decades. In 2001, the value of ASEAN export to the world was US$383 billion while the value has significantly increased to US$1.5 trillion in 2020. Likewise, ASEAN countries imported US$336 billion while the value has increased to US$1.4 trillion in 2019.

Figure 4-1. ASEAN's share of world exports and imports



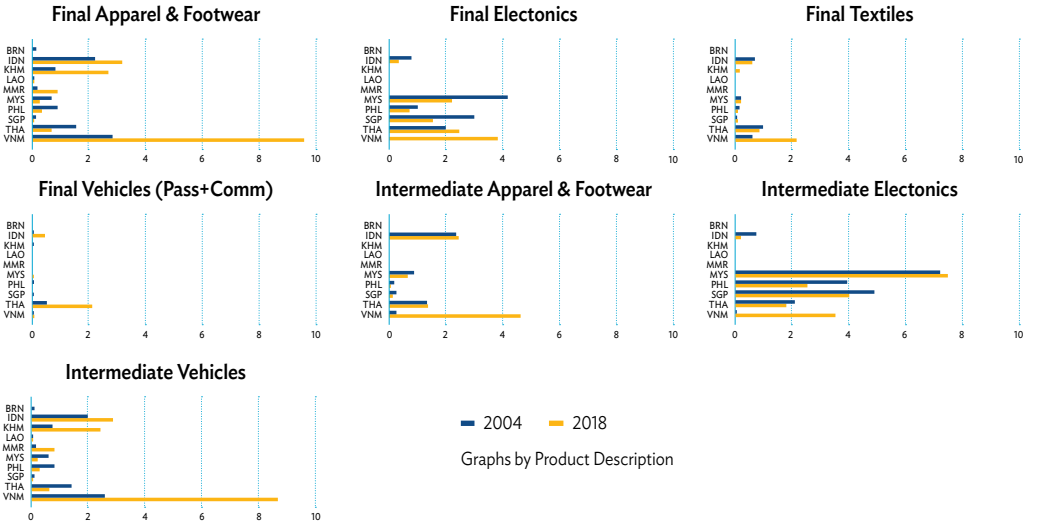
Source: Authors' computation from World Bank WITS data.

A more salient characteristic of ASEAN's growth has been the creation of strong production networks with East Asia. This is evident in the type of products traded and linkages formed with other East Asian countries. By exported commodity, Southeast Asia is one of the world's most important region in electronic goods and mineral fuels and oils productions. During the past 2 decades, electronic goods and machinery and mineral fuels export

constituted to 60% of ASEAN export to the world in 2001 and 48% of ASEAN export to the world in 2019. Similar to its export, ASEAN import has also been more diversified over time as in 2001 58% of ASEAN import were in the electronics product and mineral and oil fuels while in 2019 the number decreased to 50%.

FIGURE 4-2 shows that AMS, especially Viet Nam, have grown to be major players in global value chain-oriented products like apparel and footwear, electronics, textiles, and motor vehicles.

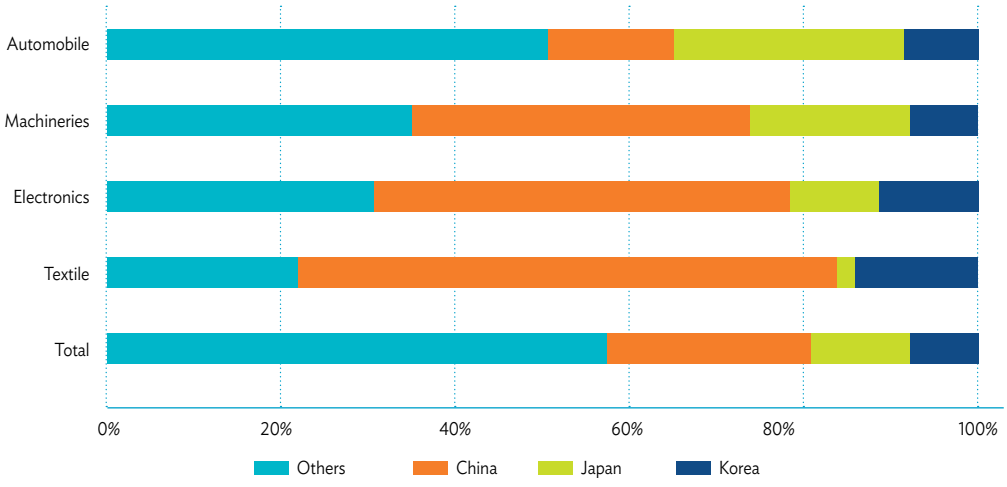
Figure 4-2. Growth in AMS share of world exports, 2004 and 2018



Source: Authors' computation from World Bank WITS data.

ASEAN countries' integration, not only amongst themselves, but also within East Asia is noteworthy. AMS also implemented bilateral and 'Plus one' FTAs with major trading partners (Australia, China, India, Japan, the Republic of Korea, and New Zealand), with their own tariff schedule. As a result, China, Japan, and the Republic of Korea have become key source of imported inputs for firms in ASEAN. FIGURE 4-3 shows that in major products produced through internationally fragmented production process, China, Japan, and the Republic of Korea provide a significant fraction of the inputs to ASEAN firms. This further complicated the trading architecture and is likely to have influenced the trade creation and trade diversion impacts of ATIGA. It also makes it hard to quantify the impact of ATIGA, as any increase in trade with AMS is likely to be accompanied by related increase in trade in upstream and downstream products with non-ASEAN trade partners.

Figure 4-3. Share of imported input in AMS from China, Japan, and the Republic of Korea, 2015



Source: Authors' illustration from TIVA data.

Such fragmentation of production across international borders provides a tremendous opportunity for countries to engage in international trade by specialising in different tasks that constitute separate segments of the production process. The ASEAN Member States aspire to create a 'common production base' in the region, so understanding the impact of ATIGA on creating supply chain linkages in the region is important. In this section, we discuss the following: How can regional FTAs like ATIGA lead to the growth and spread of supply chain relationships across countries? What are the key characteristics of FTAs that can encourage the growth and spread of fragmentation of production across national borders? What are the relative roles of tariff versus NTB reform in FTAs that can contribute to supply chain or product fragmentation trade?

It is sometimes argued that FTAs have been successful in promoting intra-regional trade through the growth and spread of production networks, and that their continued growth will be enhanced by expanding or increasing the number of FTAs. The logic behind this assertion rests on the fact that unlike trade in final goods, product fragmentation trade generally involves multiple border crossings. With this difference between the two, it is argued that trade within global production networks is generally more sensitive to tariff changes than is trade in final goods. Since a tariff can be levied each time a good-in-process crosses a border, the reduction or elimination of tariffs within the free trade area can lead to a multiplier effect whereby the cost savings is a multiple determined by the number of border crossing within the FTA.

Furthermore, tariff reductions of this type may make it more profitable for goods that were previously produced entirely in one country to become vertically specialised, exploiting differences in cost competitiveness across members of the FTA. Consequently, in theory, the trade-stimulating effect of FTAs could be higher for product fragmentation trade than for trade in final goods, other things being equal (Athukorala 2012). In their recent work, Osnago, Rocha, and Ruta (2018) argued that conditional of having a deep agreements[2] , preferential trade agreements have a significant positive impact on global value chain (GVC) trade. Their research showed that having agreement on a deep PTA in the sample doubles trade in parts and components and boost re-exported value added by around 22%.

How does this pan out in practice in Asia? The first point to note is that for FTAs to matter, they need to bring additionality in the sense that they should provide benefits that are greater than what is already available through various other liberalisation schemes or arrangements. Since most of product fragmentation trade in Asia involves products classified as electronics parts and components, this type of trade already travels at duty-free or at very low tariffs across the region because of the Information Technology Agreement (ITA), a multilateral agreement of the WTO. Products covered under the ITA include computer hardware and peripherals, telecommunications equipment, computer software, semiconductor manufacturing equipment, analytical instruments, and semiconductors and other electronic components. This covers almost all constituent products involved in fragmentation trade classified to this category. All of the key players in production networks in Asia are signatories of the ITA, including China, Japan, the Republic of Korea, the original ASEAN members or ASEAN5, Hong Kong and Taiwan. In fact, more than 75% of ITA trade involves an Asian country (see Menon, 2017). As Anderson and Mohs (2010, p.13) pointed out, 'A prominent feature of expanding ITA trade is the broadening participation of Asian countries, particularly China, and an increasingly important role for other developing countries.' Furthermore, since ITA participants must eliminate their tariffs on a most-favoured-nation (MFN) basis, even non-ITA signatories that are members of the WTO will enjoy duty-free access in these products.

How about product fragmentation trade outside the electronics parts and components sector? Products not covered by the ITA may still enjoy preferential treatment or duty-exemption if multinational corporations involved operate out of export processing or free trade zones (EPZs or FTZs). Even if they do not operate from EPZs or FTZs, various duty-drawback or bonded warehouse schemes that provide for duty-free trade in parts and components may be available.

[2] According to Lawrence (1996), deep trade agreements are PTAs that include greater coverage such as investment rule, competition rule, and harmonisation of product regulations.

Furthermore, these factors operate against a backdrop of low and falling tariffs on parts and components, which have more to do with unilateral actions than preferential ones. In this respect, scholars have suggested that a highly liberalising race-to-the-bottom unilateralism has been taking place in emerging Asia in the 1980s and 1990s, especially amongst the original ASEAN members (see also Baldwin, 2010; 2011). Vezina suggests that unilateral tariff cutting in Asia's emerging economies have been driven by competition to attract FDI from Japan. Using spatial econometrics, he shows that tariffs on parts and components, a crucial locational determinant for Japanese firms, converged across countries following a contagion pattern, driving them to lower and lower levels. In a study on autos and auto parts, and hard disk drives in ASEAN, Cheewatrakoolpong et al. (2013) concluded that investment promotion policies contributed more to the emergence of international production networks than FTAs. The many country-sector studies in UNESCAP (2011b) also came to the general conclusion that FTAs, in their current form, have had limited impact on production networks in the region.

For sectors in which margins of preference or MOPs are not zero or low (see above), there are opportunities to expand product fragmentation trade but various challenges need to be overcome. The impact that preferential tariff reductions can have on product fragmentation trade relates to the need to implement rules of origin (ROO) to exclude trade that does not comply with of meet minimum requirements. First, unlike trade in final goods, formulating and implementing ROOs for production network-related trade is far more complicated. If the conventional value-added criterion is employed, it is highly unlikely that intermediate inputs emanating from outside the region will qualify. This is because the activities involved are low-value added by their very nature.

If, on the other hand, the 'change in tariff classification'-based ROOs are applied, then this may disqualify inputs from both outside and inside the region once they travel across the next border. This is because trade in parts and components generally belong to the same tariff codes at the HS 6-digit level, which is the normal base for designing this type of ROOs. The following illustrative example, provided by Athukorala and Kohpaiboon (2011) is compelling: electrical appliances assembly plants in Thailand, for instance, which use imported bare printed circuit board (BPCB) together with other locally procured electronic components (e.g. diode, integrated circuits, semi-conductors) to printed circuit board assembly (PCBA) for export are not eligible for FTA concessions because BPCBs and PCBAs belong to the same HS code 853690.

Second, the process of international production fragmentation is characterised by continuous emergence of 'new' products (see, for instance, Athukorala and Menon, 2009). Given the obvious administrative problems involved in revising ROOs in tandem, these product inventions and innovations naturally opens up room for unnecessary

administrative delays and/or tweaking of rules as a means of disguised protection (Elek, 2008). These factors do not disqualify the possibility of using FTAs to promote product fragmentation trade, but they do suggest that they need to be designed carefully, and reviewed regularly, if they are to have an impact.

In summary, it is unlikely that ATIGA can be expected to have a major impact on the growth and spread of production networks based on its tariff liberalisation programme alone. However, ATIGA also covers NTB reform, especially the promotion of trade facilitation. So, we turn next to the role that NTB liberalisation in general, and trade facilitation in particular, can play in promoting supply chain trade.

These special features of trade in ASEAN, and the outward-looking way in which FTAs are implemented, should be considered in the choice of methodology for assessing the trade impacts of ATIGA. Rather than choosing one method over another, a combination of approaches is probably best, because each has its advantages and limitations, as highlighted in the survey of the empirical literature. If this is the case, then traditional metrics and conventional methods to assess the impact of FTAs may be inappropriate. Traditional measures such as changes in intra-regional trade flows or shares may not fully or accurately capture the trade changing impact of the FTA. In fact, a low share of intra-regional trade over time may simply reflect the absence of trade diversion. But if the analysis focused purely on intra-regional flows, it would not only miss out on other important but indirect effects on trade, but it could also provide a misleading overall assessment of the FTA.

CHAPTER 5

ANALYSIS OF TARIFF CHANGES

Using the data provided by the AMS and available from the ASEAN Secretariat (through ASEANStats), we conduct a primary analysis of the margin of preference offered by ATIGA vis-a-vis MFN rates. Where relevant, we also incorporate data from publicly available sources (WTO, World Bank) to generate insights.

A. Reduction in ATIGA tariffs

First, we analyse the tariff reduction due to ATIGA by looking at the percentage of tariff lines with zero tariffs under ATIGA. The calculation is done by counting the number of AHTN 8-digit product lines with zero ATIGA tariff and dividing this number by the total number of AHTN 8-digit product lines. This is depicted in **TABLE 5-1**. By this measure, AMS have mostly achieved the goals set forth in ATIGA by eliminating tariffs on intra-ASEAN trade. Across ASEAN, over 98% of tariff lines now have zero ATIGA tariff in 2018, an increase from just under 70% in 2009. For ASEAN 6, the biggest change occurred between 2009 and 2010, when the percentage of tariff lines with zero intra-ASEAN tariffs increased from 85% to 99%. For CLMV, the tariff reductions have been more gradual, with each of the four countries pursuing different rates of reductions. Amongst CLMV, Cambodia had the lowest share of zero ATIGA tariff lines in 2009, but this percentage had increased to 60% by 2014 and jumped to 91% 1 year later in 2015. The increase was less dramatic for LMV during the first 5 years when ATIGA was concluded, as they already had a much higher share of zero tariff product lines in 2010. Nonetheless, each of the LMV countries increased the percentage of zero ATIGA tariff lines to 90% between 2014 and 2015, and further by 2018.

Table 5-1. Percentage of tariff lines with zero tariff rates under CEPT/ATIGA

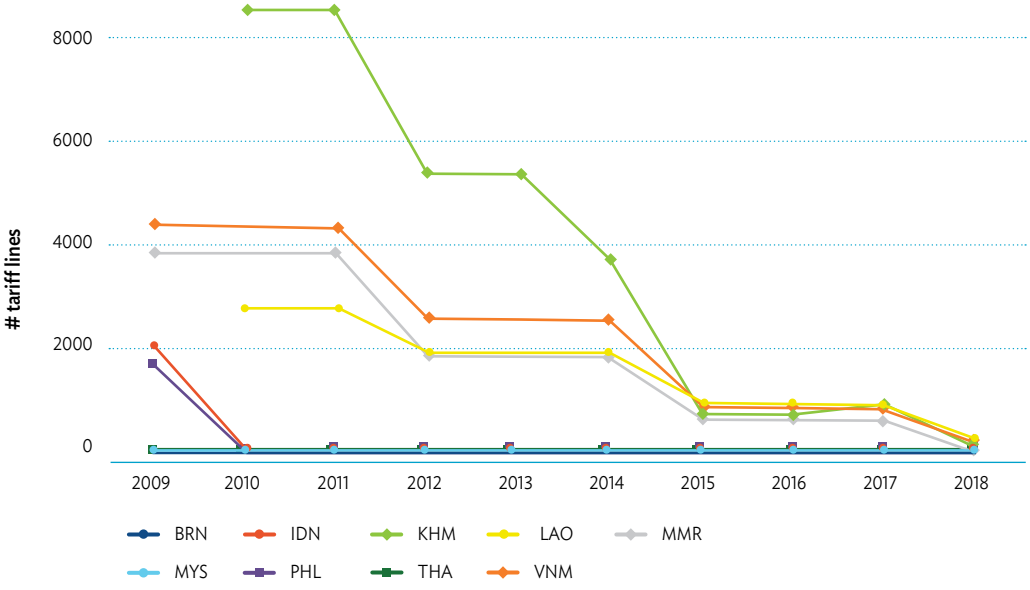
	2009 (AHTN 2007)	2010 (AHTN 2007)	2014 (AHTN 2007)	2015 (AHTN 2007)	2018 (AHTN 2007)
Brunei D.	87.22	99.07	99.27	99.27	99.20
Indonesia	78.97	98.72	98.87	98.87	98.83
Malaysia	82.34	98.69	98.74	98.74	98.64
Philippines	81.89	98.63	98.62	98.62	99.21
Singapore	100.00	100.00	100.00	100.00	100.00
Thailand	80.04	99.84	99.85	99.85	99.86
ASEAN-6	84.79	99.11	99.20	99.20	99.29
Cambodia	7.06	9.89	59.64	91.53	98.57
Lao PDR	70.41	70.96	78.73	89.32	96.65
Myanmar	60.14	60.59	79.66	92.56	99.40
Viet Nam	55.12	55.64	72.16	90.02	96.08
CLMV	45.42	49.27	72.55	90.86	97.67
ASEAN-10	69.32	80.34	88.95	95.99	98.64

Note: AHTN version indicated in brackets in column heading. Number of tariff lines varies by AHTN version. AHTN 2007 had 8,300 tariff lines, AHTN 2012 had 9,550 tariff lines, and AHTN 2017 had 10,300 tariff lines.

Source: Authors' calculation from tariff data.

FIGURE 5-1 provides an overview by year of the number of tariff lines that had ATIGA zero rates, out of the 9,550 tariff lines present in the AHTN 2012 classification scheme. The tariff data provided in AHTN 2007 and AHTN 2017 were transposed to AHTN 2012 to keep the number of product lines consistent over time. During the transposition, we classified the ATIGA tariff as non-zero if any of the parent or child tariff lines from another AHTN version had non-zero tariffs. The figure illustrates that ATIGA tariff reductions occurred in four waves. Reductions in remaining tariff lines for ASEAN-6 occurred between 2009 and 2010; CLMV reduced ATIGA tariffs in 2012, 2015, and again 2018.

Figure 5-1. Number of tariff lines with zero rate under ATIGA



Note: For analytical purpose, tariff information provided in AHTN2007 and AHTN2017 version is converted to AHTN2012.

Source: Authors' calculation from tariff data.

In **TABLE 5-2**, we examine which sectors had the most non-zero ATIGA tariffs in 2010 for CLMV to see where major liberalisation of intra-ASEAN trade took place. For each of the country, we calculate the percentage of total tariff lines within the sector that had non-zero ATIGA tariff. We find that, for Cambodia, almost all chapters had large proportion of non-zero ATIGA tariffs. For Lao PDR, food products, minerals & fuel, and transportation had over 60% non-zero ATIGA tariffs each. Transportation sector products also had the most non-zero tariffs in Myanmar, while Viet Nam's ATIGA tariffs were most likely to be non-zero in live animals, food products, textile and clothing, footwear, and transportation sector.

Table 5-2. Percentage of non-zero ATIGA tariff lines in 2010 in CLMV

HS chapters	Cambodia	Lao PDR	Myanmar	Viet Nam
Animal (1–5)	93.3	36.7	34.5	80.2
Vegetable (6–15)	92.7	49.2	30	39.2
Food products (16–24)	100	69.5	47.6	89.6
Minerals & Fuel (25–27)	87.7	69.1	33.8	33.3
Chemicals (28–38)	83.8	22	45.5	21.4
Plastic or rubber (39–40)	72.9	49.8	45	42.3
Hides and skins (41–43)	100	98	33	54
Wood (44–49)	98.8	42.7	40.6	35.4

HS chapters	Cambodia	Lao PDR	Myanmar	Viet Nam
Textiles and Clothing (50–63)	100	12.2	20.4	80.5
Footwear (64–67)	100	13.5	50	83.8
Stone and glass (68–71)	95.9	19.3	37.2	37.8
Metals (72–83)	84.5	17.9	41.4	28.5
Machine and electronic (84–85)	89.9	15	44.9	31.3
Transportation (86–89)	93.1	67.4	58.6	79.5
Miscellaneous (90–99)	85.3	18.8	48.8	42

Note: Sectoral classification of HS Chapters follows World Bank WITS. Chapter numbers indicated in bracket.

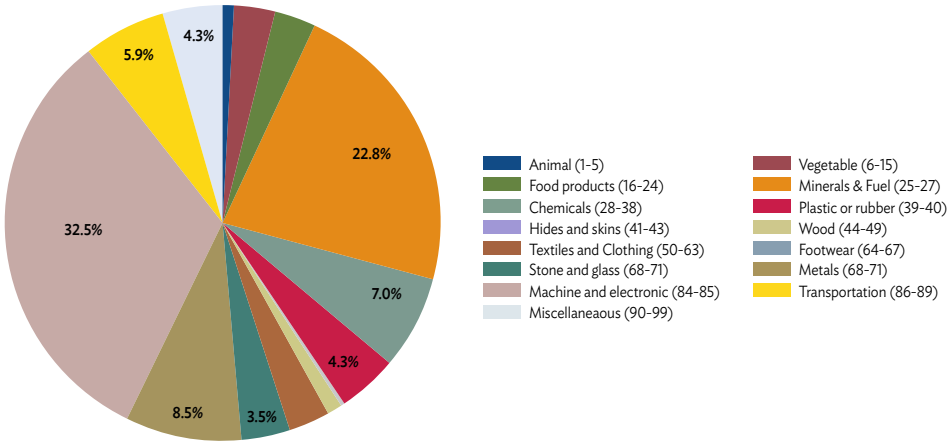
Source: Authors' calculation from tariff data.

B. Change in MFN tariffs

To study how ATIGA has changed firms' incentives to utilise ATIGA, we compare the reduction in ATIGA tariffs with MFN tariff changes to examine changes in the margin of preference offered by ATIGA tariff vis-à-vis MFN tariffs for intra-ASEAN trade. We separately examine the evolution of applied MFN tariffs in ASEAN from the early 2010s and then calculate the margin of preference as the difference between MFN tariffs and ATIGA tariffs. We then take an average across all product lines to calculate the average MFN and MOP for each AMS.

Because the importance of product line varies according to the volume of trade, we weigh each product line by its importance in ASEAN's trade. This is because tariff reduction in highly traded products is more valuable than that in less traded products. Many choices of weighting scheme are available. Since the objective of this report relates to intra-ASEAN trade, we assign weights according to the products' share in overall ASEAN imports in 2012. The year 2012 is chosen because that is the first year for which intra-ASEAN trade data is available at 8-digit AHTN code. The reason for this choice is that this weighting scheme gives greater importance to products that are demanded by ASEAN consumers from abroad. To illustrate this, consider the distribution of imports by ASEAN in 2012, as depicted in FIGURE 5-2. It is clear that not all product categories are equally imported; machinery and electric alone comprised one-third of imports in ASEAN. So, tariff changes in products within machinery and electronic are going to be more consequential than tariff changes in other products and they should therefore be given greater importance when computing average tariffs and change of average over time. Furthermore, to enable comparison over time, the same weights have to be applied to each year's tariff data. So, we convert the 2017 and 2018 data, which are provided in 2017 AHTN codes, to AHTN 2012 to facilitate comparison over time. Tariff lines that are put under the general exception (GE) category, or those for which tariffs are specified in non-ad valorem, are excluded.

Figure 5-2. Distribution of imports in ASEAN in 2012



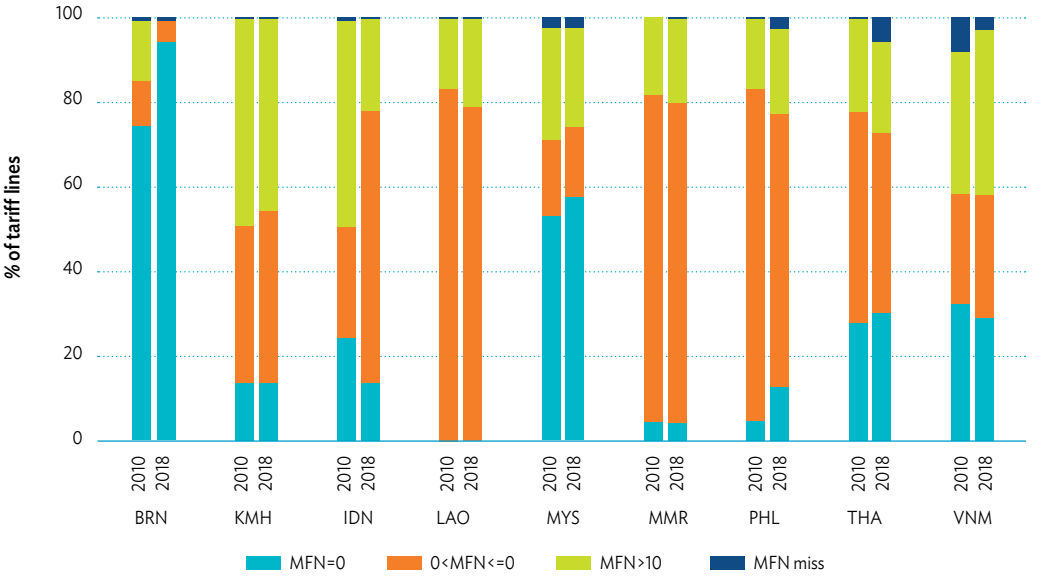
Note: Sectoral classification of HS Chapters follows World Bank WITS. Chapter numbers indicated in bracket.

Source: Authors' illustration using data from ASEANStats.

We now examine the evolution of MFN tariffs of AMS. FIGURE 5-3 shows the structure of MFN tariffs by looking at the share of tariff lines across four categories: MFN zero, MFN between zero and 10, MFN above 10, and MFN in non-ad valorem form. Each bar shows the percentage of tariff lines (out of the total for relevant AHTN version) that fall under each category. We illustrate two bars for each AMS, one for 2010 and the other for 2018, to see changes over time. One note of caution is that due to the change in AHTN version over the 2 years, direct comparison is not straightforward.

Brunei and Singapore (not shown) have liberalised considerably, with most of their MFN tariffs at zero for 2018. Malaysia also has over 50% of its tariff lines under MFN at zero, while for Thailand and Viet Nam this proportion was close to 30%. At the other end of the MFN tariff spectrum, Cambodia has the largest share (two-fifths) of tariff lines above 10% applied MFN, followed by Viet Nam. On the other hand, Brunei has no tariff lines above 10% applied MFN. The rest of the AMS have about one-fifth of their tariff lines above 10%. It is most common to find tariff rates between zero and 10% for Indonesia, Myanmar, Lao PDR, and the Philippines. The structures of MFN tariff have varied slightly over time, with Brunei liberalising drastically but Indonesia reducing the share of tariffs under MFN zero.

Figure 5-3. Structure of applied MFN tariff in 2010 and 2018

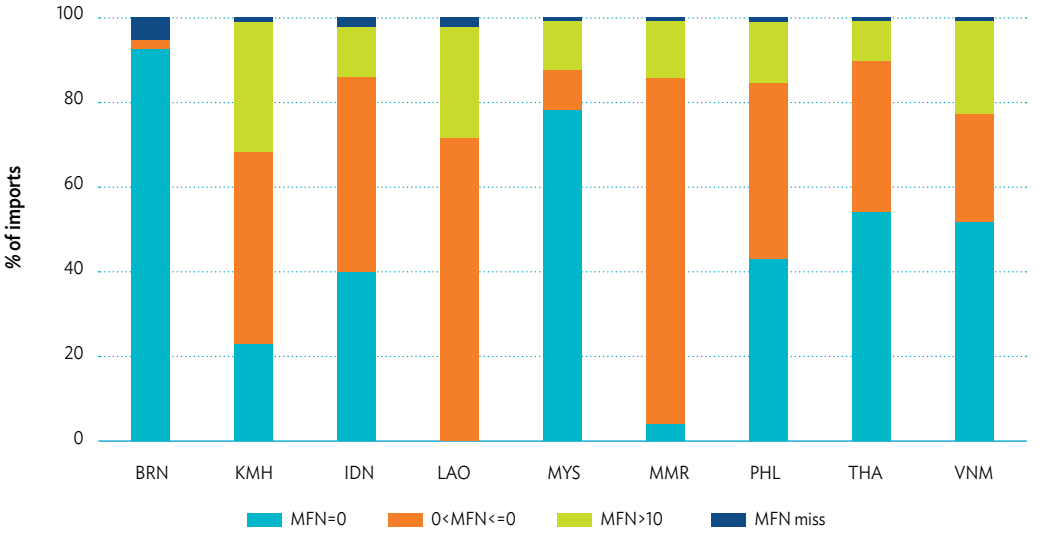


Note: Figure shows percentage of tariff lines under each bracket of MFN rate. Data for 2010 is in tariff classification version AHTN 2007 and for 2018 is in ATHN 2017. The number of tariff lines is 8330 for AHTN 2007 and 10300 for AHTN 2017. MFN NAV indicates that MFN rates are not in ad valorem format. BRN = Brunei Darussalam, KHM = Cambodia, IDN = Indonesia, LAO = Lao PDR, MYS = Malaysia, MMR = Myanmar, PHL = Philippines, THA = Thailand, VNM = Viet Nam. Singapore (not shown) has most MFN tariffs at zero.

Source: Authors' illustration from AMS tariff data at 8-digit.

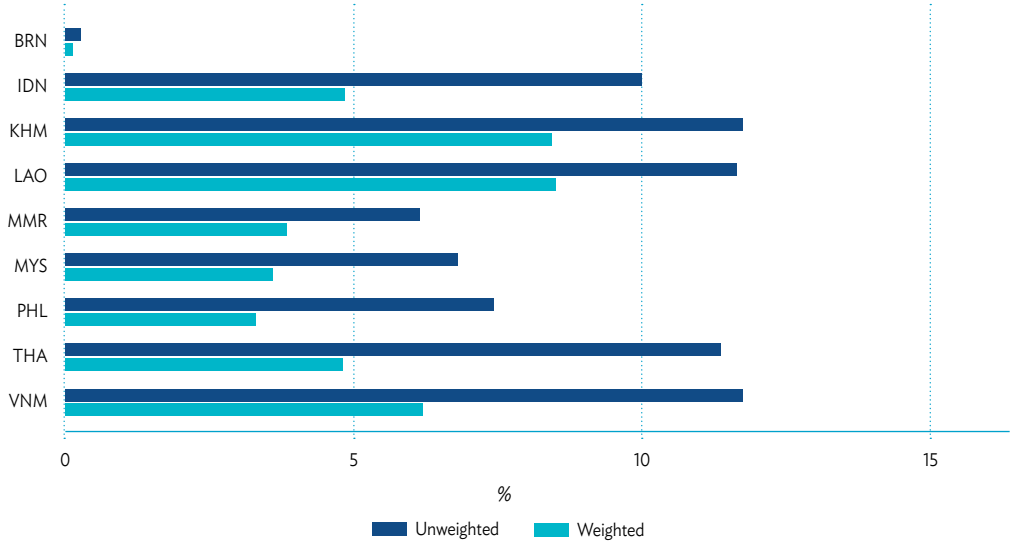
The importance of weighting is illustrated by the fact that when we in fact weight each product line by its importance in each AMS' imports, we find that tariff lines with MFN zero have much greater importance in AMS trade than suggested by just looking at Figure 5-3 above. In **FIGURE 5-4**, we see a much larger share occupied by zero MFN tariff product lines in each AMS imports. For almost all AMS, MFN zero products are more heavily traded than those with positive MFN. The implication is that there is less scope for ATIGA to have a large impact on overall ASEAN trade, as the most important products have no margin of preference.

Figure 5-4. AMS import structure by MFN tariff levels in 2018



Source: Authors' calculation from tariff data and ASEANStats.

Figure 5-5. Average MFN tariffs in 2018



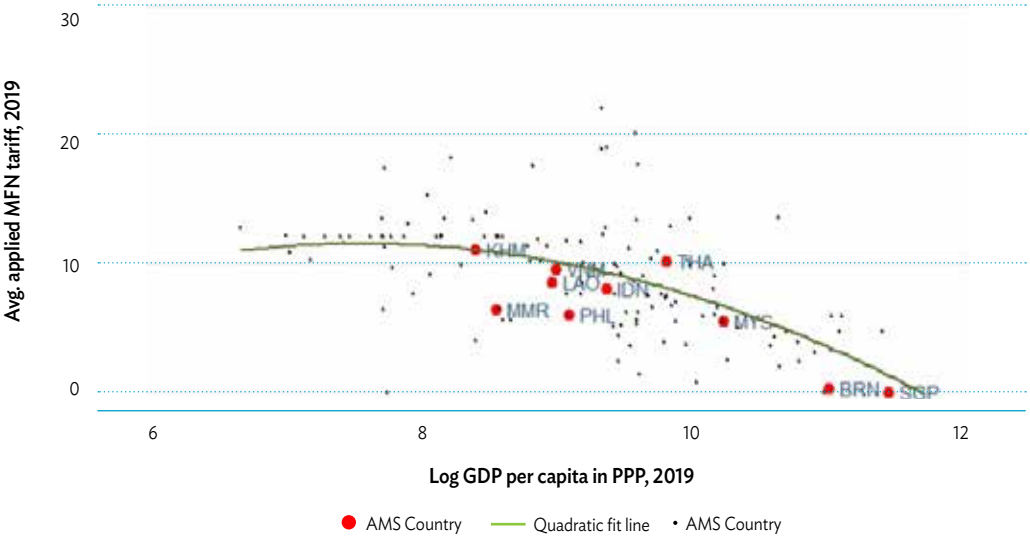
Source: Authors' calculation from tariff data.

For easy comparison across AMS, **FIGURE 5-5** shows the unweighted and weighted average MFN tariffs for 2010, 2014, and 2018. To calculate the unweighted average, we add all valid MFN rates and divide them by the total number of tariff lines. For weighted average, we take ASEAN imports in 2012, taken from ASEANStat, as the weight to give more importance to products that are heavily imported by AMS. Cambodia, Indonesia, Lao PDR, Thailand, and Viet Nam have unweighted MFN tariffs over 10%, while the rest of them except Brunei have it between 5% and 10%. Brunei has eliminated almost all MFN tariffs. Weighted tariffs tend to be lower than unweighted tariffs, meaning that on goods that had greater import volumes in 2012, MFN tariffs were lower than average. In other words, goods with high MFN tariffs had less importance in terms of import share in 2012. This could partly be due to the fact that it is more expensive to import these goods, thus they are imported less.

Before moving to the discussion of MOP, it is useful to compare AMS' MFN tariff against their peers to see the degree of trade openness. This is done by plotting AMS average MFN tariffs against their level of economic development, measured by gross domestic product per capita in purchasing power parity. This is shown in **FIGURE 5-6**. The horizontal axis represents the GDP per capita in 2019 (sourced from the World Bank), expressed in logs, and the vertical axis represents the (unweighted) average MFN tariff rates (sourced from WTO tariff database). The reason for using WTO tariff data instead of AMS submission is so that we can compare AMS to non-ASEAN countries. Each dot shows the position of a country along the two axes, with red dots representing AMS and grey dots representing non-AMS countries. The green line shows the line of best fit – which is the estimated average relationship between GDP per capita and average tariff rates using data from all available countries. The shape of the best fit line shows that countries with higher levels of GDP per capita (moving horizontally from left to right) tend to have lower average applied tariffs. In other words, developed countries have more open trade regime than developing ones. This is partly due to the larger tax base of developed countries makes them less reliant on customs duties as source of government revenue.

We find that AMS are mostly positioned below the best fit line, meaning that their average tariff rates are lower than what would be expected of their GDP per capita. Myanmar in particular is placed well below the best fit line. Thailand is the only country that is placed above the best fit line. Overall, AMS are more open to international trade when compared against other countries.

Figure 5-6. AMS average MFN tariff by level of economic development



* 2018 data for KHM

Source: Authors' calculation using data from WTO and World Bank.

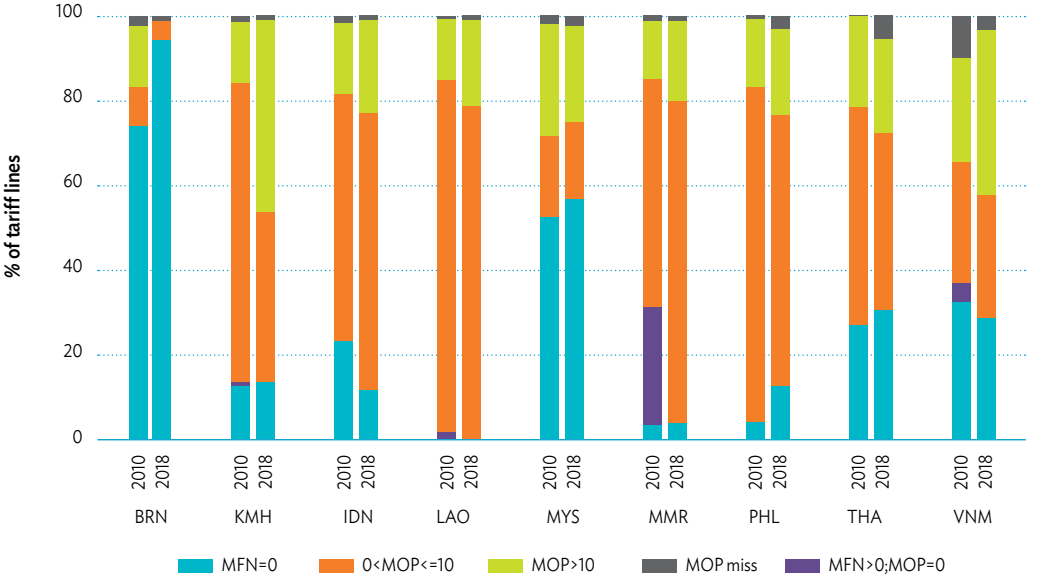
C. Margin of preference over MFN tariff

The margin of preference (MOP) is defined as the difference in MFN and ATIGA tariffs. It is additional benefits in terms of lower tariff charges enjoyed by qualifying imports to the country. Especially for large volume traders, even a small MOP can lead to substantial savings in tariff payment. But as discussed above, firms compare the MOP with the cost of complying with requirements such as rules of origin (which dictates their sourcing strategy) and obtaining certificates of origin.

To examine the structure of an AMS according to its margin of preference, we first classify each 8-digit product line into five categories according to whether (1) the applied MFN is zero (lowest likelihood to create trade diversion), (2) MFN is non-zero but MOP is zero; (3) MOP is between 0% and 10% (medium likelihood to create trade diversion in favour of ASEAN), and (3) MFN non-zero with MOP above 10% (highest likelihood to create trade diversion). The structure of each AMS tariffs is depicted graphically in **FIGURE 5-7**. Different colours in each bar shows the percentage of tariff lines that fall under each of the above five categories of MOP.

As of 2018, Brunei is least likely to have high ATIGA usage as they do not have many products with high margins of preference – over 95% of intra-ASEAN imports in 2012 were products for which Brunei has zero applied MFN. This represents a change in their tariff structure towards greater multilateralisation between 2010 and 2018. Likewise, Indonesia's tariff structure was such that just above 20% of intra-ASEAN trade was in products where it offers zero applied MFN, whereas just above 40% was in products where Indonesia's MOP is above 30%. The lowest share with zero MFN tariffs is found in Lao PDR, Myanmar, and Malaysia, while the highest share of products with largest MOP was for Cambodia, Lao PDR, Thailand, and Viet Nam, each of which have tariff structure such that above 40% of intra-ASEAN trade are in product lines with the highest MOP. The sharp change in Malaysia's tariff structure is because Malaysia changed many small tariff rates (1 and 3%) that were prevalent in 2010 to zero percent by 2018. So many product lines were classified in the mid-level MOP category got reclassified as MFN zero category. Overall, this analysis reveals that AMS' MFN and ATIGA tariff structures provide varying incentives for firms to utilise ATIGA. Thus, the impact of ATIGA on trade is likely to vary accordingly.

Figure 5-7. Margin of preference in 2010 and 2018



Source: Authors' calculation from tariff data. MOP = Margin of Preference, MFN = Most Favoured Nation tariff rates. MOP is missing for tariff lines in some countries because either MFN or ATIGA tariffs are not provided in ad-valorem format (e.g. specific duty).

TABLE 5-3 shows the average MOP and number of tariff lines with MOP greater than 0 for 2012 and 2018 for each AMS. We find that average MOPs for eligible tariff lines went down for Brunei from 14% to 6%, while it has not changed much for Myanmar, Malaysia, Lao PDR, and Thailand. MOPs for Cambodia, Indonesia, and Viet Nam increased by over 2 percentage points, mostly due to decreases in ATIGA tariffs.

Table 5-3. Average MOP and number of tariff lines where MOP > 0

AMS	2012 Average MOP	2012 #tariff lines	2018 Average MOP	2018 #tariff lines
BRN	14.24	1,964	5.57	481
IDN	8.02	8,267	10.81	9,488
KHM	11.09	7,104	13.60	9,259
LAO	9.26	8,043	10.28	9,473
MMR	6.06	7,880	6.33	10,132
MYS	15.80	3,158	16.30	4,182
PHL	6.88	8,826	8.51	9,448
THA	15.41	6,930	16.78	6,428
VNM	13.27	6,154	16.65	7,567

Source: Authors' calculation from tariff data.

TABLE 5-4 summarises the MOP values of broad sectors across ASEAN in 2018. We first compute MOP at 2-digit HS level for each AMS. We then summarise the distribution of values. **TABLE 5-4** shows the minimum and maximum MOP, and the value at the median, which shows the central tendency of the distribution of MOP across all AMS and all products within the sectors. We find that footwear and food products have the largest median MOP, which are well above 10%. These are the sectors that are most shielded through high MFN tariffs. Median MOPs lie between 5% and 10% in animals, vegetables, plastics/rubber, wood, textiles & clothing, stone & glass, and transportation. The lowest MOPs are found in the Minerals & Fuels, Chemicals, Metals, Machines, and Electronic sectors.

Table 5-4. Distribution of MOP by sectors across ASEAN in 2018

HS chapters	Minimum	Median	Maximum
Animal (1–5)	1.41	5.08	42.52
Vegetable (6–15)	0.00	6.50	39.39
Food products (16–24)	0.42	13.84	59.27
Minerals & Fuel (25–27)	–5.64*	0.99	13.87
Chemicals (28–38)	0.03	3.56	20.98
Plastic or rubber (39–40)	3.24	6.77	13.17
Hides and skins (41–43)	0.21	9.10	24.24

HS chapters	Minimum	Median	Maximum
Wood (44–49)	0.00	6.13	35.00
Textiles and Clothing (50–63)	0.51	7.99	30.00
Footwear (64–67)	0.00	14.55	27.46
Stone and glass (68–71)	0.02	7.42	23.57
Metals (72–83)	0.00	4.73	32.62
Machine and electronic (84–85)	0.83	3.52	14.48
Transportation (86–89)	0.00	5.15	38.18
Miscellaneous (90–99)	0.00	7.29	27.92

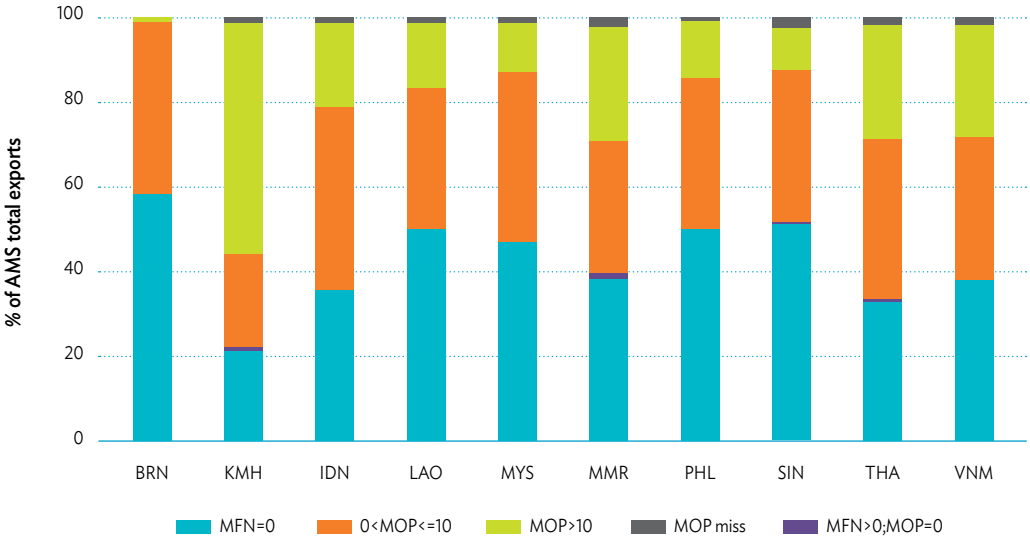
Note: *Some AMS reported having higher tariff rates under ATIGA than MFN for a small number of product lines.

Source: Authors' calculation.

It is also of interest to analyse the MOP structure prevalent in ASEAN from an exporting perspective.

To do this, we combine the MOP structure of each AMS into an ASEAN-wide MOP structure at 8-digit AHTN level and allocate each AMS' global exports into one of the five MOP categories proportionately according to how many AMS (excluding Singapore) have the particular tariff line under a particular MOP. For illustration, consider the AHTN product 8542.39.00. In 2018, six AMS had a tariff structure such that this product had MOP zero while three AMS had tariffs such that it had MOP between 0 and 10. During the same year, Singapore's global exports in this category amounted to US$33 billion. As a thought experiment, suppose all of these exports were to be sent to an ASEAN country. In this hypothetical scenario, six out of nine times (two-thirds), the exports would face MOP zero, while three out of nine times (one-third), it would face a MOP between 0 and 10. Keeping this in mind, we allocate 66.66% of these exports to MOP 0 category and 33.33% to MOP 0–10 category. We do this for each AMS and each tariff line and add up the allocation under each MOP category. The result is depicted in **FIGURE 5-8**.

Figure 5-8. Distribution of AMS exports by MOP category in 2018



Source: Authors' calculation from tariff data.

This analysis shows that there is still a substantial fraction of AMS exports that could potentially enjoy positive MOP within ASEAN. For Cambodia for example, almost 80% of its global exports are in products where ASEAN has a positive MOP. This percentage is lowest for Brunei at 40%. For other AMS, the value is around 60%. So, as much as two thirds of AMS's global exports in 2018 were in products in which the implementation of ATIGA created tariff differential with MFN, thus creating a potential for a greater fraction of these exports to be sent to ASEAN.

D. Breakdown of ASEAN share by MOP category

In this section, we analyse how AMS' import patterns vary by the level of MOP to understand whether AMS tend to import more from ASEAN those products that offer the highest MOP. There are two variables to consider here: (1) the proportion of AMS imports in different categories of MOP, and (2) the proportion of ASEAN share in AMS' imports of different categories of MOP. Like above, we classify each product line into three categories based on the level of MOP offered and examine how ASEAN's share varies in products with different levels of MOP. The overall ASEAN share in AMS imports can be broken down into multiple components. Let M_A denote imports from ASEAN, and M_W denote imports from the world. Then ASEAN's share can be written as:

$$\text{ASEAN Share } = \frac{M_A}{M_W} = \frac{M_A \text{ in cat } 1 + M_A \text{in cat } 2 + M_A \text{in cat } 3}{M_W}$$

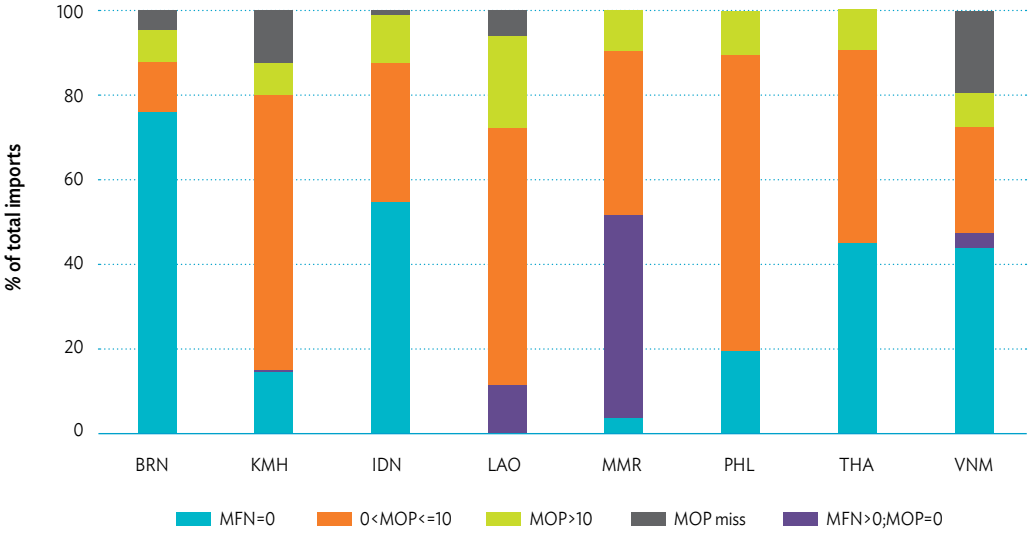
$$= \frac{M_A \text{in cat } 1}{M_w \text{in cat } 1} x \left(\frac{M_W \text{in cat } 1}{M_W}\right) + \frac{M_A \text{in cat } 2}{M_w \text{in cat } 2} x \left(\frac{M_W \text{in cat } 2}{M_W}\right) + \frac{M_A \text{in cat } 3}{M_w \text{in cat } 3} x \left(\frac{M_W \text{in cat } 3}{M_W}\right)$$

This shows that when we classify AMS trade by level of MOP, two factors determine the overall ASEAN share in AMS imports. The first is the ASEAN share in AMS imports in each category of products, multiplied by the percentage of AMS imports in that category. We expect these factors to change differently over time. If ATIGA's tariff preference are effective, we should expect the ASEAN share of imports under categories 2 and 3 to be high. However, their impact is tempered by the changing share of category 2 and 3 imports. How do each of these components change over time?

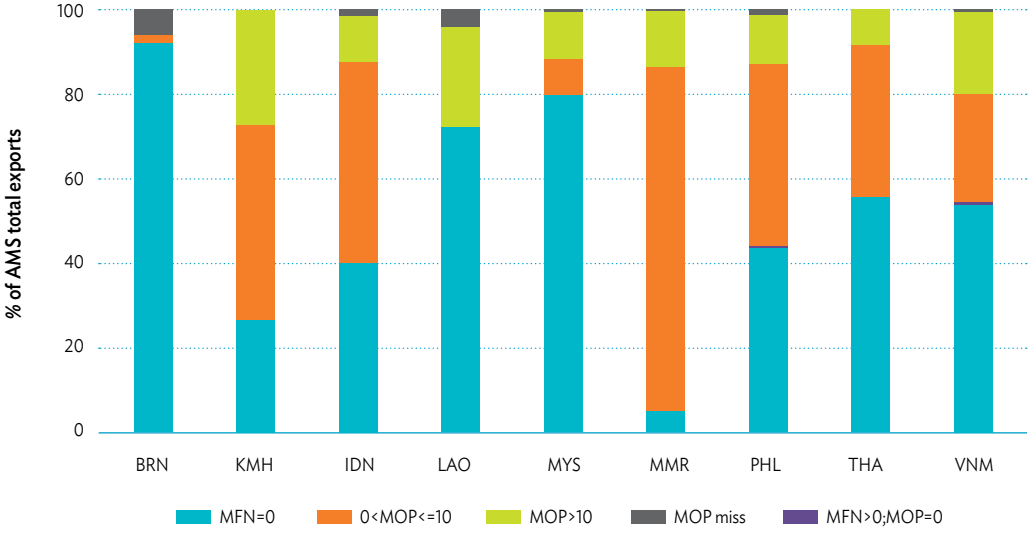
The distribution of AMS imports in 2012 across the three types of product lines are depicted in FIGURE 5-9. The figure reveals that the percentage of AMS imports in products in which they offer the highest MOP is actually very small, with the highest share found in Cambodia, Lao PDR, and Thailand. Likewise, Lao PDR, Myanmar, and the Philippines import a significant share in products in which they offer mid-level MOP. At the other end, Brunei, Indonesia, and Viet Nam have the highest share of imports in products where MFN is at zero. In the case of Cambodia and Viet Nam, we also find that a significant portion of their imports comprised of products in which we could not ascertain the MOP due to missing information on tariff rates. The fact that only a small portion of AMS trade takes place in products that offer the highest MOP limits the possibility that ATIGA will stimulate trade overall. This does not mean that intra-ASEAN imports are totally dependent on MOP. For many products in which AMS have comparative advantage, they can easily supply to meet the import demand of other AMS even without any tariff advantage. So, intra-ASEAN trade can still be high even if MOP is low. Nonetheless, amongst products where ATIGA does offer higher MOP, the share of ASEAN in AMS imports can provide an understanding of the effectiveness of ATIGA.

The distribution of AMS imports across various MOP categories changed by 2018. In the cases of Brunei, Cambodia, Philippines, Thailand, and Viet Nam, the share of imports under MFN zero had increased since 2012. While Myanmar's trade pattern also reflected this pattern, the share of MFN zero products remains small. The share of trade in which ATIGA led to high margins of preference remained small in 2018, except for Lao PDR. Another important change is that a greater fraction of products switched to ad valorem or zero rates, so that a smaller fraction of trade has missing MOP information.

Figure 5-9. AMS import pattern by MOP category of products



(a) 2012



(b) 2018

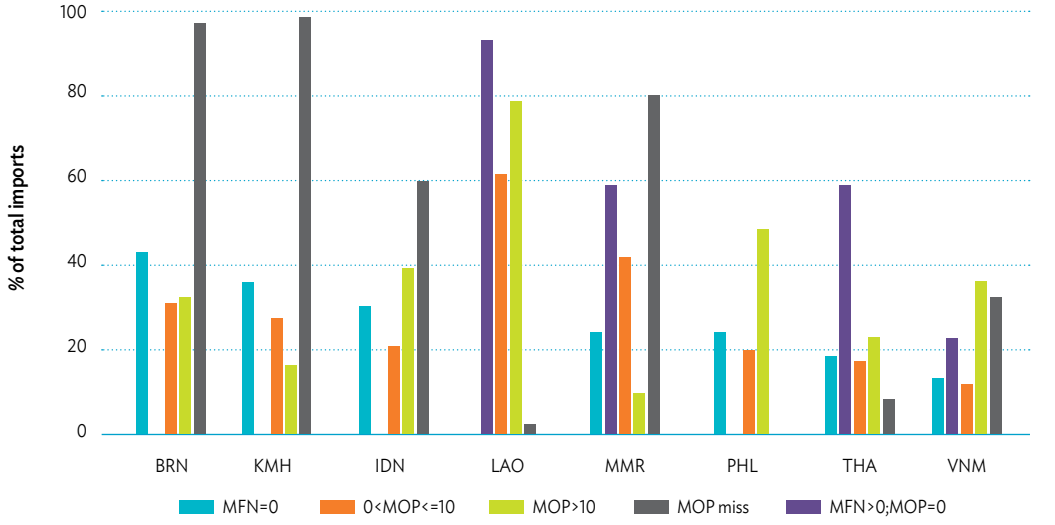
Note: Malaysia is excluded because extra-ASEAN import data is available at 6-digit level only. Singapore is excluded because most tariff lines have MFN zero.

Source: Authors' calculation.

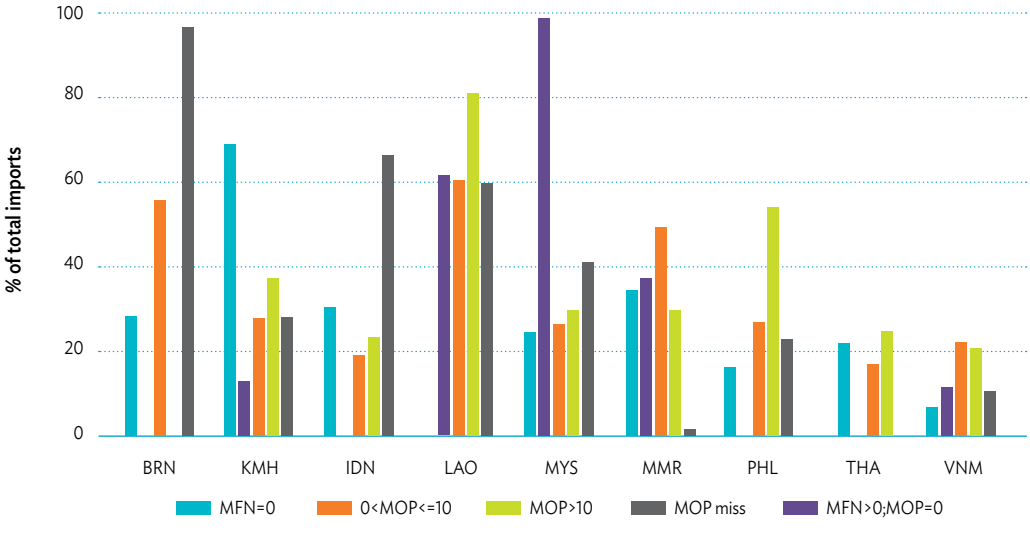
To understand ASEAN's share of imports within each category of product lines, we compute the total imports of each AMS from all countries, and total imports from within ASEAN. Then we divide the second by the first to calculate the share of ASEAN in AMS' total imports by type of product. This calculation is done for 2012 and 2018 to examine any changes over time. **FIGURE 5-10** depicts the calculation graphically. Panel (a) shows the calculation from 2012, and panel (b) shows it for 2018. Differently coloured bars show ASEAN's share of AMS in products that offer different levels of MOP.

The picture is mixed – some AMS import more from within ASEAN when the product has a large MOP, whereas for others MOP does not seem to make a big difference. In 2012, that ASEAN share in total imports was above 60% in Lao PDR, and this was the case regardless of the MOP category of the product. ASEAN's share of imports is 20% in Brunei, Indonesia, Cambodia, Myanmar, and the Philippines, and below 20% in Thailand and Viet Nam. Such variation in import penetration has not changed much since 2012. But when we classify the product by the level of MOP offered by ATIGA, we find that such products tend to have a higher ASEAN share in AMS imports in some countries. For example, in the cases of Indonesia, the Philippines, and Viet Nam, the ASEAN import share of products with the highest MOP is higher than all products taken together. But this is not the case for Brunei, Cambodia, Lao PDR, and Myanmar. What this shows is that MOP is one of many factors that determine trade flows. Geographical proximity and other product attributes also tend to drive imports from ASEAN.

Figure 5-10. ASEAN share of AMS total imports by product type in 2012 (2010 tariff structure) and 2018 tariff



(a) 2012



(b) 2018

Note: Malaysia is excluded because extra-ASEAN trade data is only available at the 6-digit level. Lao PDR has no product lines with 0 MFN tariff.

Source: Authors' calculation.

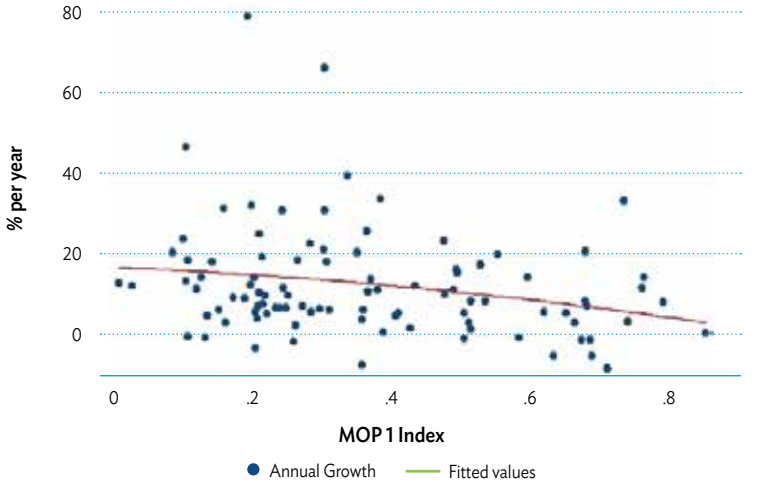
How is intra-ASEAN trade in a product related to its MOP? To answer this question, we first create an index of MOP for each HS 2-digit level. Since each AMS' tariff structure is different, we need to somehow summarise all the variation into a single value for each HS-2 product category. To do this, we compute a weighted share of 8-digit product lines within the 2-digit chapter which are classified as MFN zero (called MOP 1 Index), as MOP below 10% (MOP 2 Index), and as MOP above 10% (MOP 3 Index). Weights comprise of each AMS' imports in that particular product line, so that if a larger importer offers high MOP, it counts for more in the calculation. A higher MOP 1 Index of a HS2 chapter means that most product lines within this chapter have MFN zero within ASEAN. Likewise, a higher MOP 2 Index means that most product lines within this chapter have mid-level MOP in ASEAN. Finally, a higher MOP 3 Index means that most product lines within this chapter have the highest level of MOP in ASEAN. The calculation is done using information about AMS' 2010 tariff structure expressed in the 2012 AHTN code.

After the calculation, we relate the MOP Indices to intra-ASEAN trade growth between 2009 and 2019. For each HS2 digit product denoted by $\boldsymbol{i}$, we compute the average annual growth rate as

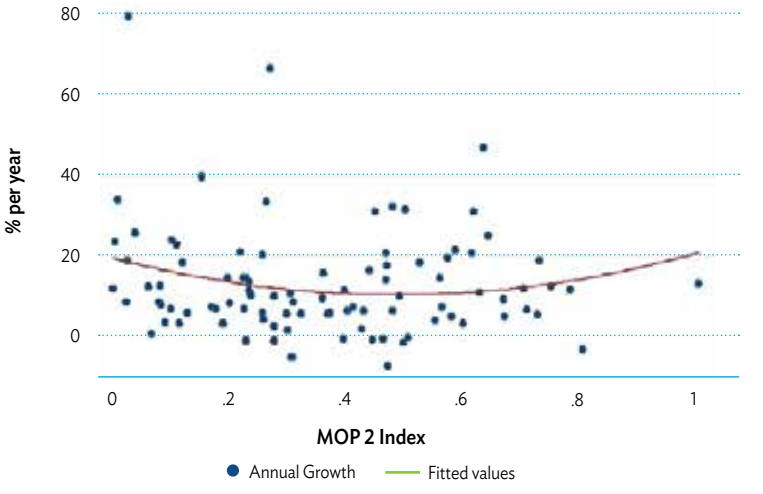
$$growth_i = \frac{intra\ ASEAN\ imports\ 2019_i - intra\ ASEAN\ imports\ 2009_i}{intra\ ASEAN\ imports\ 2009_i} \times 10.$$

The relationship between growth rates and MOP Indices of the products are shown in **FIGURE 5-11**, which is comprised of three sub-figures, pertaining to MOP 1 Index, MOP 2 Index, and MOP 3 Index respectively. The figure indicates that intra-ASEAN trade growth is higher in products where the MOP 3 index is highest. In other words, if a HS2 chapter was such that many AMS offer high MOP in the product lines within this chapter, its intra-ASEAN trade growth rate was higher. But if the HS2 chapter was such that many AMS have zero MFN for many of its product lines, intra-ASEAN trade growth was slower. This analysis gives a strong indication that MOP is an important factor that stimulated intra-ASEAN trade. Thus, ATIGA, by liberalisation of intra-ASEAN trade in goods where AMS still maintain high levels of MFN tariff, helped to expand intra-ASEAN trade. Thus, ATIGA was helpful in creating trade within ASEAN.

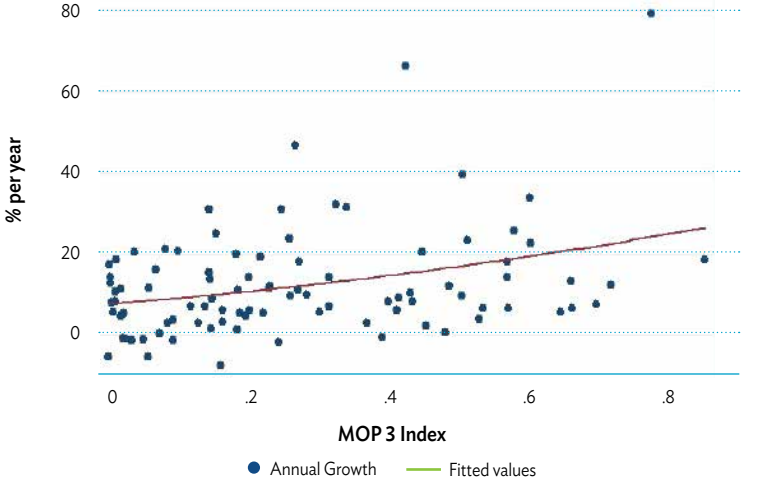
Figure 5-11. Relationship between margin of preference and growth in intra-ASEAN imports at HS 2 digit level.



(a) MOP 1 index



(b) MOP 2 index



(c) MOP 3 index

Source: Authors' calculation from tariff data.

E. Utilisation

To get a full picture of ATIGA's importance for intra-ASEAN trade, we also need to examine the utilisation of FTA. FTA utilisation is total imports under the ATIGA regime expressed as a percentage of total imports from ASEAN. Because the calculation is relevant only when AMS offer a margin of preference over MFN tariffs, FTA utilisation is calculated only for those products that do not have zero MFN and where the difference between MFN and ATIGA tariffs is positive.[3] Product lines where MFN tariffs or ATIGA tariffs are unavailable (e.g. when it is specified as specific duty rather than ad valorem) are included as being eligible. Mathematically, the formula for calculating FTA utilisation is

$$FTA\ Utilisation = \frac{Total\ trade\ under\ ATIGA_i\ where\ MOP > 0}{Total\ trade\ where\ MOP > 0}$$

Before doing the calculation, it is necessary to make some choices. First, regarding identifying the product lines that will be included in the calculation, we use tariff information supplied by the member states. In some cases, member states have more detailed tariff specification than 8-digit, but all other data is available only at the 8-digit level. So, in the case where an 8-digit tariff line has more than one ad-valorem duty specified, we take the mid-point of the largest and smallest value to compute a single MFN and ATIGA rate.

Regarding data sources, AMS were requested to submit imports from other AMS under ATIGA Form D and total imports for each 8-digit AHTN tariff line. However, the submission was not complete. In that case, we resorted to using the ASEANStats database to supplement the information not obtained officially from the member states. The second issue was that, for member states who did submit total imports data, we found discrepancies between AMS submission and the ASEANStats record. Where relevant, we calculate FTA utilisation rates using both AMS submission and ASEAN Stats, but they give different results. In some cases, AMS submission was in local currency, so we converted into US dollars using the average exchange rate for the relevant year published in the World Bank database as needed.[4]

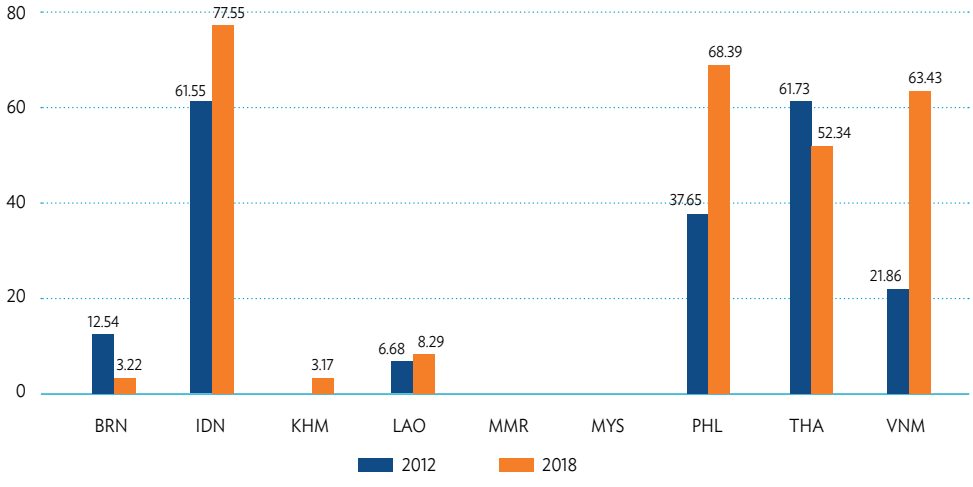
[3] It is important to note however that firms may still wish to use Form D even if there is no margin of preference for many reasons, e.g. to show cumulation to qualify for regional value content-based preference margins at a later stage.

[4] https://databank.worldbank.org/reports.aspx?source=2&series=PA.NUS.FCRF&country=#

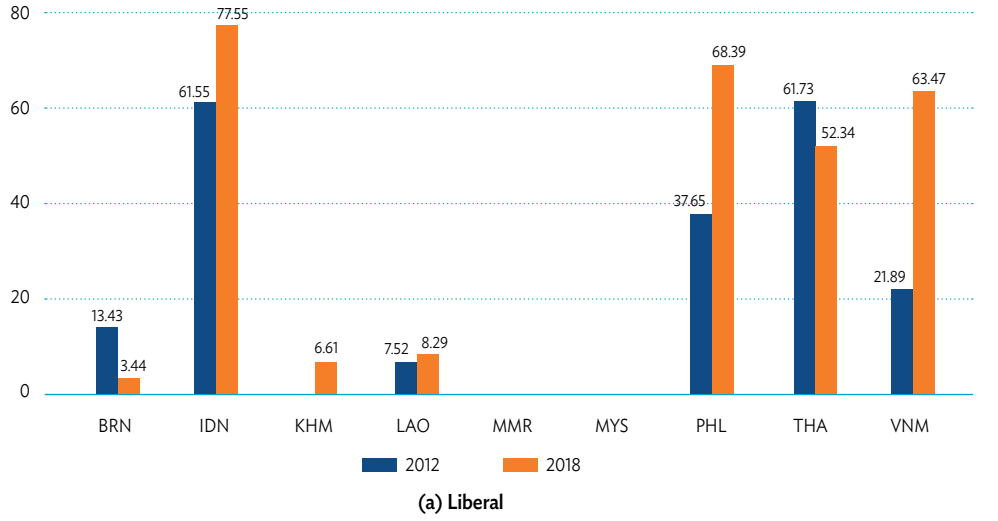
We also have to worry about consistency of the Form D data, as in some cases the Form D values reported were greater than the total imports submitted by the member states or recorded in ASEAN Stat database. This could be due to errors in recording (for example wrong placement of decimal points) but it is impossible to know the correct value. In some cases, they make significant differences to the calculation, thus making comparisons across time and countries difficult. Thus, we calculate two different values under two assumptions: (1) a 'conservative' FTA utilisation excluding all instances where the Form D import value is greater than total import value or ASEAN Stat import value and (2) a 'liberal' FTA utilisation where we assume a maximum of 100% utilisation in these product lines (although it could be less than that). The latter calculation necessarily gives a larger estimate of tariff utilisation than the former. The actual utilisation is likely to be between the two values.

FIGURE 5-12 shows FTA utilisation rates of each AMS using AMS submission data. Calculation is not available for Cambodia (2012), Myanmar (both years), and Malaysia (both years) due to lack of information on total imports submitted by the AMS. This figure shows lower utilisation in Brunei, which is consistent with reduction in MFN rates for the country. Utilisation rates have increased in Indonesia, the Philippines, and Viet Nam. FTA utilisation rates in Cambodia and Lao PDR remain quite small.

Figure 5-12. FTA Utilisation rates using AMS submission



(a) Conservative



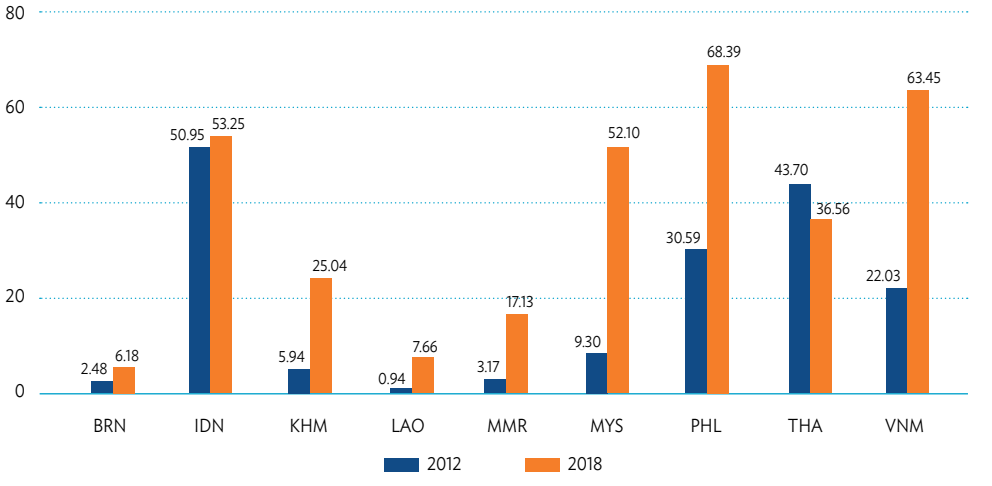
(a) Liberal

Note: Values for Cambodia, Myanmar, and Malaysia are not available in 2012 due to lack of information on total imports. Values for Malaysia and Myanmar are not available for 2018 due to lack of information total imports.

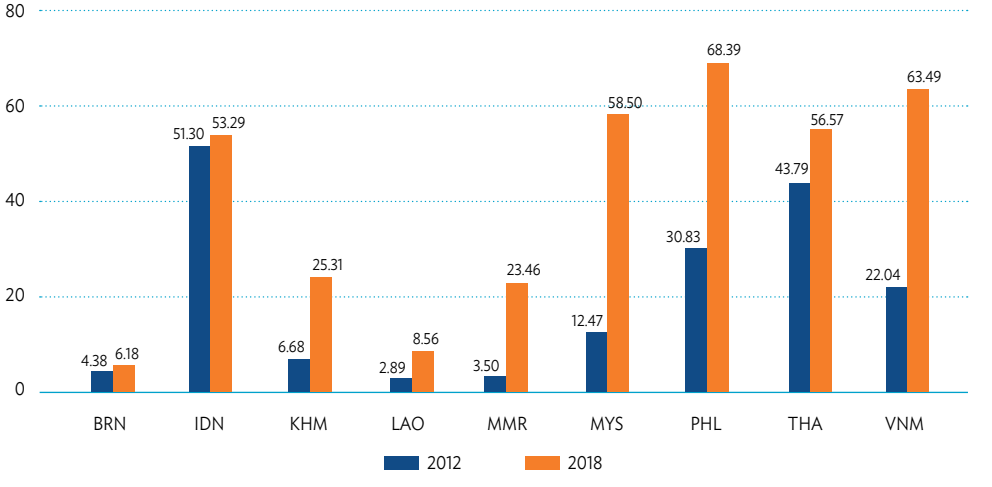
Source: Authors' calculation from tariff data.

FIGURE 5-13 shows FTA utilisation rates of each AMS using ASEANStat data for total imports, while Form D data is taken from AMS submission. We see some discrepancies on the estimated FTA utilisation rates, although the story of rising utilisation is broadly consistent. For Brunei, estimated utilisation rates fell in 2012 and rose in 2018 using this method compared to the previous method. Indonesia still has high utilisation rates, although it is slightly smaller at 50% and has not increase much since 2012. The rest of the AMS showed strong growth in utilisation rates over time. Especially for Cambodia, the difference between the previous method and this method is very high in 2018, and it warrants further investigation by the country to find out the true value. Likewise, Thailand shows a difference between conservative and liberal estimates, with conservative estimates showing a fall in FTA utilisation whereas liberal methods show an increase. Maintaining consistent and accurate data on Form D trade will help determine the actual evolution of intra-ASEAN trade.

Figure 5-13. FTA Utilisation rate using ASEAN Stat data



(a) Conservative



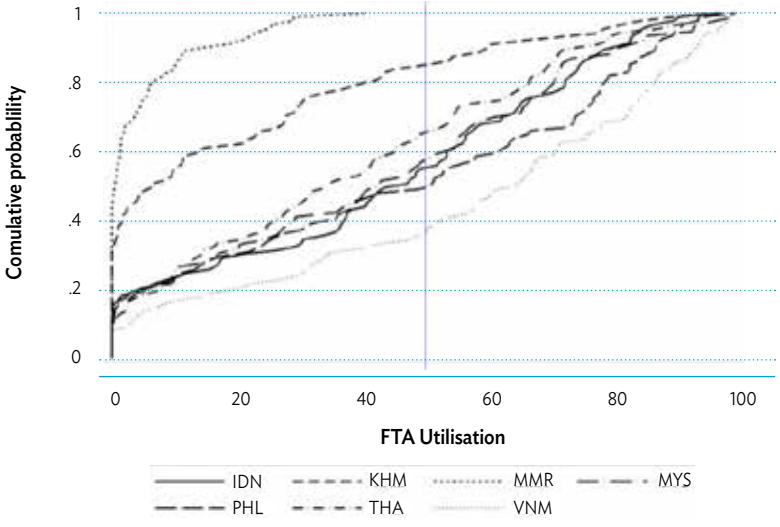
(b) Liberal

Note: For Brunei, Cambodia, and Lao PDR the 2012 trade data obtained from ASEASNStat was transformed from AHTN2012 to AHTN2007 using concordance to match the submission of Form D data. The 2018 trade data for Lao PDR obtained from ASEANStats was converted from AHTN2017 to AHTN2012 to match the submission of Form D data.

Source: Authors' calculation from tariff data.

In **FIGURE 5-14**, we look at the distribution of FTA utilisation across 2-digit HS codes, using the conservative calculation with ASEANStat data. The figure shows how FTA utilisation rates in each AMS vary across the whole gamut of products. For any given reference level of FTA utilisation, it is possible to examine the number of HS 2-digit products that lie above or below the reference value. An AMS towards the right has high levels of FTA utilisation in many products, while those towards the left have lower levels of FTA utilisation. For example, for a reference level of 50% FTA utilisation (indicated by the vertical line), we see that for Myanmar none of the HS 2-digit products have utilisation above this level; for Cambodia, only 20% of the HS 2-digit products were above this threshold, while for Viet Nam 60% of the products were above the threshold. Thus, imports to Viet Nam have high levels of FTA utilisation for a lot of products, while those in Cambodia and Myanmar have low levels of FTA utilisation. But this figure does not tell us exactly which products had high utilisation rates. To see this, in TABLE 5-5 we depict the top five HS-codes with highest rates of FTA utilisation, along with total Form D values and total imports in US$ million.

Figure 5-14. Distribution of FTA Utilisation across 2-digit HS in 2018



Source: Authors' calculation from tariff data.

Table 5-5. Top 5 HS-2 digit product with highest FTA Utilisation in 2018

AMS	HS 2-digit	Form D (US$ million)	ASEAN Imports (US$ million)	FTA Utilisation
IDN	11	176.1	206.4	85.3
IDN	31	96.1	110.0	87.33
IDN	07	43.7	48.3	90.35
IDN	53	0.2	0.2	90.91
IDN	08	121.0	124.5	97.22
KHM	70	18.7	23.8	78.74
KHM	19	86.8	106.9	81.28
KHM	21	52.3	61.7	84.66
KHM	33	48.8	54.8	89.2
KHM	22	257.6	268.1	96.06
MMR	18	0.0	0.1	25.33
MMR	30	1.8	6.8	25.67
MMR	94	3.1	10.6	29.04
MMR	20	0.8	2.7	29.22
MMR	21	2.0	4.9	40.47
MYS	17	51.3	55.0	93.19
MYS	19	172.9	185.2	93.32
MYS	12	0.5	0.5	95.75
MYS	02	93.4	94.2	99.15
MYS	50	0.0	0.0	99.92
PHL	11	94.4	103.5	91.21
PHL	19	294.2	321.0	91.65
PHL	06	0.0	0.0	94.34
PHL	07	19.6	20.7	95.01
PHL	05	0.0	0.0	100
THA	07	104.4	119.6	87.27
THA	08	66.7	73.8	90.37
THA	75	0.5	0.5	93.99
THA	29	7.5	8.0	94.03
THA	24	101.2	103.3	97.94
VNM	19	365.2	374.2	97.59
VNM	08	1,069.6	1,093.9	97.78
VNM	31	130.7	132.2	98.87
VNM	22	123.1	124.0	99.25
VNM	06	13.5	13.6	99.55

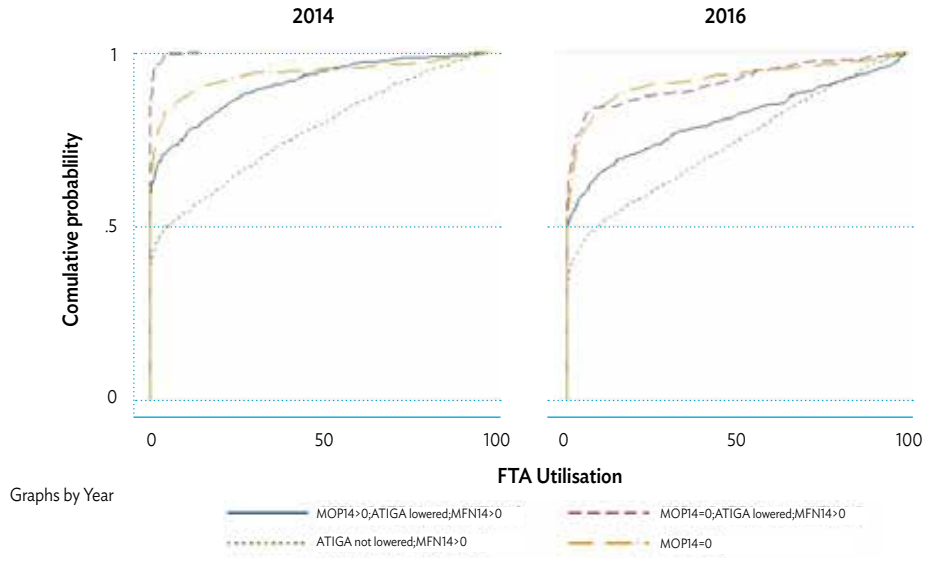
Source: Authors' calculation.

F. Evidence from ATIGA reductions in 2015

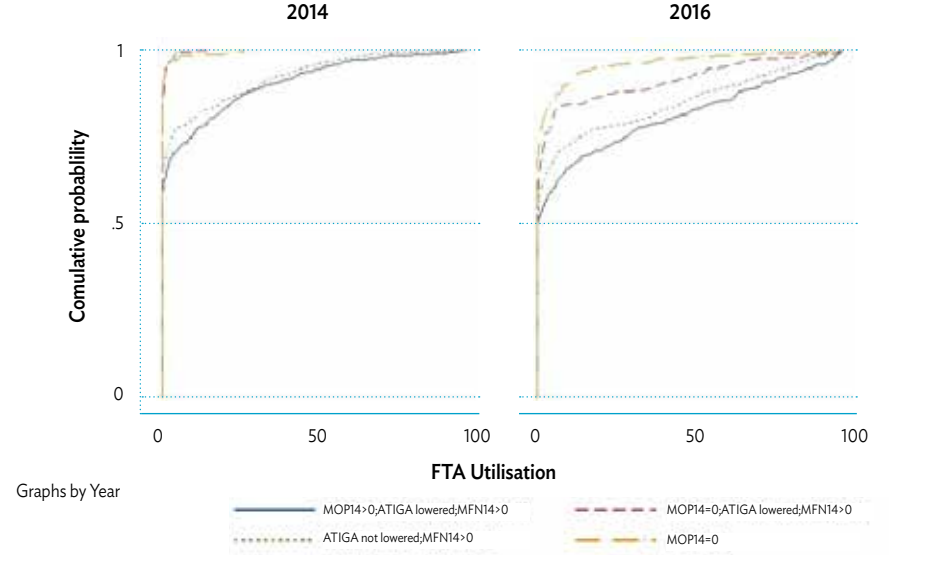
To examine more closely the relationship between reduction in ATIGA tariffs and FTA utilisation, we look at the change that took place in 2015, when CLMV countries increased the number of tariff lines with zero ATIGA rates. If MOP is related to FTA utilisation, we should see increase in utilisation following this reduction. We use the 2014 and 2016 Form D and ASEANStat data to analyse how FTA utilisation changed when ATIGA tariffs were reduced in 2015. This analysis is done at HS 2-digit product classification. The advantage of examining the 2014 and 2016 data is that the same AHTH version was used (AHTN 2012) in both years, so we do not have to deal with the complication arising due to transposition. The data submission for these years is also complete. We apply the conservative ASEANStat methodology to calculate FTA utilisation rates.

FIGURE 5-15 shows the distribution of FTA utilisation across products in 2014 and 2016 for four types of products: (1) where margin of preference was zero in 2014, MFN 2014 was non-zero and ATIGA tariffs were lowered between 2014 and 2016; (2) where margin of preference non-zero in 2014, MFN 2014 was non-zero, and ATIGA tariffs were lowered between 2014 and 2016; (3) where ATIGA tariffs were not lowered between 2014 and 2016 but MFN was non-zero; and (4) where MFN was already zero in 2014. We would expect the impact of ATIGA to be felt amongst the first two type of products, where tariffs were brought down to zero. A graph further to the right indicates that products within the category represented by the graph tend to have high rates of utilisation. Panel (a) includes all AMS except Brunei and Singapore, while Panel (b) includes only CLMV as they were responsible for most of the reductions in ATIGA tariffs in 2015.

Figure 5-15. Distribution of FTA Utilisation across products by ATIGA tariff change



(a) All AMS*



(b) CLMV only

*Note: Brunei and Singapore are not included due to their already low level of MFN tariffs.

Source: Authors' calculation from tariff data.

We first note that the highest FTA Utilisation is found in the third type of products – those with non-zero MFN 2014 and where ATIGA tariffs had not been lowered by 2015. These are the most sensitive products, and tend to have a very high margin of preference (the MFN rates are much higher than ATIGA rates, even though both are positive), so FTA utilisation is naturally higher. Second, products in the fourth category (those with MFN 2014 at zero) do not have further room for increasing MOP (unless MFN is increased), so their FTA utilisation is very low and stable across time (as shown by the dashed orange line). The most relevant from ATIGA's impact perspective are the first two categories, represented in the figure by solid blue and dashed red lines. These were the products where ATIGA tariffs were lowered. Here we observe a marked shift towards the right in the distribution between 2014 and 2016 – FTA utilisation rates increased due to a higher MOP offered in these products after 2015. The solid blue line was much closer to the dotted green line in 2014 than in 2016. Likewise, the dashed red line also shifted to the right, indicating that products in this category were more likely to have high FTA utilisation in 2016 compared with 2014 due to a reduction in ATIGA tariffs. In that case, ATIGA tariffs in 2014 did not provide any margin of preference over MFN tariffs, but their reduction in 2015 stimulated greater FTA utilisation in these products. This illustrates a strong impact of ATIGA-led tariff reductions on FTA utilisation.

CHAPTER 6

EMPIRICAL ANALYSIS

A. Background

In this section, we report results from an empirical exercise which attempts to isolate the impact of reductions in ATIGA tariffs (equivalently, increase in the margin of preference) in the evolution of intra-ASEAN trade. The empirical analysis consists of two steps. The first step is to quantify by how much AFTA/ATIGA increased intra-ASEAN trade. To this end, we estimate the gravity equation for worldwide bilateral trade during 1995–2018 using data for 222 countries. In this model, we introduce a variable taking the value of one if two countries are members of the AFTA/ATIGA, in addition to the standard indicator for membership of an RTAs. We estimate this gravity equation at the level of three-digit codes of the Harmonized System (HS) nomenclature (we call these 3-digit groupings 'products' for convenience). From this step, we obtain the magnitude of the trade creation effect of the AFTA/ATIGA for each three-digit product and each year. However, this trade creation effect of AFTA/ATIGA based on the gravity approach captures increases in intra-ASEAN trade due to not only the tariff liberalisation of AFTA/ATIGA but also all other events that have an influence on intra-ASEAN trade during the study period. These other influences could come from changes in technology of production in key sectors, development in important trade partners (e.g. trade conflict), global economic shocks that may have different impact on various sectors, to list a few. Whatever the source, the main issue is that some parts of the estimates of trade creation are not attributed to the utilisation of the ATIGA regime.

Thus, we take a second step to capture the trade creation effect attributed to the utilisation of the ATIGA regime. To do that, we examine how these trade creation effects are related to the actual utilisation of the ATIGA regime in intra-ASEAN trade, calculated from the Form D trade data shared by the AMS for this study. Utilisation is measured as the share of imports under the ATIGA regime out of total imports at the level of three-digit products. We compute the average of those shares amongst intra-ASEAN trade flows, called the ATIGA utilisation share in this study. This variable acts as the main explanatory variable

to which we relate the trade creation effect using the econometric method of Ordinary Least Squares (OLS). In other words, we regress the trade creation effect estimated above on it. This allows us to compute the value of the trade creation effect predicted by the average ATIGA utilisation rate. This predicted value would show the trade creation effect attributed to the utilisation of ATIGA tariff rates. Since this step requires the data on ATIGA utilisation, in this second step analysis, we restrict the study years to 2010, 2014, and 2018 only. We present such a value by products and years.

A note is warranted on our use of three-digit product, which is slightly different from the 4-digit sub-headings of standard tariff nomenclature. This is used purely for analytical convenience. Two considerations led to this decision. One is to conduct analysis on as many product groupings as possible, which would lead to disaggregation. However, we also do not want to make it too fine-grained as many product lines at the 6- and 8-digit level have zero trade. Although using a 4-digit chapter heading, which has about 1,200 unique product categories, this would be too fine-grained for our estimation. However, 2-digit chapter headings with 97 product lines would be slightly too aggregated. Thus, we settle on 3-digit by using the first three digits of the subheading, which gives us about 170 product lines. Effectively, this process sub-divides some of the HS chapters into multiple categories, but not as finely as 4-digit. For example, for agriculture products, there are 14 2-digit chapters, but 21 3-digit classifications. Likewise, for processed food, there are 10 2-digit chapters, but 13 3-digit classifications.

Our data sources are as follows. We obtain the trade data for 229 countries from the CEPII, a database that makes available data for gravity estimation.[5] It is called 'BACI' database and is an updated version of the data provided in Gaulier and Zignago (2010). The database provides disaggregated data on bilateral trade flows for more than 5,000 products and 222 countries. Originally, the data are available at the six-digit level of the HS nomenclature. We aggregate these trade data at the three-digit level to reduce the occurrence of zero-value trade. We use the data reported in the HS1992 version to maximise the length of study years, which runs from 1995 to 2018. We restrict observations of country pair-year to those with positive values in total trade at a country pair-year-level.[6] Nevertheless, when we estimate our gravity equations by the three-digit code of the HS, the zero value appears. The RTA dummy variable is drawn from Egger and Larch (2008) and the version updated to 2017.[7] The RTAs include those under GATT Article XXIV and those based on the Enabling Clause. The RTA dummy takes the value of one if either type of RTAs is formed between a pair of countries.

5 This database can accessed from this link: http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=37

6 Since the unit of trade values in the BACI database is US$1,000, 'positive values' mean that more than US$1,000 of trade is observed.

7 The data are available in https://www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html.

B. Gravity modelling results

Technical details of the estimation procedure are provided at the end of this chapter. This section reports our estimation results. In the first step, we obtain the coefficients for ATIGA dummy variables for each product and years. Table **6-1** shows the summary statistics of the trade creation effect across the 170 products. We present the number of products, the mean, standard deviation, 25th percentile, 50th percentile (i.e. median), 75th percentile, minimum, and maximum amongst the coefficients in each year. The row labelled ATIGA depicts the estimated trade creation effect of ATIGA, while information on other ASEAN Plus One FTAs is also presented for comparison. While results for each year are available, we only show results for years 2010 and 2018, to mark the beginning of ATIGA and the last available data.

There are some noteworthy findings. In terms of mean values, ATIGA has the smallest estimates. In 2010, the average trade creation effect of ATIGA was –0.15, which can be interpreted as the average increase (negative value means a decline) in trade flow between trade partners due to membership in ATIGA. Thus, according to this result, members of ATIGA (i.e. ASEAN countries) on average had 15% less trade than other trade partners on average. The mean value for the year 2018 is even more negative at –0.33. AANZFTA and AIFTA, also have negative average values in both 2010 and 2018, in terms of both mean and median, which implies that most of the products have negative estimates in these three RTAs. On the other hand, AJCEP has the largest estimates. ACFTA also has relatively large estimates particularly in 2018. Thus, trade between AMS and China and AMS and Japan was strong and strengthened from 2010 to 2018.

Another remarkable finding is that in terms of mean and median, the magnitude of the coefficients does not necessarily rise over time. Although the number of RTA-eligible products and the magnitude of tariff reduction tend to increase over time especially in ASEAN+1 FTAs, such a gradual increase does not produce a large additional effect. Last, the standard deviation is quite high in ATIGA, indicating that there is a massive difference in the magnitude of the coefficients across products. In sum, these results indicate the large trade creation effects of AJCEP, ACFTA, and AKFTA, compared with the effects of ATIGA, AIFTA, and AANZFTA. Therefore, consistent with the result in Magee (2008), the AFTA/ATIGA does not have positive trade creation effects in most sectors.

Table 6-1. Basic Statistics of gravity coefficients

		N	Mean	S.D.	p25	p50	p75	Min	Max
Year = 2010									
	ATIGA	173	−0.15	1.97	−1.17	−0.31	0.57	−5.18	10.06
	AANZ	173	−0.08	0.49	−0.26	−0.05	0.18	−2.76	1.60
	AC	173	−0.02	0.63	−0.41	−0.01	0.33	−1.58	2.23
	AI	173	−0.05	0.69	−0.34	−0.07	0.27	−3.80	3.56
	AJ	172	0.13	0.57	−0.12	0.09	0.33	−1.36	4.99
	AK	172	−0.08	0.60	−0.29	−0.03	0.19	−3.09	2.01
Year = 2018									
	ATIGA	170	−0.33	2.03	−1.34	−0.46	0.47	−5.25	10.50
	AANZ	173	−0.13	0.74	−0.40	−0.08	0.23	−3.75	3.30
	AC	173	0.17	0.79	−0.28	0.14	0.58	−1.98	3.16
	AI	173	−0.11	0.90	−0.44	−0.02	0.26	−4.71	3.22
	AJ	173	0.18	0.65	−0.14	0.14	0.50	−2.37	2.54
	AK	173	0.07	0.74	−0.26	0.05	0.43	−2.11	2.99

Source: Authors' calculation.

TABLE 6–2 reports the average magnitude of the coefficients in 2018 according to groups of products into sectors and the RTAs. We can see notable differences in their size across industries. The machinery industry has negative averages (except in AK), although ASEAN has developed sophisticated international production networks. One possible reason might be the frequent use of duty-drawback regimes in this industry rather than the use of RTA regimes. Another reason might be that RTAs reduced costs for horizontal-type or market-seeking foreign direct investment (FDI). The increase of such FDI results in reduced intra-ASEAN trade (Brainard, 1997). On the other hand, the transport equipment industry shows negative values in AANZFTA, ACFTA, and AIFTA but positive values in ATIGA, AJCEP, and AKFTA. The largest average in ATIGA can be found in precious metals. Other sectors with positive average trade creation effect are live animals, mineral products, textiles, and plastic or glass products.

Table 6-2. Average Coefficients in 2017 by Sections and RTAs

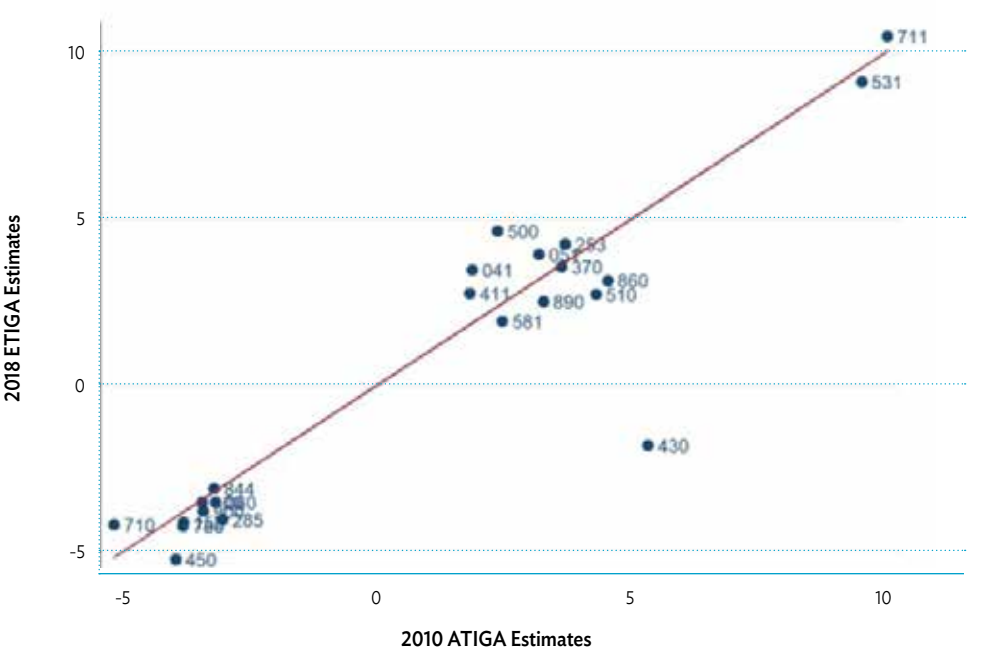
	ATIGA	AANZ	AC	AI	AJ	AK
Live animals	0.182	0.175	0.492	−0.809	0.231	−0.532
Vegetable products	−0.749	−0.242	−0.117	−0.037	0.487	0.401
Animal/vegetable fats and oils	−1.831	0.389	−0.964	−0.768	0.463	−0.092
Food products	−0.227	0.356	−0.276	−0.066	0.085	0.385
Mineral products	0.632	−0.254	0.147	0.200	−0.021	−0.042
Chemical products	−0.402	−0.257	−0.049	−0.106	−0.003	−0.208

	ATIGA	AANZ	AC	AI	AJ	AK
Plastics and rubber	−1.024	0.216	0.355	0.243	0.051	0.189
Leather products	−0.113	−1.118	0.448	−0.919	−0.135	0.032
Wood products	−1.642	−0.215	0.163	−0.181	0.301	0.268
Paper products	−0.927	0.083	0.335	−0.445	0.304	0.090
Textiles	0.010	0.048	0.497	0.166	0.501	0.279
Footwear	−0.256	0.112	1.007	−0.606	0.918	1.005
Plastic or glass products	0.578	−0.180	0.671	−0.055	0.248	0.033
Precious metals	3.150	−0.475	0.311	0.464	0.040	−0.399
Base Metal	−1.032	−0.273	0.161	0.119	−0.028	−0.101
Machinery	−0.177	−0.245	−0.028	−0.094	−0.031	0.115
Transport equipment	0.167	−0.290	−0.011	−0.358	0.002	0.381
Precision machinery	−1.219	−0.073	−0.175	−0.274	0.116	0.047
Miscellaneous	0.402	−0.365	0.443	−0.429	0.249	−0.180

Source: Authors' calculation.

FIGURE 6-1 presents the correlation between ATIGA coefficients in 2010 and 2018 for the top and bottom products to check how these coefficients changed while ATIGA came into effect. Product codes are displayed. The red line indicates the location of points if the ATIGA coefficients were to be the same in both years. Points above the line are those that slightly increased the trade creation effect and points below it are those with a slight reduction. We find that coefficients changed very little, except for Furskin articles (product, 430), the coefficient of which declined from 5% trade creation effect in 2010 to −2 trade creation effect in 2018. The biggest coefficients are found in certain precious metals (product 711) and woven fabrics. Interestingly, other types of precious metals (product 710) have the most negative ATIGA coefficients. Another product with very negative trade creation effect is cork (product 450). Overall, the coefficients are remarkably stable over time, meaning that ATIGA did not create drastic change in the structure of ASEAN trade. It is possible that the fundamental factors that drive trade amongst AMS have not changed enough yet to register significant evolution of trade at this level.

Figure 6-1. Highest and lowest ATIGA coefficients in 2010 and 2018



Source: Authors' calculation

C. Utilisation effects

The next step is to estimate the utilisation effect. To do that, we need the data on the utilisation of RTA regimes. Although we estimate the gravity equation for ATIGA and all ASEAN+1 FTAs by employing the standard trade data, the analysis at this step is restricted to ATIGA due to the need to use of FTA utilisation data. We obtained the data on ATIGA utilisation and total imports from each AMS at a HS eight-digit level for use in this study. However, there are some missing data. For example, the data on total imports are missing or show somewhat strange values in some cases. Therefore, we obtain those in Malaysia from the Global Trade Atlas maintained by the IHS Markit and those in Lao PDR, Myanmar, and Thailand from the BACI database. With these data, we compute the utilisation variable.

It is noteworthy how we compute utilisation more specifically. As explained before, for each product we take the simple average of the ATIGA import shares amongst all pairs of the AMS. However, those shares are missing in some pairs because of no imports, i.e. the denominator of the share is zero. Therefore, we try two measures of utilisation. One is the

simple average amongst all pairs where the RTA import shares can be defined. Namely, country-pairs with no imports are not included in the computation of average shares. We call this measure 'Type I.' The other is to replace the missing shares with a value of zero and then to take the simple average. We call this measure 'Type II.' Naturally, the Type II measure takes a smaller value than the Type I measure. One may take the latter measure as a more appropriate one because we estimate gravity equations for all pairs, including those with zero valued trade. However, it is not necessarily so because singleton observations are also dropped in the gravity estimation. Thus, we try both two measures.

There are some more data issues. First, based on data availability, we focus on 2010, 2014, and 2018. Thus, the study years in the second step include only these 3 years. Second, the data for 2014 are not available in Lao PDR. Thus, we use the figures in 2012 for Lao imports in 2014. Similarly, we use the figures in 2013 for Malaysian imports in 2010. For the imports of Brunei and Lao PDR in 2010, we use their respective figures in 2009. Third, we do not have the ATIGA utilisation data in Singapore's imports though we have the data on total imports obtained from the BACI database. In Singapore, only six products (defined at an HS eight-digit level) have positive MFN tariffs. Those products exist only in HS 220. Therefore, we set the shares in Singapore's imports to zero for all products (with positive total imports in the case of the Type I measure) except for HS 220. The shares in Singapore's imports in HS 220 are set to 0.3, which is the average in other AMS' imports in HS 220. As a result, we can cover all country pairs in ATIGA in the computation of utilisation.

The estimation results using OLS are reported in **TABLE 6–3**. We use the Type I measure in column (I) and the Type II measure in column (II). In both columns, the coefficient for utilisation is estimated to be significantly positive, indicating that the higher average utilisation shares lead to the larger magnitude of the trade creation effect in the gravity estimates. Its coefficient is large when using the Type II measure. Based on the finding in Hayakawa (2020), which is that increases in ASEAN imports from China between 2000 and 2015 reduced intra-ASEAN trade by 20%, we also introduce the average share of imports from China out of total imports from the world (China share). The results are shown in columns (III) and (IV). Although the coefficient for the China share is insignificantly estimated, utilisation again has significantly positive coefficients. This leads us to conclude that in products where there is greater ATIGA utilisation, the trade creation effect is larger.

Table 6-3. Regression Results of the Coefficients for Utilisation: OLS

	(I)	(II)	(III)	(IV)
Utilisation	1.433**	2.325**	1.421**	2.249**
	[0.573]	[0.967]	[0.573]	[0.969]
China share			0.648	0.586
			[0.516]	[0.518]
Type	I	II	I	II
Number of obs	515	515	515	515
Adj R-squared	0.9367	0.9366	0.9368	0.9366

Source: Authors' calculation.

Then, by using the estimation results above, we compute the utilisation effect for each product. It is computed by multiplying utilisation by its coefficient reported in columns (I) and (II) in **TABLE 6-3**. Then, we further take an exponential and subtract the value of one. The resulting utilisation effect shows by what percentage intra-ASEAN trade increased due the utilisation of ATIGA tariffs. The summary statistics of the utilisation effect are shown in **TABLE 6-4**. Notice that we can compute the utilisation effect also for the three-digit codes that we did not obtain the gravity estimates for as long as the average utilisation share is available. Thus, the number of observations slightly increases compared with that in **TABLE 6-3** (169 for each year).

Table 6-4. Basic Statistics of Utilisation effects of ATIGA

		N	Mean	S.D.	p25	p50	p75	Min	Max
Year = 2010									
	Type I	173	0.16	0.09	0.10	0.15	0.21	0	0.38
	Type II	173	0.13	0.09	0.06	0.12	0.19	0	0.39
Year = 2014									
	Type I	173	0.24	0.16	0.13	0.21	0.35	0	0.69
	Type II	173	0.21	0.16	0.09	0.19	0.31	0	0.67
Year = 2018									
	Type I	173	0.33	0.24	0.16	0.29	0.46	0	1.12
	Type II	173	0.31	0.25	0.12	0.25	0.44	0	1.26

Source: Authors' calculation.

The means of the utilisation effect show the increase by around 15% in 2010, by around 25% in 2014, and by about 35% in 2018. The rise of the utilisation effect from 2010 to 2018 is based on the rise in utilisation of ATIGA tariffs. For example, utilisation rises in food products by nearly 30 percentage points from 2010 to 2018. **TABLE 6-5** lists the top 25 products in terms of the Type I utilisation effect in 2018. It shows that food products tend to have high effects, mostly around a 100% increase. Overall, high effects can be found in agricultural goods and food products. Thus, the introduction of ATIGA preferential tariffs contributed to increasing intra-ASEAN trade particularly in those industries. Chemical products and plastic/glass products also have relatively high effects.

Table 6-5. Top 25 Products in ATIGA Utilisation Effects in 2018 (Type I)

		Gravity	Utilisation		Utilisation effect	
HS	Section	Coef.	I	II	I	II
190	Food products	−0.38	0.52	0.35	1.12	1.26
180	Food products	0.77	0.48	0.25	0.99	0.81
200	Food products	−0.68	0.47	0.30	0.96	1.01
110	Vegetable products	−0.82	0.46	0.26	0.94	0.83
210	Food products	−1.15	0.46	0.31	0.92	1.04
151	Animal/vegetable fats and oils	−1.84	0.45	0.27	0.91	0.88
170	Food products	0.13	0.45	0.29	0.90	0.94
220	Food products	−0.63	0.44	0.28	0.88	0.92
81	Vegetable products	1.73	0.43	0.22	0.86	0.69
330	Chemical products	−0.35	0.42	0.28	0.83	0.90
150	Animal/vegetable fats and oils	0.47	0.39	0.16	0.74	0.45
90	Vegetable products	−2.66	0.37	0.22	0.70	0.68
441	Wood products	−0.87	0.37	0.24	0.70	0.75
701	Plastic or glass products	1.10	0.37	0.22	0.69	0.65
340	Chemical products	0.45	0.36	0.23	0.67	0.71
940	Miscellaneous	0.32	0.35	0.24	0.66	0.75
80	Vegetable products	0.43	0.35	0.20	0.65	0.58
481	Paper products	−0.08	0.34	0.25	0.63	0.77
71	Vegetable products	0.36	0.34	0.19	0.62	0.54
870	Transport equipment	−1.02	0.34	0.24	0.62	0.74
40	Live animals	−1.51	0.34	0.19	0.62	0.55
871	Transport equipment	−2.38	0.33	0.22	0.61	0.68
160	Food products	0.11	0.33	0.19	0.61	0.54
690	Plastic or glass products	−0.57	0.32	0.17	0.59	0.50
681	Plastic or glass products	0.26	0.32	0.18	0.58	0.52

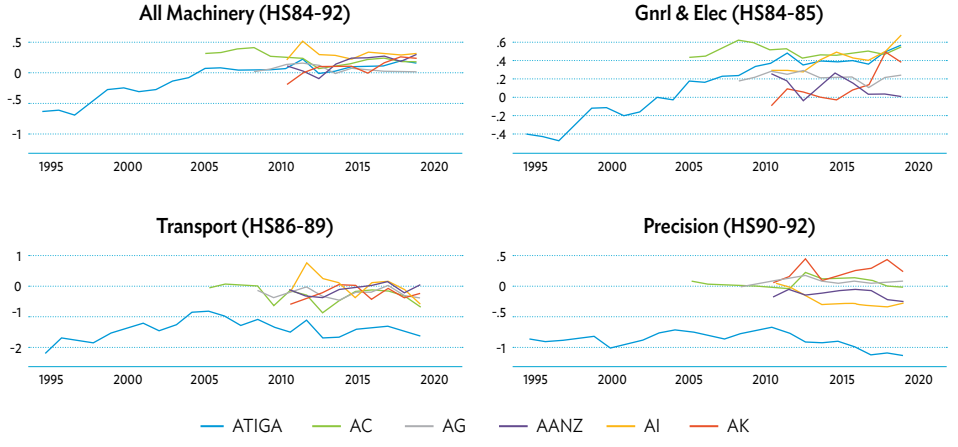
Source: Authors' calculation.

D. Additional Analyses: Gravity for Machinery

In this section, we estimate the gravity equation for machinery industries, distinguishing between finished goods and intermediate goods. In Asia, international production networks have developed in machinery industries since the 1990s. Such networks have been called 'Factory Asia' (Baldwin, 2008). To further examine their role in trade by the AMS, we estimate equation (2) for finished machinery goods and machinery parts separately. Machinery goods are defined as those in general or electric machinery (HS84–85), transport equipment (HS86–89), and precision machinery sectors (HS90–92). Kimura and Obashi (2010) carefully classified HS six-digit codes in these industries into finished products and intermediate products. By using this list, we decompose total trade in each machinery industry and aggregate to finished machinery goods and machinery parts in each industry.

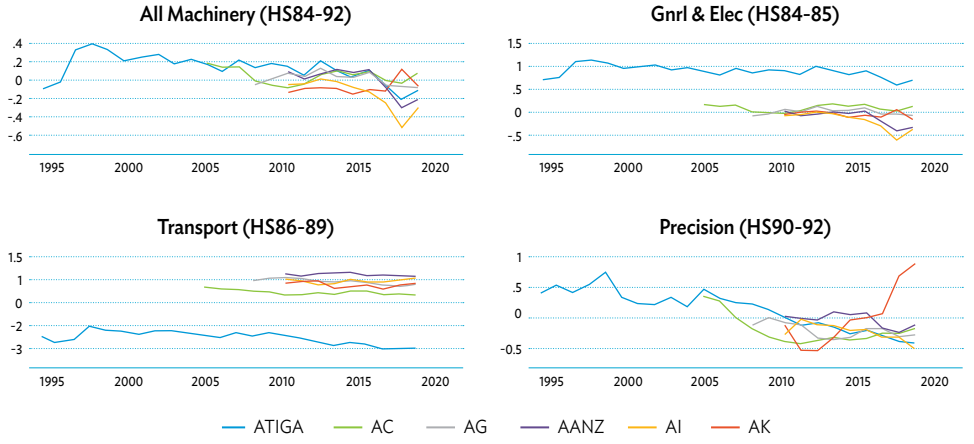
We show the changes of coefficients in **FIGURES 6-2** and **6-3**. In the case of ATIGA, machinery parts are likely to have positive coefficients, while the coefficients in finished machinery goods tend to be negative. Nevertheless, in the 2010s, those became positive in general or electric finished machinery goods and negative in precision machinery parts. On the other hand, for both finished machinery goods and machinery parts, the coefficients for ATIGA were mostly negative in the transport equipment industry. This last finding may contradict our previous findings, which show the positive mean for ATIGA in transport equipment. This difference is due to the coefficients for ATIGA in HS 860 and HS 890 being rather large and positive, whereas the other three-digit codes in transport equipment have negative coefficients. Thus, taking the average of three-digit-level products yields a positive average. This again emphasises the fact that the trade creation effect of ATIGA is very specific to certain sectors or products.

Figure 6-2. Gravity Estimates for Finished Machinery Goods



Source: Authors' calculation.

Figure 6-3. Gravity Estimates for Machinery Parts



Source: Authors' calculation.

E. Determinants of ATIGA Utilisation Rates

In this subsection, we examine the utilisation rates of ATIGA tariffs provisions. Unlike our analysis in the previous section, we restrict the study products to only those that have ad-valorem rates in both MFN tariffs and ATIGA tariffs and where ATIGA tariffs are lower than MFN tariffs. Then, we compute the share of imports under the ATIGA regime out of total imports, i.e. ATIGA utilisation rates. We identify the eligibility, i.e. whether or not ATIGA tariffs are lower than MFN tariffs, at an HS eight-digit level. If multiple rates are available within an HS eight-digit code, we use the lowest rates. Singapore as an importer is dropped because of the unavailability of data on imports under the ATIGA regime. Due to the data limitation, we focus on 2018 in this subsection.

The ATIGA utilisation rates for 2018 are shown in **TABLE 6-6**.[8] Brunei, Cambodia, Lao PDR, and Myanmar have low utilisation rates when importing. Other countries including Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, have relatively high utilisation rates when importing. It is also interesting that Singapore has relatively low utilisation rates when exporting even though it is known for efficient trade facilitation. Given that Singapore is characterised as the centre of the entrepôt trade, the low utilisation rates may indicate lower use of back-to-back certificates of origin (or movement certificate). In addition, unlike the case of importing, Cambodia and Lao PDR have relatively high utilisation rates when exporting to some countries.

[8] We use tariff rates in Lao PDR for 2017 to identify the eligibility of the ATIGA regime to keep the consistency of HS versions between tariff data and trade data.

Table 6-6. ATIGA Utilisation Rates in 2018 (%)

	Importer								
	BRN	**IDN**	**KHM**	**LAO**	**MMR**	**MYS**	**PHL**	**THA**	**VNM**
BRN		15		0	0	44	93	12	72
IDN	33		1	19	62	63	80	74	75
KHM	0	49		0	19	10	75	64	85
LAO		75	3		0	92	74	63	33
MMR	0.3	65	0.1	0		13	74	42	80
MYS	23	80	4	11	29		59	34	52
PHL	0	76	0.3	63	63	76		50	39
SGP	2	55	6	0.04	4	22	29	37	58
THA	11	87	10	10	33	71	77		68
VNM	35	82	3	0.5	24	51	65	68	

Note: Products are restricted to those that have ad-valorem rates in both MFN tariffs and ATIGA tariffs and where ATIGA tariffs are lower than MFN tariffs, i.e. MOP is positive.

Source: Author's computation.

Next, we explore the association of ATIGA utilisation rates with tariff margins. To do that, we estimate the following equation:

$$Utilization\ rates_{ijp} = \gamma \times Margin_{jp} + \boldsymbol{\delta} + \varepsilon_{ijp}. \quad (4)$$

The dependent variable is an ATIGA utilisation rate when exporting HS eight-digit level product p from countries *i* to *j* in 2018. It lies in the unit interval, [0, 1]. Note that this variable is different from *Utilisation* in equation (3). The measure here is defined at a bilateral-basis. $Margin_{jp}$ is the difference between MFN tariffs and ATIGA tariffs. For example, if those tariff rates are 10% and 0%, respectively, this variable takes 0.1, i.e. (10−0)/100. Since our study countries include only the members of ATIGA, this variable does not differ by exporting countries. $\boldsymbol{\delta}$ is a vector of various fixed effects. The study country pairs are the same as those shown in Table 6. Also, we restrict the study products only to those that have ad-valorem rates in both MFN tariffs and ATIGA tariffs and where ATIGA tariffs are lower than MFN tariffs.

The estimation results by using the OLS method are reported in Table 7. We cluster the standard errors by country pairs. All specifications include country pair fixed effects. Furthermore, in columns (I) and (III), we control for product fixed effects. In columns (II) and (IV), we introduce exporter-product fixed effects. These product-level fixed effects completely absorb the effects of rules of origin on the ATIGA utilisation rates. One data

issue is that the HS version is HS 2012 in the import data in Lao PDR but is HS 2017 in those in the other countries. Therefore, in columns (I) and (II), we define products in the fixed effects at a six-digit level of HS 2012 by using the converter table at a six-digit level between HS 2012 and HS2017. In columns (III) and (IV), on the other hand, we drop observations where Lao PDR is an importer and then define products in the fixed effects at an eight-digit level of HS 2017. Naturally, the number of observations differs by specifications because the singleton observations are dropped.

Table 6-7. Regressions of ATIGA Utilisation Rates on Tariff Margin: OLS

	(I)	(II)	(III)	(IV)
Margin	0.246***	0.229***	0.215***	0.202***
	[0.049]	[0.043]	[0.050]	[0.042]
Lao PDR	Incl.	Incl.	Excl.	Excl.
Country pair FE	X	X	X	X
Product FE	X		X	
Exporter-product FE		X		X
Adjusted R-squared	0.2986	0.3763	0.3115	0.4096
No. of observations	92,538	85,831	85,030	71,142

Notes: The dependent variable is the ATIGA utilisation rates, which lie in a unit interval, [0, 1]. ***, **, and * indicate 1%, 5%, and 10% significance, respectively. Standard error clustered by country pair is reported in parentheses. In columns (I) and (II), we define products in fixed effects (FE) at an HS six-digit level. In columns (III) and (IV), where Lao PDR as an importer is not included, products in the FE are defined at an HS eight-digit level.

Source: Author's estimations.

All columns show that the coefficient for the tariff margin is estimated to be significantly positive. Thus, as well-documented in the literature, ATIGA tariffs are more utilised in trading products with greater tariff margins. For example, column (IV) indicates that a one-percentage-point rise in tariff margin raises the ATIGA utilisation rate by 0.2 percentage points. To examine the non-linear relationship between the utilisation rate and tariff margin, we introduce dummy variables indicating various ranges of tariff margin instead of its continuous variable. The results are reported in Table 8. The base range is the range of (0, 0.01]. Although the statistical significance differs by specifications, no results show significant coefficients for the range of (0.01, 0.03]. This result may indicate that due to the compliance costs in rules of origin, firms require a tariff margin to be greater than 3% in their use of the ATIGA regime.

Table 6-8. Regressions of ATIGA Utilisation Rates on Category Variables on Tariff Margin: OLS

	(I)	(II)	(III)	(IV)
1 for 0.01 < Margin ≤ 0.03	0.001	0.001	−0.0002	−0.001
	[0.012]	[0.010]	[0.013]	[0.011]
1 for 0.03 < Margin ≤ 0.06	0.034*	0.033***	0.029	0.023*
	[0.017]	[0.011]	[0.018]	[0.014]
1 for 0.06 < Margin ≤ 0.10	0.034*	0.030***	0.029	0.024*
	[0.017]	[0.011]	[0.018]	[0.012]
1 for 0.10 < Margin ≤ 0.15	0.028	0.031**	0.019	0.018
	[0.019]	[0.013]	[0.021]	[0.015]
1 for 0.15 < Margin ≤ 0.20	0.067***	0.065***	0.061***	0.056***
	[0.021]	[0.014]	[0.022]	[0.015]
1 for 0.20 < Margin ≤ 0.30	0.071***	0.066***	0.057***	0.053***
	[0.018]	[0.013]	[0.019]	[0.014]
1 for 0.30 > Margin	0.094***	0.091***	0.084***	0.078***
	[0.022]	[0.015]	[0.024]	[0.016]
Lao PDR	Incl.	Incl.	Excl.	Excl.
Country pair FE	X	X	X	X
Product FE	X		X	
Exporter-product FE		X		X
Adjusted R-squared	0.2993	0.3771	0.3122	0.4104
No. of observations	92,538	85,831	85,030	71,142

Notes: The dependent variable is the ATIGA utilisation rates, which lie in a unit interval, [0, 1]. The base category in Margin is when margin lies in (0, 0.01]. ***, **, and * indicate 1%, 5%, and 10% significance, respectively. Standard error clustered by country pair is reported in parentheses. In columns (I) and (II), we define products in fixed effects (FE) at an HS six-digit level. In columns (III) and (IV), where Lao PDR as an importer is not included, products in the FE are defined at an HS eight-digit level.

Source: Author's estimations.

E. Conclusion from gravity analysis

This chapter examined the effects of ATIGA on intra-ASEAN trade. We first estimated the gravity equation with ATIGA dummy variables and found that their coefficients were negative during our study period. This result implies that the total trade creation effect of ATIGA had been negative. Second, we quantified the trade creation effect attributed only to the utilisation of ATIGA tariffs. To do that, we regressed the gravity estimated above on the average share of imports under the ATIGA regime amongst ASEAN country-pairs. Then, we found that the utilisation of ATIGA tariffs increased intra-ASEAN trade in 2018 by approximately 35%. In particular, agriculture and food industries have the largest effects, followed by chemical products and plastic/glass products. These relatively large effects are based on the active use of ATIGA tariffs in those industries. Last, we conducted

two additional analyses. One is to estimate the gravity equation for finished machinery goods and machinery parts separately. Our finding is that the coefficients for the ATIGA dummy tend to be positive in machinery parts but negative in finished machinery goods. The other is to examine the utilisation rates of the ATIGA regime. We found their positive relationship with the preference margin. Firms are more likely to utilise ATIGA tariffs when trading products with a greater margin of preferences. Due to the compliance costs in rules of origin, however, firms require a tariff margin to be greater than 3% in their use of the ATIGA regime. Since the utilisation of ATIGA tariffs contributes to increasing intra-ASEAN trade, it is the right way to encourage the further utilisation of ATIGA tariffs. Lowering compliance costs for rules of origin contributes to enhancing firms' utilisation of ATIGA tariffs.

Technical Appendix to the chapter (Empirical Methodology)

Our empirical analysis consists of two steps. The first step is to quantify the trade creation effect by estimating the gravity equation. To evaluate the effects of regional trade agreements (RTAs), most studies employ a gravity equation with an RTA dummy variable, which takes the value of one if two countries belong to the same RTA and the value of zero otherwise (RTA_{ijt}). Specifically, it is given as follows:

$$\ln X_{ijt} = \alpha \times RTA_{ijt} + \mathbf{Z'}_{ij}\boldsymbol{\beta}_1 + \mathbf{Z'}_{it}\boldsymbol{\beta}_2 + \mathbf{Z'}_{jt}\boldsymbol{\beta}_3 + \epsilon_{ijt}, \quad (1)$$

where X_{ijt} is export values from countries i to j in year t. $\mathbf{Z}_{ij}$, $\mathbf{Z}_{it}$, and $\mathbf{Z}_{jt}$ are vectors of time-invariant country pair, time-variant exporter, and time-variant importer characteristics, respectively. The time-invariant country pair characteristics include geographical distance, language similarity, and cultural similarity. GDP and multinational resistance terms[9] are examples of time-variant exporter and importer characteristics. ϵ_{ijt} is a disturbance term. The coefficient for the RTA dummy indicates the trade creation effects of RTAs, that is, the average effects of RTAs on trade amongst RTA member countries.

There are three empirical issues regarding estimation. First, it is challenging to find a good proxy variable for price indices or multilateral resistance terms (Anderson and van Wincoop, 2003). As suggested in Feenstra (2002), since those elements differ by countries, not by country-pairs, most studies control for them by introducing exporter-year and importer-year fixed effects. The second issue is the treatment of zero-valued trade. As Melitz (2003) suggested, trade values can be systematically zero. However,

[9] The multilateral resistance term indicates the price index that consists of prices of all goods available in a country, including imported goods. Since it takes non-monetary trade costs into account, it is not the same as consumer price index.

taking logarithms of trade values drops such observations from the sample, leading to the elimination of potentially useful information and yielding to a sample selection bias. To overcome this issue, recent studies employ the Pseudo-Poisson Maximum Likelihood (PPML) technique (Silva and Tenreyro, 2006) or the extended technique of Heckman two-step estimation (Helpman, Melitz, and Rubinstein, 2008).

The last is an endogeneity issue on the RTA dummy variable. It is, without a doubt, not an exogenous random variable: countries systematically and purposefully decide whether to conclude a RTA. Furthermore, the elements that influence international trade also affect decisions on a RTA's conclusion. For example, the geographically close countries tend to have not only more trade due to lower transportation costs but also a higher probability of forming RTAs due to closer economic or cultural ties. Hence, there would be unobservable elements that affect both the RTA dummy and the magnitude of trade. Without accounting for the endogeneity of the RTA dummy, estimating the gravity equation using the RTA dummy through ordinary least squares (OLS) results in biased estimates. Baier and Bergstrand (2007) closely examined this endogeneity issue in the RTA dummy and demonstrated that the most plausible estimates of RTA effects on international trade are obtained from the gravity estimation using panel data with time-invariant country-pair fixed effects.

In this study, we address all of the three issues by employing the approaches proposed above. Specifically, our gravity equation is given as follows:

$$X_{ijpt} = \exp\{\alpha_p \times RTA_{ijt} + ATIGA_{ijt} \times \mathbf{Y'}_t \boldsymbol{\beta}_p^{ATIGA} + AANZ_{ijt} \times \mathbf{Y'}_t \boldsymbol{\beta}_p^{AANZ} + AC_{ijt} \times \mathbf{Y'}_t \boldsymbol{\beta}_p^{AC} + AI_{ijt} \times \mathbf{Y'}_t \boldsymbol{\beta}_p^{AI} + AJ_{ijt} \times \mathbf{Y'}_t \boldsymbol{\beta}_p^{AJ} + AK_{ijt} \times \mathbf{Y'}_t \boldsymbol{\beta}_p^{AK} + \delta_{ijp} + \delta_{ipt} + \delta_{jpt}\} + \epsilon_{ijpt}. \quad (2)$$

We estimate this model by the three-digit code of the HS, which is called product hereafter and is indicated by a subscript *p*. Namely, we regress approximately 170 equations.[10] X_{ijpt} is export values of product p from countries *i* to *j* in year *t*. δ_{ijp}, δ_{ipt}, and δ_{jpt} are respectively the time-invariant country pair-product, time-variant exporter-product, and time-variant importer-product fixed effects. The endogeneity issue is addressed by the time-invariant country pair-product fixed effects. GDP and multinational resistance (e.g. price index) are controlled for by the time-variant exporter-product and importer-product fixed effects. These fixed effects control for exporter's international competitiveness and importer's demand size. ϵ_{ijpt} is a disturbance term. We estimate this equation using the PPML technique.

[10] We choose the analysis at an HS three-digit level. For example, when we estimate equation (2) at an HS four-digit level, the coefficients for ATIGA cannot be estimated in many products because of the existence of many zero-values in intra-ASEAN trade.

The dummy variables on RTAs by AMS are defined as follows. $ATIGA_{ijt}$ takes the value of one if both countries are members of the AFTA/ATIGA. Note that the dummy variable of RTA_{ijt} does not cover the AFTA/ATIGA to isolate the trade creation effect of the AFTA/ATIGA from that of the other RTAs. To investigate its time-series change, $ATIGA_{ijt}$ is interacted with a vector of year dummy variables, $\mathbf{Y}_t$. A vector $\boldsymbol{\beta}_p^{ATIGA}$ indicates the trade creation effect of the AFTA/ATIGA in a product according to years. Like the ATIGA, we introduce the interaction terms of five ASEAN+1 FTA dummy variables with year dummy variables; ASEAN–China FTA (ACFTA), ASEAN–Republic of Korea FTA (AKFTA), ASEAN–Japan RTA (AJCEP), ASEAN–Australia–New Zealand FTA (AANZFTA), and ASEAN–India FTA (AIFTA). Note that these variables on ASEAN+1 FTAs do not take the value of one between the AMS to capture the increase of intra-ASEAN trade solely by the coefficients in the ATIGA dummy. For example, AC takes the value of one for trade between one of the AMS and China, but not for trade between the AMS. AANZ examines trade with Australia or New Zealand while *AI*, *AJ*, and *AK* explore trade with India, Japan, and the Republic of Korea, respectively. In addition, these dummy variables can be the value of one after 2004 in *AC*, after 2007 in *AJ*, after 2009 in *AANZ*, *AI*, and *AK*. We do not take into account the existence of bilateral RTAs between AMS and plus-one countries. Lastly, the RTA dummy variable does not take the value of one when ASEAN+1 FTA dummy variables do so.

There are two noteworthy points. First, we define the dummy variables on RTAs with plus-one countries based on the entry year of plurilateral RTAs. For example, a bilateral RTA entered into force between Thailand and Australia in 2005 while AANZFTA did in 2010. As defined above, our dummy variable on the RTA between Australia and AMS has taken the value of one since 2010 to keep consistency across AMS. Thus, although we label RTA dummy variables by using the name of plurilateral RTAs, their coefficients indicate the trade creation effects of not only plurilateral RTAs but also existing other RTAs. Second, the above estimates on the trade creation effect include the effects of not only the RTA utilisation but also all the other events that have an influence on intra-member trade during the study period. Namely, some parts of the estimates are not attributed to the utilisation of the RTA regime. This fact is inevitable because we cannot control all possible events directly. Although the gravity estimates are still invaluable since such parts include the effects of the non-tariff measure (NTM) changes, we may be interested in the effects of solely utilising RTA tariff rates.

Against this backdrop, the second step intends to capture the trade creation effect attributed to the utilisation of the RTA regime, which hereafter is called 'utilisation effect.' To this end, we examine how the trade creation effects estimated above are related to the utilisation rate of the RTA regime. In this analysis, due to the data limitation, we focus on ATIGA and estimate the following equation by using the simple OLS method:

$$\hat{\beta}_{pt}^{ATIGA} = \gamma \times Utilization_{pt} + \delta_p + \delta_t + \varepsilon_{pt}. \quad (3)$$

Subscripts *p* and *t* indicate HS three-digit code and year, respectively. $\hat{\beta}_{pt}^{ATIGA}$ is obtained by estimating equation (2). δ_p and δ_t are fixed effects for HS three-digit codes and years, respectively. We construct *Utilisation* as follows. We first compute the share of imports under the ATIGA regime out of total imports for each country pair at the HS three-digit level.[11] Then, we take the simple average of those shares amongst all pairs of the AMS according to the three-digit codes and years, which is named '*Utilisation*.'

The use of a simple average is to keep consistency with the estimates of the trade creation effect. These estimates for each product are obtained by regressing trade values at a country-pair level by using the simple OLS method and thus indicate the simple average of trade creation effects amongst all pairs of the AMS. Therefore, we also compute *Utilisation* by taking a simple average. For a similar reason, when computing *Utilisation*, we include the products that are ineligible under the ATIGA regime or for which ATIGA tariff rates are not available. In this sense, our measure of *Utilisation* is a bit different from 'RTA utilisation rates' used in the literature, which does not include RTA-ineligible products in the computation. To distinguish from the RTA utilisation rate, we call our measure the 'RTA utilisation share.' The utilisation effect is computed as $\exp(\hat{\gamma} \times Utilization_{pt}) - 1$.

It is invaluable to discuss further what we do in this second step. We can interpret the model specified in equation (3) as indicating the decomposition of the total trade creation effect. For simplicity, suppose that the trade creation effect of ATIGA comes from two sources: one is tariff reduction, the other is the change of NTM. The right-hand side of equation (3) consists of the effects from these two sources. Obviously, the effect of tariff reduction is captured by a variable of Utilisation. Although NTMs differ by AMS, we suppose that the differences in NTMs come mainly from products. Thus, we assume that their effects are controlled by HS three-digit fixed effects. In sum, by estimating equation (3), we intend to decompose the total trade creation effect of ATIGA into the effects attributed to the utilisation of ATIGA tariffs and those based on the NTM changes. Later, we also assume that the total trade creation effect of ATIGA depends on imports from China.

[11] It is desirable to include not only the imports under the ATIGA regime but also those under the ASEAN+1 FTA regimes when computing Utilisation. However, we do not have the data on the latter imports.

CHAPTER 7

ANALYSIS OF PRIORITY INTEGRATION SECTORS

Reaffirming ASEAN's commitment to fast-track integration towards the ASEAN Economic Community (AEC), ASEAN Leaders in 2004 agreed to accelerate the integration of 11 priority sectors under the Framework Agreement for the Integration of Priority Sectors and 11 ASEAN Sectoral Integration Protocols. One additional sector (logistics services) was added as the 12th Priority Integration Sector (PIS) in 2006. It was envisaged that sector-level integration and AEC building would nurture and help in the proliferation of regional linkages forward and backward, facilitating the transformation of ASEAN into a single market and production base, as well as sustaining the region as a dynamic and competitive player in global value chains and production networks. These selected sectors accounted for more than 50% of intra-ASEAN trade in 2003 and contributed US$48.4 billion and US$43.4 billion of intra-ASEAN exports and imports, respectively.

In this chapter, we study nine key sectors – (1) agriculture, (2) processed agriculture, (3) electronics, (4) automotive, (5) textiles & apparels, (6) fisheries, (7) healthcare, (8) rubber-based products, and (9) wood-based products, where agriculture (Chapters 1–14 of the HS Code) and processed agriculture (Chapters 15–24) are the modified sectors from the original agro-based products sector of the Framework Agreement for the Integration of Priority Sectors. The number of AHTN 2012 and 2017 tariff lines for each sector is shown in **TABLE 7-1**. In terms of the number of tariff lines, electronics, textiles and apparel, agriculture, and automotive are the largest sectors comprising 1,000 tariff lines each in 2018. Altogether, the PIS sectors comprise just over half of the tariff lines. Note that some product lines are classified under multiple PIS sectors. Different sectors had different degrees of protection before the liberalisation period, which means that each sector is going to evolve differently due to the tariff provisions in ATIGA. Thus, is it important to analyse the sectors separately.

Table 7-1. Number of tariff lines categorised into PIS Sector

PIS Sector	Number of tariff lines in AHTN 2012 (N = 9,558)	Number of tariff lines in AHTN 2017 (N = 10,813)
(1) Agriculture	995	1,080
(2) Processed agriculture	599	645
(3) Electronics	1,129	1,165
(4) Automotive	728	1,194
(5) Textiles & apparel	1,081	1,177
(6) Fisheries	380	437
(7) Health-related	366	416
(8) Rubber-based	254	270
(9) Wood-based	126	166

Source: Authors' calculation.

A. Trade patterns

The importance of PIS sectors in terms of trade volumes and intra-ASEAN share varies quite a lot. **TABLE 7-2** shows the value of ASEAN imports by PIS sector in 2018 along with the share of all AMS imports coming from within ASEAN. Overall, PIS sectors still account for half of global imports of ASEAN and 65% of ASEAN exports. Electronics is by far the most important amongst the PIS sectors, constituting just under 30% of imports and over 35% of exports. In fact, the import value of electronics is larger than for all other PIS sectors combined, so what happens in this sector greatly influences the overall characteristics of ASEAN trade. It is therefore not surprising that this sector's ASEAN share was very close to the overall average ASEAN share of 21% in 2018.

Automotive is the second most important trade sector, with total imports of US$71 billion and exports of US$79 billion, although its total size is only one-sixth of the electronics sector. The automotive production network is very strong is ASEAN, and this is indicated by a larger-than-average ASEAN share in imports and exports of more than 30% each. The next most important PIS sector is processed agriculture, with US$136 billion in total trade volume in 2018. The importance of this sector also lies in the fact that AMS have a strong comparative advantage in it. This is evident from the fact that of the total volume of imports of this sector in ASEAN, almost 38% comes from within ASEAN. At the same time, intra-ASEAN exports constitute only 25% of total exports, meaning that AMS are not only exporting the products in this sector within ASEAN, but across the world. The shares of automotive and processed agriculture in total intra-ASEAN trade are less than 7% each.

The textiles & apparel PIS sector is also significant for ASEAN, with US$52 billion in imports and US$76 billion in exports. This is also one of the fastest growing sectors in ASEAN, particularly in Cambodia, Lao PDR, Myanmar, and Viet Nam. However, this sector has one of the smallest ASEAN shares of imports and exports, making it the most globally oriented sector in ASEAN. Raw materials for this sector are imported mostly from China, and the output sold in the US and European markets.

The other PIS sectors are quite small in terms of volume relative to total ASEAN trade, but individually quite important for ASEAN. The agriculture PIS sector is the largest apart from the ones previously discussed, with import and export volumes of less than 4% of the ASEAN total. This sector also has average values for the ASEAN share of imports and exports. Fisheries, rubber-based, and wood-based PIS sectors have shares higher than the average ASEAN share in imports and lower than the average ASEAN share in exports. This means that these sectors include products with comparative advantage for AMS producers, and the output is sold globally. These sectors also are likely to involve more small and medium-sized firms. To the extent that ATIGA tariff reductions in these sectors create opportunities for production sharing, it creates opportunities for ASEAN growth. Finally, the non-PIS sector is by far the largest sector and quite heterogenous. This also seems to be the most regionally traded, with the ASEAN share of exports at 32%, which is higher than that of any PIS sector, and also higher than the average ASEAN share in imports. A closer examination of goods not included in the current list of PIS sectors and updating the list to include some promising tariff lines currently excluded would help ASEAN integration. Given that the PIS sectors were designated as such over 15 years also, the list should be updated to reflect current trends in global and ASEAN trade.

Table 7-2. ASEAN share by PIS sector category in 2018

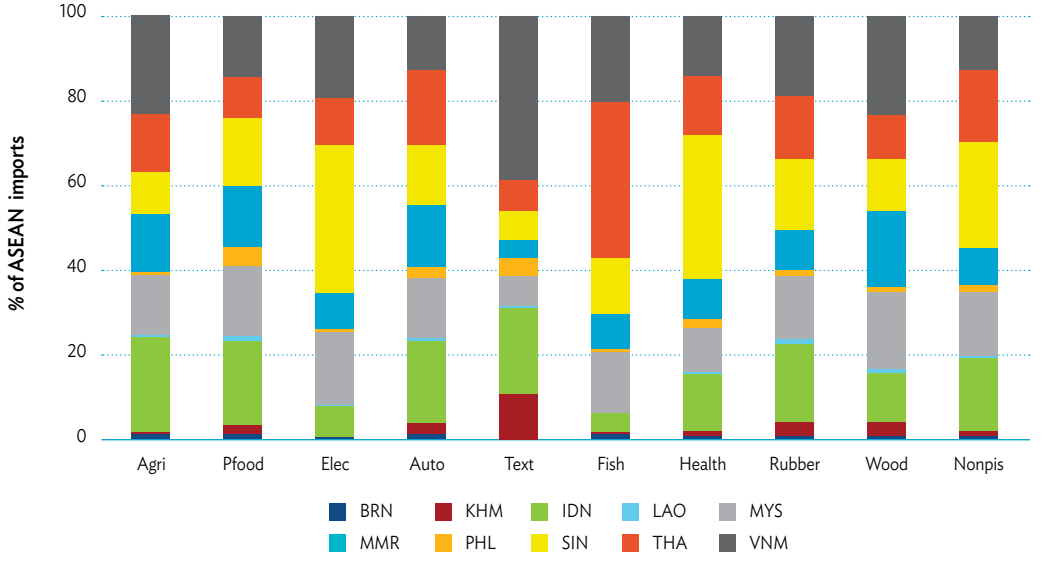
PIS Sector	Total imports by AMS (US$billion)	ASEAN Share in AMS imports (%)	Total exports by AMS (US$Billion)	ASEAN Share of AMS exports (%)
(1) Agriculture	52.98	19.20	54.10	19.34
(2) Processed agriculture	48.14	37.55	88.06	24.77
(3) Electronics	412.16	20.96	509.64	20.97
(4) Automotive	71.16	31.64	78.69	30.05
(5) Textiles & apparel	52.46	11.03	76.07	8.24
(6) Fisheries	7.82	24.77	21.60	11.18
(7) Health-related	38.97	12.61	41.64	16.60
(8) Rubber-based	20.18	27.18	56.68	10.03
(9) Wood-based	5.44	32.85	23.14	7.00
(10) Non PIS	694.28	22.04	508.22	32.30
Total ASEAN	**1,388.39**	**21.91**	**1,435.69**	**23.99**

Note: Tariff lines not classified as any of the PIS sectors is included in Non PIS.

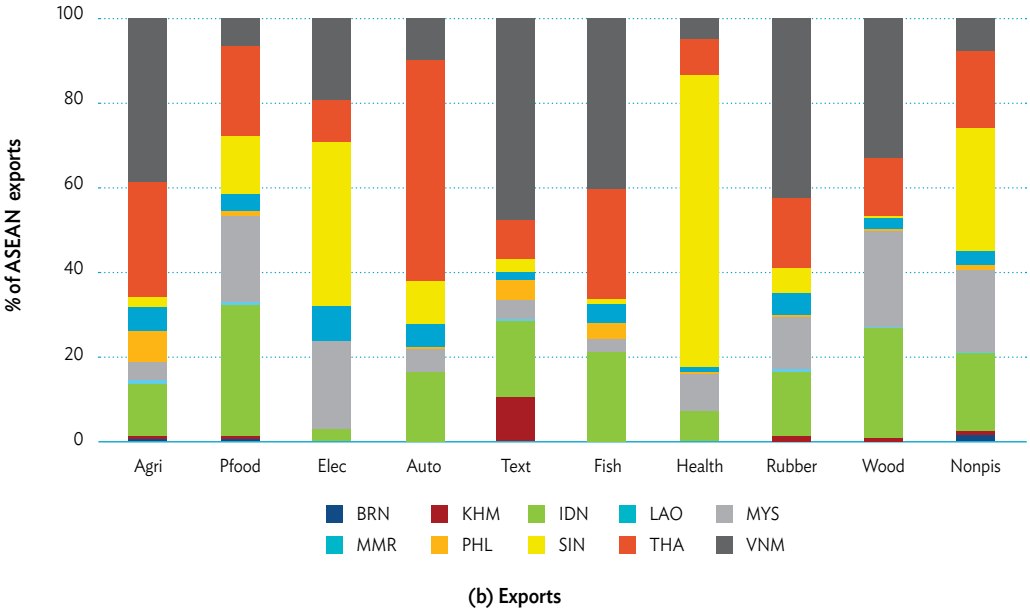
Source: Authors' calculation from ASEANStats data.

Each AMS has a different pattern of intra-ASEAN imports and exports in each PIS sector, as depicted in **FIGURE 7-1**. In agriculture, Indonesia and Viet Nam have large import shares of 20% each, while Viet Nam has the largest export share at 40%. Intra-ASEAN imports of processed agriculture is evenly distributed between Indonesia, Malaysia, the Philippines, Singapore, and Viet Nam, while the export share of Indonesia is the highest at over 30%. Singapore has a larger than average share in electronics imports and exports. ASEAN's automotive imports are distributed fairly evenly across AMS (in proportion to their market size), while Thailand has a share of almost 50% of intra-ASEAN exports. In the textiles and garments PIS, Viet Nam's share is quite large in both imports and exports, while Cambodia's share is also larger than for other products. Thailand has a larger share in fisheries imports, while Viet Nam's share in exports is the largest. In health related PIS, Singapore has the largest share in both exports and imports. For both rubber-based and wood-based PIS sectors, imports are also evenly distributed, while Viet Nam's export share is large. Indonesia's share in wood-based exports is also higher than average.

Figure 7-1. Share of AMS in total ASEAN trade by PIS sector, 2018



(a) Imports



(b) Exports

Source: Authors' calculation from ASEANStats data.

To examine the specialisation of each AMS in different PIS sectors, we compute the relative comparative advantage (RCA) of each AMS for each PIS sector. The RCA expresses the share of a particular product in AMS exports relative to the share of the product in total ASEAN imports. For example, if a product constitutes 10% of a AMS's exports, while its share in ASEAN exports is 5%, the RCA is 2. A value greater than 1 means that the product's importance in the AMS's exports is greater than that for ASEAN overall. While normally the comparison is made against world's exports, in the case of PIS we focus on total ASEAN exports as the definition is relevant only for ASEAN. The calculated RCA is shown in **TABLE 7-3**. In agriculture PIS, all AMS except Brunei, Malaysia, and Singapore have values greater than one, meaning that seven AMS are relatively more intensively exporting agriculture PIS products. The highest RCA is found for Malaysia. In processed agriculture, Indonesia has the highest RCA, followed by Lao PDR, Malaysia, and Thailand. In electronics, a high RCA is found for Malaysia, the Philippines, Singapore, and Viet Nam. The RCA for automotive is above 1 in Indonesia, the Philippines, and Thailand, the latter of which has strong specialisation in this sector with an RCA of over 3. In textiles and apparel PIS, Cambodia's RCA is very high at 11, indicating the strong specialisation of the country in this sector. Myanmar and Viet Nam are also quite high, with Indonesia being the other country with a RCA above 1 in this sector. Myanmar and Viet Nam have a RCA above 2 in the fisheries PIS. In the health PIS, Singapore is the only country with a RCA above 1. Five AMS have a RCA above 1 in rubber-based products, with the highest value for Viet Nam at 2.5. Finally, Indonesia and Viet Nam have RCAs above 2 in wood-based products. The specialisation of AMS in various PIS sectors means that the growth trajectory of each sector is influenced by development in the respective member states.

Intra-ASEAN linkages vary a lot across sectors, depending on comparative advantage of the producing AMS and market conditions in consumption AMS. Thus, different strategies may be needed to further integrate these sectors within ASEAN.

Table 7-3. Revealed comparative advantage of AMS in PIS sector

	Agri	P. agri	Elec	Auto	Text	Fish	Health	Rubber	Wood
Brunei	0.04	0.01	0.03	0.02	0.03	0.08	0.02	0.02	0.02
Cambodia	1.06	0.24	0.12	0.29	11.90	0.00	0.06	1.58	0.97
Indonesia	1.02	2.52	0.17	1.21	1.39	1.65	0.50	1.21	2.01
Lao PDR	2.86	1.31	0.36	0.12	0.70	0.00	0.07	0.44	0.77
Malaysia	0.24	1.21	1.22	0.35	0.25	0.19	0.54	0.72	1.31
Myanmar	6.02	0.86	0.04	0.03	4.78	2.94	0.20	0.61	0.76
Philippines	1.07	0.79	1.79	1.14	0.33	0.89	0.22	1.07	0.54
Singapore	0.08	0.48	1.25	0.35	0.10	0.06	2.40	0.18	0.02
Thailand	1.63	1.29	0.74	3.12	0.55	1.58	0.57	1.06	0.75
Viet Nam	2.31	0.38	1.15	0.62	2.84	2.36	0.27	2.47	2.02

Note: Data is for 2018. Agri = Agriculture, P. agri = Process Agriculture, Elec = Electronic, Auto = Automotive, Text = Textiles & Apparels, Fish = Fisheries, Health = Healthcare, Rubber = Rubber-based Products, Wood = Wood-based Products.

Source: Authors' calculation based on ASEANStats data.

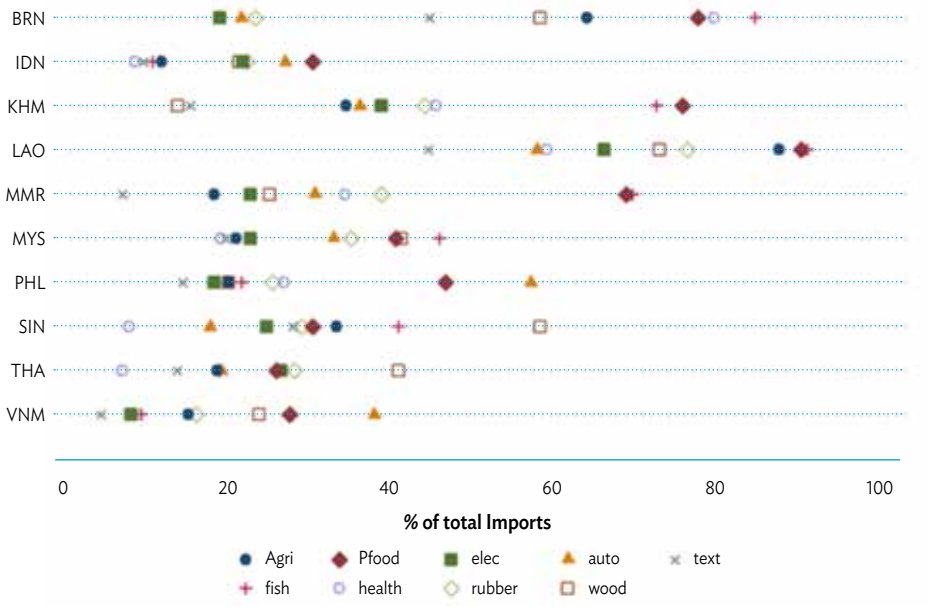
Formation of intra-ASEAN production networks requires that AMS that are competitive in certain sectors also source inputs from other AMS. In many cases, domestic endowment of resources usually determines comparative advantage, but with a single production base, the ideal case would be ASEAN's overall resources being combined with the resources and know-how of individual AMS to produce globally competitive goods. Examining the status of such linkages for each PIS sector would require us to understand the input–output relationship between each product and studying the imports of relevant inputs from other AMS. Unfortunately, we do not have detailed knowledge of the inputs required to produce a particular PIS product. As a first step, we just examine whether there is large intra-PIS sector sourcing from ASEAN in sectors where certain AMS have high revealed comparative advantage. For each sector, we pick the AMS with the top RCA and check their ASEAN share of imports in that sector. The analysis is more relevant for processed agriculture, electronics, automotive, and textiles as these require a greater degree of processing and have the potential to form supply chain linkages and are also the most important sectors in terms of trade volume.

FIGURE 7-2 depicts each ASEAN share in each AMS' imports of various PIS sector products for 2018. The figure shows that AMS vary in terms of their sourcing of imports from within ASEAN. The highest ASEAN share is found in imports of processed agriculture to Myanmar at about 90%, as well as imports of agriculture and fisheries-based products in

Lao PDR. In the top ASEAN imported sector – electronics – the ASEAN share is highest in Lao PDR at 66% and lowest in Viet Nam at 8%. Likewise, the ASEAN share is high in automotive imports to Lao PDR and the Philippines at above 57%, and lowest in Singapore and Thailand at below 20%. For textile-related products, the ASEAN share is highest in Brunei and Lao PDR at above 44%, and lowest in Viet Nam at below 5%

We make a rough comparison of AMS' RCA in a PIS sector and their ASEAN share in their imports. In processed agriculture, Indonesia's RCA is highest amongst ASEAN countries but its sourcing of agriculture products from ASEAN is very low. This is likely because the country makes greater use of domestic inputs and only imports consumption goods within this sector. The Philippines has the highest RCA in electronics, but its imports from within ASEAN in this category is just 20%. Thailand's RCA is the highest in automotive but its ASEAN share of automotive is also small at 20%. Indonesia, the Philippines, and Viet Nam have the highest ASEAN share in automotive, presumably imported from Thailand. In textiles, Cambodia, Myanmar, and Viet Nam have the highest RCA but for each their ASEAN share of imports is quite small. This is related to the overall small ASEAN share of imports in this sector and is a result of sourcing of inputs mostly from China. It is a reflection of the current state of technology in the region but does not mean that there not a potential to form intra-ASEAN supply chain linkages in these sectors. But it does require greater capacity to produce important inputs with the region, by attracting relevant foreign direct investment and developing domestic human capital.

Figure 7-2. ASEAN share in AMS imports by PIS sector, 2018



Source: Authors' calculation. Malaysia is excluded to ensure consistency with previous analysis.

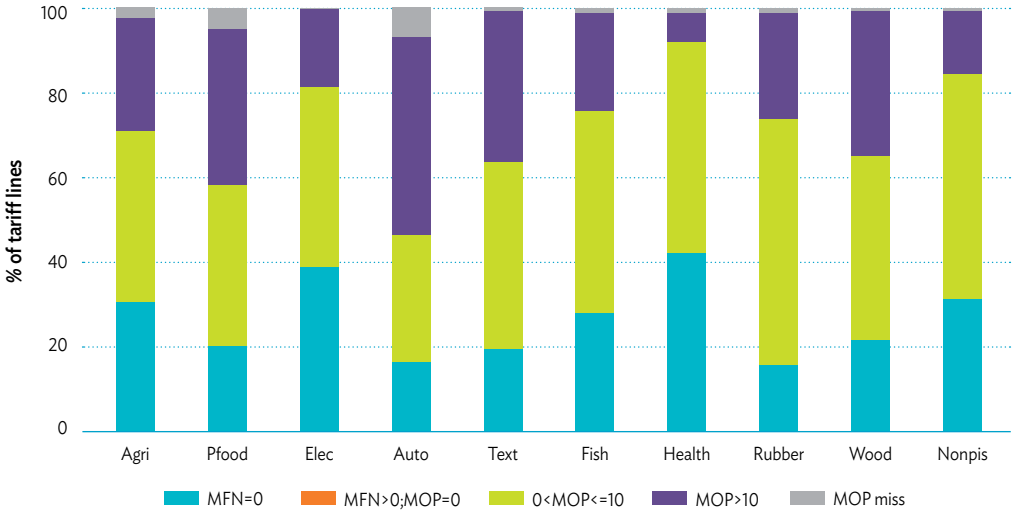
B. Tariff structure

ATIGA tariffs of PIS products, except those in the sensitive (Schedule D), highly sensitive (Schedule E) and general exception lists (Schedule H), in ASEAN-6 were eliminated in 2007. Sensitive (Schedule D) and highly sensitive (Schedule E) products are under the Agriculture and Processed Agriculture Sectors. The changes of the MOP are also due to the unilateral liberalisation of MFN tariffs by AMS. As before, the margin of preference plays a big role in dictating the trends in ASEAN trade in PIS sectors.

FIGURE 7-3 shows the distribution of tariff lines under each PIS sector by MOP structure in 2018, aggregating over all AMS. The PIS sectors differ in their degree of external liberalisation. About 40% of tariff lines under the electronics and health PIS sectors have a MOP of zero, meaning that there is no tariff advantage of using ATIGA preference. Thus, while electronics is the largest sector in terms of trade within ASEAN, it is also the sector with a small percentage of tariff lines that has the highest MOP. If fact, if we were to only examine the tariff structure of the largest AMS economies except Singapore (Indonesia, Malaysia, Philippines, Thailand, and Viet Nam), the percentage of tariff lines with MOP zero is almost 50%. This provides an additional perspective on why overall ATIGA utilisation in ASEAN is low.

This percentage of tariff lines with MFN zero is slightly lower in other sectors but not lower than 20% in any of them. At the other end, tariff lines classified under automotive are most likely to offer high MOP, with about 50% of the tariff lines in automotive showing a MOP above 10%. Processed agriculture, textiles, and wood products also have a high percentage of tariff lines that have MOP above 10%. The high MOP in the automotive and processed agriculture sectors is due to the significantly high MFN tariffs in three sectors, i.e. the automotive, processed agriculture, and agriculture sectors. Many tariff lines in these three sectors have MFN tariffs above 30%. In the agriculture sector, since there are still sensitive (Schedule D) and highly sensitive (Schedule E – rice, chapter 10) products in this sector, the MOP is not as high as for the other two sectors. In the textile and wood-based sectors, the high MOP are also due to the fact that most tariff lines in these sectors have relatively high MFN tariffs, i.e. between 10% and 20%.

Figure 7-3. Distribution of tariff lines by MOP structure by PIS sector in ASEAN



Source: Authors' calculation from tariff data. Singapore is not included in the calculation.

Below we discuss each PIS sector in turn and examine the tariff structure and FTA utilisation rates. The calculation of FTA utilisation is based on the liberal ASEAN Stat method described in Chapter 6. This choice is made due to the need to convert 2012 8-digit trade data to the AHTN 2007 classification scheme to be able to merge the information on Form D trade for some countries. Because the number of product lines is smaller, any errors in the data are likely to create a greater impact on the accuracy of estimation.

C. Agriculture

This sector comprises mostly of tariff lines in HS Chapters 1 to 14. **TABLE 7-4** reports average MFN and ATIGA tariffs in the agriculture sector and the average margin of preference. In agriculture, MFN tariffs remain close to or above 10% in the Philippines, Thailand, Cambodia, Lao PDR, and Viet Nam, while the ATIGA tariffs have declined. This provides opportunities for expansion of intra-ASEAN trade to these countries. The lowest tariffs are found in Brunei and Malaysia. As a result, MOP remains high in these countries (close to or above 10%). Amongst product lines where MFN is greater than ATIGA, the highest MOP is found in Thailand at 24%. Cambodia, Lao PDR, and Viet Nam have MOPs between 10% and 15%, and those of the rest of the AMS are below 10%.

Table 7-4. Tariffs and margin of preference in PIS agriculture

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	0.00	0.00	n.a.	0.00	0.00	n.a.
Indonesia	5.12	0.37	5.81	5.29	0.23	5.75
Malaysia	1.61	0.31	7.90	1.06	0.27	8.30
Philippines	9.12	0.68	9.01	9.11	0.48	9.41
Singapore		0.00			0.00	
Thailand	16.78	0.09	22.02	17.98	0.07	24.05
Cambodia	15.31	5.35	12.19	10.92	0.30	11.77
Lao PDR	19.29	4.08	15.92	17.96	1.21	16.95
Myanmar	7.52	1.12	8.99	7.57	0.05	9.13
Viet Nam	13.91	2.88	15.05	13.56	0.13	15.81

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

Source: Authors' calculation from tariff information.

Figure 7-4. Number of non-zero ATIGA tariff lines in agriculture by year

Source: Authors' calculation from tariff information.

FIGURE 7-4 examines how the ATIGA tariffs were reduced in this sector. Most of the ATIGA tariffs had been eliminated in this sector by 2015 by all AMS except Lao PDR, which still had over 200 product lines at 5% ATIGA rate. Due to the high number of non-zero ATIGA tariffs, Lao PDR's margin of preference was 8 percentage points smaller than Thailand's even though both countries have similar average MFN rates. Cambodia, which had the highest number of non-zero tariff lines in 2011, brought them down quickly and had eliminated many of them by 2015.

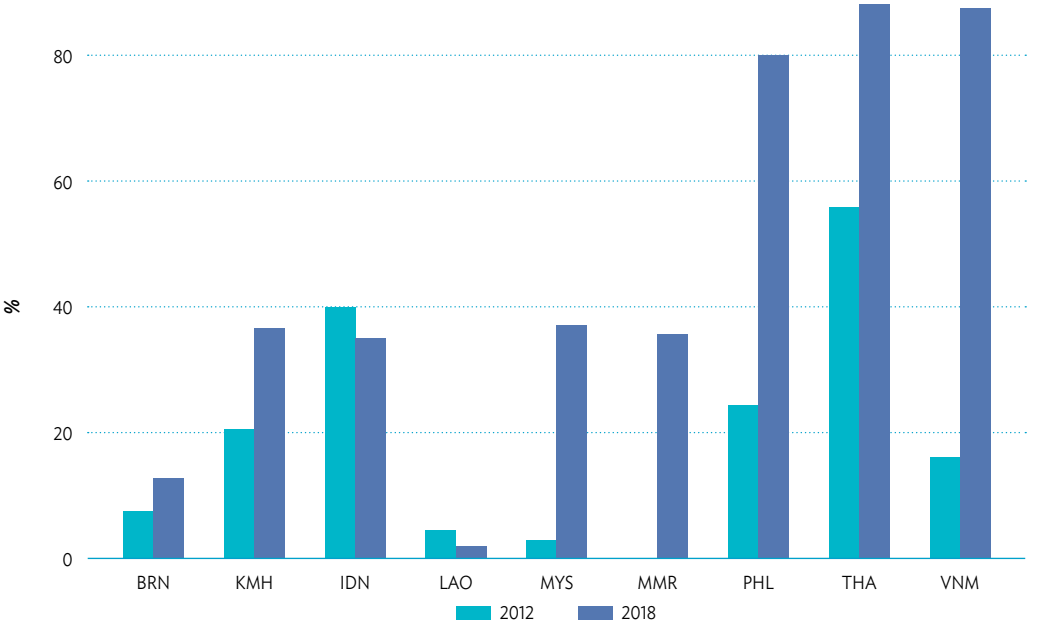
FIGURE 7-5 presents the FTA utilisation rates by AMS in this sector. FTA utilisation rates in agriculture increased dramatically between 2012 and 2018 in the Philippines, Thailand, and Viet Nam, and are amongst the highest of all AMS. Over 80% of imports in Thailand and Viet Nam products where the MOP is greater than zero were imported under ATIGA, which is an increase from around 20% in Viet Nam and the Philippines. FTA utilisation in Thai imports of agriculture products was already high at almost 60% in 2012. As expected, these are also the countries with the highest MOP afforded in this sector. In fact, the ASEAN share of the Philippines, Thailand, and Viet Nam rose somewhat between 2012 and 2018, which could partly be due to ATIGA. These countries had ASEAN shares in agriculture imports of 18%, 14%, and 13%, respectively, in 2012, which had increased to 20%, 19%, and 16%, respectively. This trend is oppositite to the one seen in the overall ASEAN share.

Cambodia, Indonesia, Malaysia, and Myanmar have close to 40% utilisation rates, with increased utilisation observed in Cambodia, Malaysia, and Myanmar. The MOP of these countries was around 10%. Utilisation rates remained lowest in Lao PDR, which is surprising given its high MOP. It is possible that this is due to a high cost of compliance related to trade procedures or the existence of some other scheme for this product, since 77% of their imports come from Thailand and another 10% from Viet Nam.

The growth in the Philippines' FTA utilisation is worth exploring further, given that there has been no discernible change in its tariff structure since 2010. The Philippines imported most of this sector's products in 2018 from Thailand and Viet Nam, with an FTA utilisation rate of about 80%. Back in 2012, Viet Nam had a much larger share in the Philippines' imports in this sector, but with a utilisation rate of only 19%. The strongest growth in Form D trade is posted by imports from Thailand, growing over 900% over this period, compared to 'only' a 500% growth in total imports. Furthermore, the FTA utilisation rate of Thai imports to Philippines were 13% in agriculture PIS products with zero MOP, 63% with moderate MOP, and 88% with MOP above 10%. Thus, trade in agriculture PIS between the Philippines and Thailand has growth swiftly since ATIGA came into force. Note that as a result of ATIGA, the Philippines brought down ATIGA tariffs in over 200 product lines in 2010 (when expressed in AHTN 2012 classification). In terms of AHTN 2007,

the Philippines had only 72% of tariff lines at ATIGA zero. This reduction may have played some role in growing ATIGA Form D trade. Overall, although many factors may have contributed to changing the structure of intra-ASEAN trade in agriculture, ATIGA could have played a part.

Figure 7-5. FTA utilisation rate in agriculture



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

D. Processed agriculture

Processed agriculture mostly includes products in HS chapters 15 to 24. This is a sector with very high MOPs in many AMS, as reported in **TABLE 7-5**. MFN tariffs remained above 17% for five AMS, but below 5% for three AMS. We note a sharp increase in MFN between 2010 and 2018 for Indonesia and Thailand. For Indonesia it was due to the MFN tariffs increase of products under chapter 16 (prepared foodstuffs) and some tariff lines under chapter 22 (alcoholic beverages). In case of alcoholic beverages, specific duties were applied in 2010, which were difficult to measure, but in 2018 high ad-valorem tariffs were applied (90%–150%). For Thailand, the increase in the average MFN tariffs were due to the MFN tariff increase of animal or vegetable fats (Chap 15), prepared or preserved fish or fish products (HS 1604), prepared or preserved vegetables, fruits and nuts (Chap 20), extracts, essences and concentrates of coffee (HS 2101), and unmanufactured tobacco (HS 2401). For Cambodia, Lao PDR, and Viet Nam, MOP has increased, as ATIGA tariffs

were reduced in 2012 for PIS products, and in 2015 for the rest. As a result, the MOPs in 2018 were close to or above 10% in all AMS except Brunei and Singapore, with four AMS having them at close to or above 20%.

Table 7-5. Tariffs and margin of preference in PIS processed agriculture

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	0.05	0.00	5.00	0.00	0.00	n.a.
Indonesia	7.93	0.41	7.46	18.27	0.09	9.19
Malaysia	4.70	0.30	9.72	3.68	0.27	9.22
Philippines	9.84	0.35	9.77	0.04	10.16	10.16
Singapore		0.00			0.00	
Thailand	16.39	0.00	30.09	23.35	0.00	27.61
Cambodia	16.15	5.00	12.21	17.75	0.00	18.93
Lao PDR	18.75	3.52	15.82	18.90	0.10	19.12
Myanmar	11.80	1.72	11.75	11.65	0.00	11.72
Viet Nam	25.88	4.98	21.45	24.97	0.22	24.69

Note: Average MOP is calculated by taking the difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

Source: Authors' calculation from tariff information.

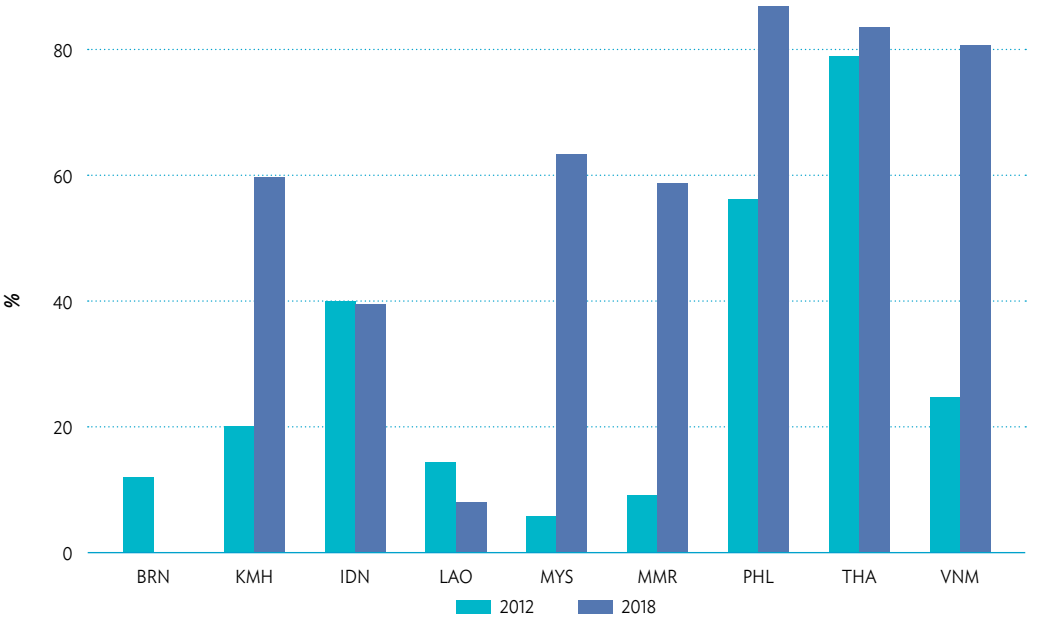
Figure 7-6. Number of non-zero ATIGA tariff lines in processed agriculture by year

Source: Authors' calculation from tariff information.

FIGURE 7-6 shows the ATIGA tariff reduction timeline, while FIGURE 7-7 shows the FTA utilisation rates in 2012 and 2018. In terms of ATIGA tariffs, almost all AMS had fewer than 200 tariff lines with non-zero rates by 2015, with further reductions in 2018. Especially, Cambodia, Lao PDR, and Viet Nam made rapid reductions between 2014 and 2015. As a result of high and rising MOP, FTA utilisation in processed agriculture was above 60% in 2018 in Cambodia, Malaysia, the Philippines, Thailand, and Viet Nam, with above 80% utilisation amongst the last three. While the Philippines and Thailand reported high utilisation as far back as 2012, for others this was a substantial increase. Lao PDR's low utilisation rate again stands out for being quite low despite the large MOP offered by its tariff structure. Again, the fact that 80% of imports to Lao PDR in this sector come from Thailand and the existence of the Thailand–Lao PDR FTA could be behind the low utilisation of ATIGA.

Malaysia's large increase in utilisation is noteworthy, despite little change in its MOP. Diving deeper into this, we note that Malaysia imports processed agricultural products mostly from Indonesia. In 2012, Indonesia accounted for 32% of Malaysia's global imports of processed food, mostly crude oil and cocoa. Between 2012 and 2018, there was a 10-fold increase Malaysia's Form D imports from Indonesia, while the total value of imports did not increase very much. This is the main reason behind Malaysia's overall high utilisation rates in processed food. However, because this trade is dominated by highly specialised products, it is not clear to what extent ATIGA helped stimulate new trade.

Figure 7-7. FTA Utilisation rate in processed agriculture



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

E. Electronics

The 1,129 tariff lines classified under electronics (in AHTN 2012 version) came mostly from HS chapter 84 and 85 (75% of electronics PIS tariff lines belonged to these two chapters), and from chapter 90 (comprising 10% of the tariff lines in this PIS sector). **TABLE 7-5** shows this sector's tariff structure. The electronics sector has some of the lowest MFN tariffs in ASEAN – around or below 10%, except for Cambodia. Cambodia's products that have high MFN tariffs are mostly household electronic appliances. There was a sharp decline in MFN tariffs in Brunei on electrical equipment (chap 84), electrical machineries (chap 85) and, photographic equipment (chap 90).

ATIGA tariffs were completely eliminated by CLMV between 2010 and 2018. Although the average MFN tariffs in ASEAN are already below 10%, the average MOPs of Malaysia, Thailand, Cambodia, and Viet Nam are above 10%. Products that have high MOP in Malaysia include air conditioning machines, refrigerators and freezers, reception apparatus for television, and insulated wire, cable, and other insulated electric conductors. In **Thailand** these are air conditioning machines, refrigerators and freezers, electro-mechanical domestic appliances, and electro-thermic appliances of a kind used for domestic purposes. Cambodia has many more products with high MFN tariffs. In Viet Nam, fans, air conditioner, refrigerators, sound recorders, video recorders, and radio-broadcast receivers have high MOP.

Nonetheless, in the few remaining tariff lines where MOP is present, the average tariff rates are quite high, leading to above 10% MOPs in Cambodia, Malaysia, Thailand, and Viet Nam. Interestingly, Malaysia's MOP is higher than Cambodia's, even though the latter has higher average MFN rates. This is because only a few product lines in Malaysia have a MOP, and those have very high MFN tariffs. On the other hand, Cambodia has many tariff lines with a gap between MFN and ATIGA tariffs, but they are small on average. As depicted in **FIGURE 7-8**, the electronics sector was fully liberalised quickly under ATIGA, with the number of tariff lines with non-zero tariff having been

Table 7-6. Tariffs and margin of preference in PIS electronics

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	10.47	0.00	14.15	0.11	0.00	5.00
Indonesia	4.67	0.00	7.71	5.67	0.00	7.63
Malaysia	3.77	0.00	14.91	4.34	0.00	16.87
Philippines	3.41	0.00	4.63	3.31	0.00	5.69
Singapore		0.00			0.00	
Thailand	5.97	0.00	8.19	5.47	0.00	10.76
Cambodia	16.30	4.15	12.54	14.27	0.00	15.55
Lao PDR	7.74	0.20	7.54	7.88	0.00	7.88
Myanmar	4.18	1.00	4.46	4.06	0.00	4.11
Viet Nam	6.20	1.50	11.72	6.71	0.00	14.13

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

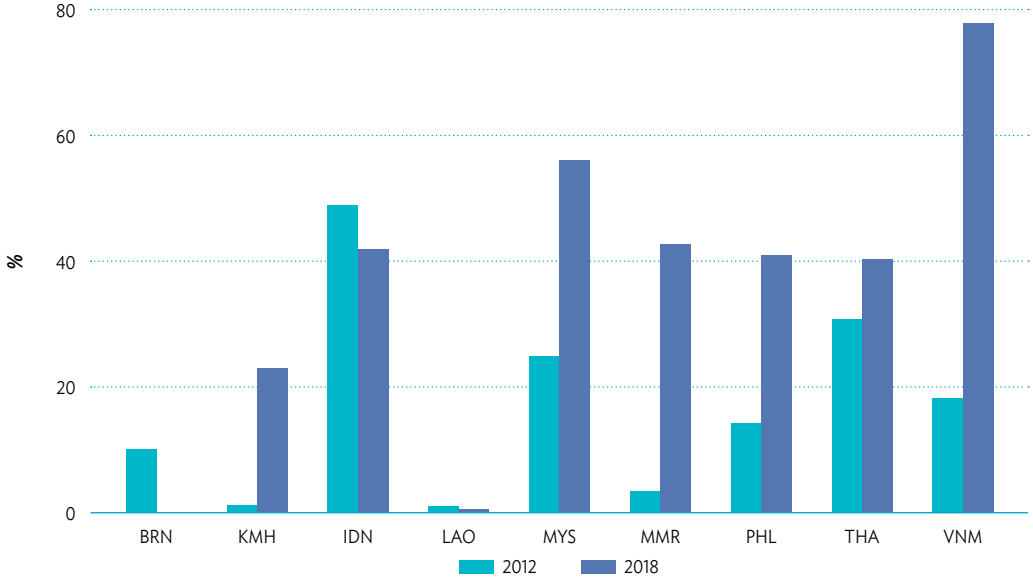
Source: Authors' calculation from tariff information.

Figure 7-8. Number of non-zero ATIGA tariff lines in electronics by year

Source: Authors' calculation from tariff information.

In electronics, FTA utilisation remains around or below 40% for the majority of AMS. Viet Nam reported the highest utilisation rates, reaching almost 80%, which is consistent with its high MOP in this sector. Malaysia's utilisation rate is above 50%, also consistent with its high MOP. Cambodia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam have registered significant increases in utilisation rates over time. We observe a slight decline in Indonesia's utilisation rates. There is also some variation in utilisation rates by source of the imports. Electronics coming from Cambodia and Indonesia had the highest utilisation rates at close to 60% in 2018, while imports from Thailand had a utilisation rate of 43%. Indonesia and Thailand in particular have a higher share of exports under Form D (12% and 51%, respectively) compared with their share of all exports (4% and 22%, respectively). In other words, Thai Form D exports of electronics account for over half of all electronics trade under Form D in ASEAN. On the other hand, while Singapore's electronics export account for as much as 35% of total exports by AMS to other AMS, it accounts for less than 2% of Form D exports. This is likely because the two countries specialise in exporting different types of electronics components to other AMS. Thirty-two percent of Singapore's exports to other AMS comprises of HS Sub-heading 8542, where Form D utilisation is zero percent, while for Thailand this product only comprises 16% of its exports. Other major exports of Indonesia in this PIS sector enjoy high FTA utilisation rates. This is because the HS Sub-heading 8542 comprises products that have zero MFN tariff.

Figure 7-9. FTA Utilisation in electronics sector



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

F. Automotive

Over 95% of the 728 tariff lines in this sector came from HS chapters 84, 85, and 87, while a few products from HS chapters 40 and 73 are also included. The tariff rates and MOP of this sector is presented in **TABLE 7-7**. Automotive is the sector with some of the highest MOP due to ATIGA tariff elimination and very high MFN tariffs. It is also the sector with the highest number of tariff lines with high MFN tariffs and zero ATIGA tariffs. In automotive, while the ATIGA tariffs have already been eliminated in all countries, except for Viet Nam, the MFN tariffs remain very high – at above 15% in most countries. MFN tariffs of automotive products increased from 2010 to 2018 for all countries except Brunei Darussalam and the MOPs are above or close to 10% for all AMS except Brunei, which has eliminated all of its MFN tariffs, so the MOP is zero. Automotive products do not only include vehicles but also its components such as tyres, tubes (chap 40), chains, and springs (Chap 73). However, car windshields (7007.11 – glass suitable for vehicles) are not included in the automotive sector. In the automotive sector, the very high MFN tariffs are mostly on the complete built-up (CBU) vehicles under headings 8702–8705. This high MOP could provide a continuing advantage for ASEAN as an attractive investment destination for automotive manufacturers to build factories in ASEAN countries.

Table 7-7. Tariffs and margin of preference in PIS automotive

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	8.95	0.00	18.78	0.00	0.00	n.a.
Indonesia	15.66	0.00	19.00	23.70	0.00	25.20
Malaysia	15.68	0.00	20.09	18.51	0.00	22.40
Philippines	12.28	0.00	12.28	18.67	0.00	19.12
Singapore		0.00			0.00	
Thailand	28.61	0.00	29.11	35.60	0.00	37.31
Cambodia	17.54	4.81	13.60	20.29	0.00	22.73
Lao PDR	17.41	5.68	12.03	24.78	0.00	24.79
Myanmar	7.51	1.83	9.78	11.70	0.00	11.71
Viet Nam	28.22	12.13	20.37	31.83	0.00	34.60

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

Source: Authors' calculation from tariff information.

As shown in **FIGURE 7-10**, liberalisation of the automotive sector occurred in 2012 in Cambodia and Myanmar. Lao PDR and Viet Nam reduced ATIGA tariffs to zero in 2012 in some of their product lines, but over 200 over of them remained without zero rates at that time. In 2015, Lao PDR reduced its tariff rates on more products, while Viet Nam's reductions came mostly in 2018. In 2017, 437 tariff lines had non-zero ATIGA tariffs in Viet Nam, 110 tariffs were at 15% ATIGA tariffs, and another 77 were set at 30%. ATIGA rates were unspecified in the remaining tariff lines of this sector. By 2018, an equivalent of 615 tariff lines had ATIGA zero tariffs (after tranposition of 2018 rates from AHTN 2017 to AHTN 2012 for consistency) while the rest were classifed under CKD or GEL.[12]

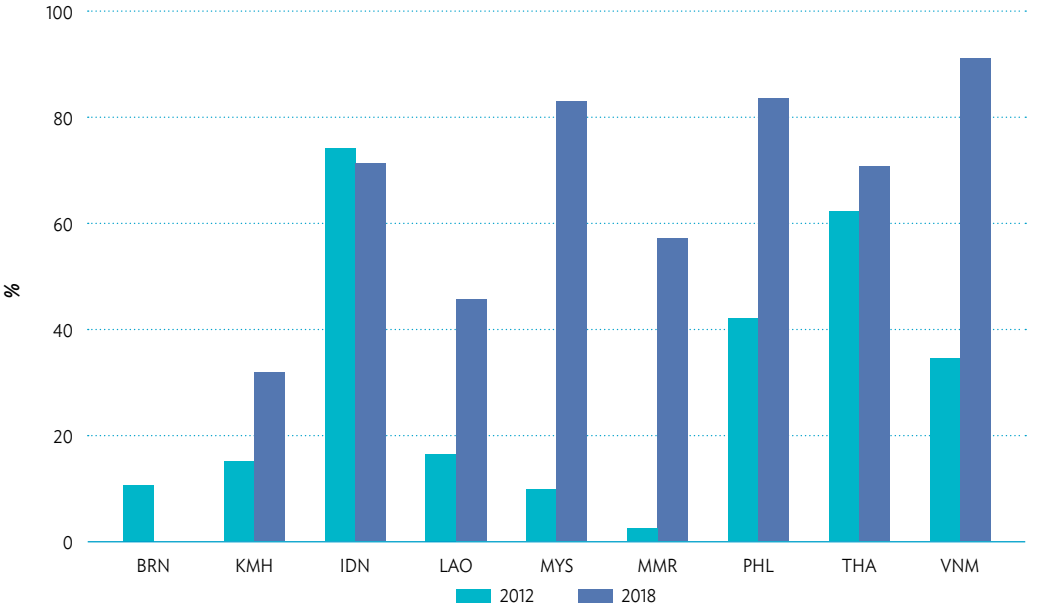
Figure 7-10. Number of non-zero ATIGA tariff lines in automotive by year

Source: Authors' calculation from tariff information.

As a result of the high MOP, FTA utilisation rates are quite high in this sector for all AMS except Brunei. Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, have utilisation rates above 60%, which has meant a sharp incrase in Malaysia and Viet Nam since 2012. Myanmar's utilisation rate is also approaching 60%, after being almost non-existent in 2012. Cambodia and Lao PDR are also showing increased FTA utilisation rates in this sector.

[12] In the AHTN 2017 classification, 949 out of 1,194 of Viet Nam's automotive tariff lines had zero ATIGA tariff.

Figure 7-11. FTA Utilisation in automotive



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

G. Textiles and apparel

The tariff lines of the PIS textiles & apparel sector mostly come from HS Chapters 50–63, with significant numbers coming from Chapters 52, 61, and 62. This sector is one of the key growth areas for ASEAN, espcially for Cambodia, Lao PDR, Myanmar, and Viet Nam. The exports of these countries grew very rapidly between 2012 and 2018. Especially for Cambodia, export growth to ASEAN has increased much faster than export growth everywhere. As summarised in **TABLE 7-8**, MOPs have stayed high in the textiles and apparels sector and most of them had increased by 2018 compared with 2010. In the textiles and apparel sector, MFN tariffs for Indonesia, Thailand, and Viet Nam have increased between 2010 and 2018, and now are well above 10% or close to 15%. For Indonesia, the increase of average MFN tariffs was due not only to the actual tariff increase but also a result of a transposition process where some of the tariff lines with high tariff in 2018 (in AHTN 8 digit) could not be measured in 2010 because they were a combination of different tariffs at 10-digit level. For Thailand, the increased tariffs were on carpets (HS 5702) and for Viet Nam the increased tariffs were merely due to the result of the transposition exercise to the updated AHTN version. Malaysia's MFN tariffs have declined significantly due to the MFN tariff elimination on products under Chapters 61–63. MFN tariffs of more than 53% of total tariff lines in this sector for Malaysia had already been at 0% in 2018, so average MFN tariffs are relatively low, yet the average MOP

is relatively high. On the contrary, Brunei's MFN remains low and close to zero. There is not much change in MOP for the remaining AMS. **FIGURE 7-12** depicts the trend in liberalisation of ATIGA tariffs in this sector, which had been mostly done by 2012. Viet Nam further liberalised in 2015 by pushing the number of tariff lines with non-zero tariffs below 100.

Table 7-8. Tariffs and margin of preference in PIS textiles and apparel

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	0.65	0.00	5.93	0.45	0.00	6.48
Indonesia	10.57	0.00	10.65	15.33	0.00	15.43
Malaysia	11.77	0.00	15.38	6.21	0.00	13.39
Philippines	10.75	0.00	10.78	10.89	0.00	10.95
Singapore		0.00			0.00	
Thailand	12.11	0.00	18.12	15.10	0.00	15.53
Cambodia	13.87	4.99	11.70	8.29	0.00	9.86
Lao PDR	9.30	0.29	9.01	9.30	0.00	9.30
Myanmar	10.91	0.85	10.82	11.27	0.00	11.30
Viet Nam	12.32	4.05	9.87	12.64	0.00	13.72

Note: Average MOP is calculated by taking the difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

Source: Authors' calculation from tariff information.

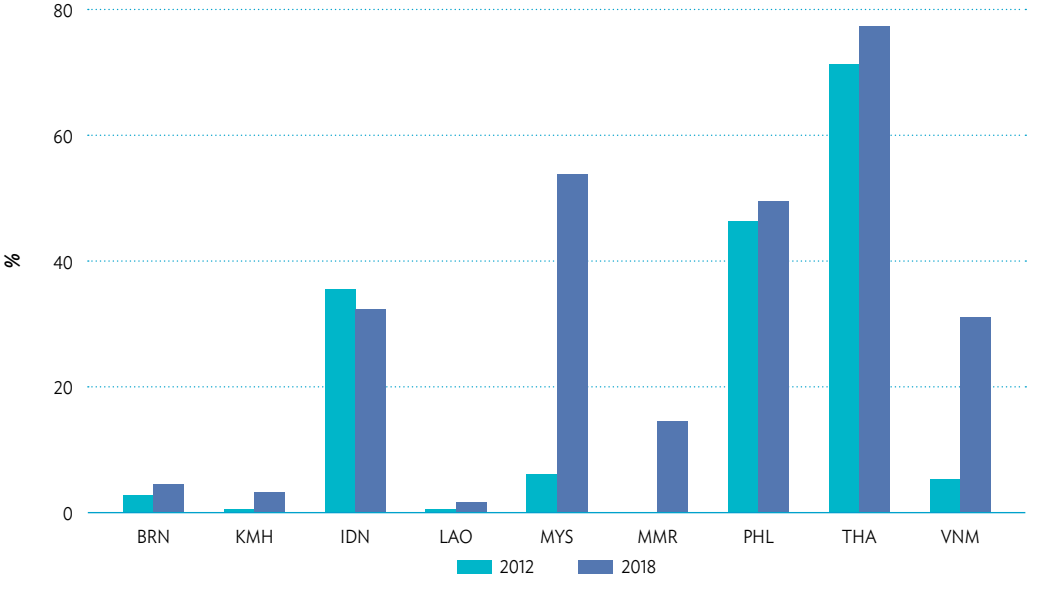
The FTA utilisation rates in textile and apparel sector, shown in **FIGURE 7-13**, remains low with only three AMS – Malaysia, Philippines, and Thailand – reporting rates over 40% in 2018. This could be related to the fact that inputs for this sector mostly originate in non-ASEAN countries, especially China, and trade within ASEAN could be utilising one of the ASEAN Plus One FTAs. It is important to note that ROO on textiles and apparel is one of contentious sectors in FTA negotiations, not only in ATIGA but also in the ASEAN Plus 1 FTAs, when product-specific rules were adopted as alternative origin criteria for the regional value content. An enhancement of the ATIGA ROO on textiles and apparel could benefit ASEAN in facilitating trade and expanding the production networks in the region.

As a case in point, FTA utilisation in Malaysia's imports varies by source country, with imports from Indonesia, Lao PDR, and Thailand having high rates of FTA utilisation, whereas those from Cambodia, Myanmar, and Viet Nam had very low FTA utilisation in 2018. This is likely due to the fact that the latter three countries used imported inputs from China in this sector and made use of the ASEAN–China FTA rather than ATIGA.

Figure 7-12. Number of non-zero ATIGA tariff lines in textiles and apparel by year

Source: Authors' calculation from tariff information.

Figure 7-13. FTA Utilisation in textile and apparel sector



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

H. Fisheries

Most of the fisheries PIS sector comes from HS Chapters 3 and 16. The tariff structure of AMS in this sector is given in **TABLE 7-9**. Cambodia and Lao PDR still have some products for which ATIGA tariffs have not been eliminated. Those products are freshwater fish fry for Lao PDR and not for breeding fish fry for Cambodia. These products are under the Sensitive List (Schedule D) where the end rates are at 5%. Most of the products were set to zero ATIGA tariffs by 2012, as shown in FIGURE 7-14. MFN tariffs of products in this sector are above 10% in Thailand, Cambodia, Lao PDR, and Viet Nam; above 6% in Indonesia; below 10% in the Philippines and Myanmar; and below 1% in Malaysia and 0% in Brunei Darussalam. Regarding MOP, Thailand, Cambodia, Lao PDR, and Viet Nam have their MOP above 12%, while that of Indonesia, Malaysia, Philippines and Myanmar is between 6% and 10%.

Table 7-9. Tariffs and margin of preference in PIS fisheries

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	0.00	0.00	n.a.	0.00	0.00	n.a.
Indonesia	5.39	0.00	5.73	6.06	0.00	6.26
Malaysia	2.26	0.00	9.48	0.79	0.00	8.87
Philippines	8.78	0.00	8.78	9.40	0.00	9.44
Singapore		0.00			0.00	
Thailand	8.88	0.00	10.48	10.34	0.00	15.71
Cambodia	19.25	5.07	14.82	14.62	0.02	14.98
Lao PDR	14.00	0.48	13.58	12.65	0.01	12.64
Myanmar	7.77	1.40	7.74	8.02	0.00	9.27
Viet Nam	16.26	4.86	17.30	15.17	0.00	17.53

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

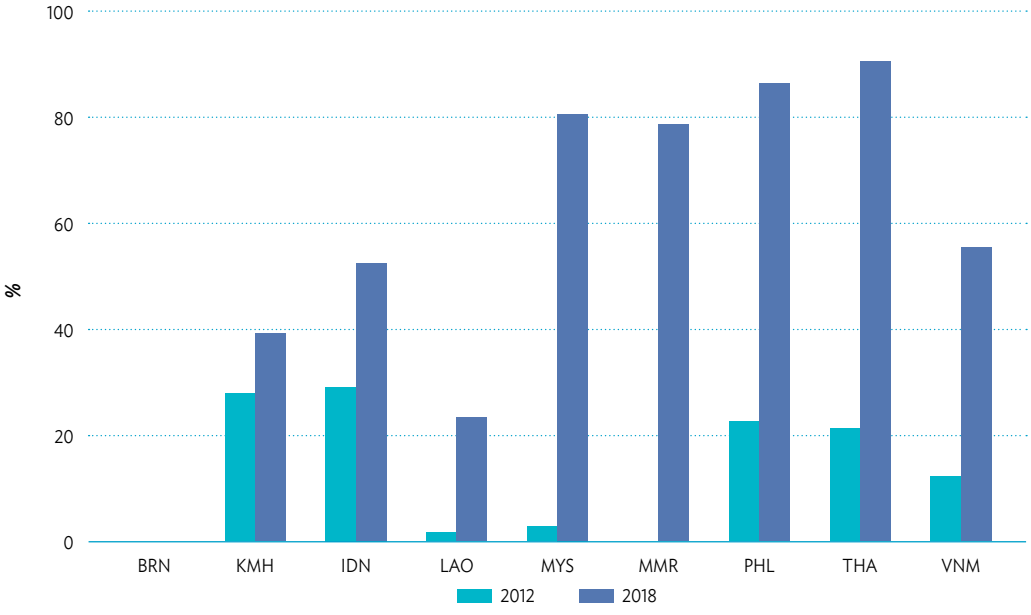
Source: Authors' calculation from tariff information.

Figure 7-14. Number of tariff lines in fisheries with non-zero ATIGA tariffs by year

Source: Authors' calculation from tariff information.

FTA utilisation fisheries is shown in **FIGURE 7-15**. It is found to be high in many AMS, with four AMS at or above 50%. Consistent with the high MOP offered by Thailand, it also has the highest utilisation rate. Even though the Philippines' MOP is half that of Thailand, its utilisation rate is almost the same. Malaysia's and Myanmar's utilisation have increased markedly to be amongst the top AMS with the highest utilisation rates. Both AMS offered a little less than 10% MOP, which has not changed much since the early 2000s. Viet Nam's utilisation rate is low given it has the highest MOP in this sector.

Figure 7-15. FTA Utilisation in fisheries



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

I. Healthcare

The products under healthcare PIS come from a slightly more diverse set of HS chapters, most of them from Chapters 29, 30, and 33, but some also from Chapters 90, 12, and 34. The tariff structure of this sector is shown in **TABLE 7-10**. In the healthcare sector, MFN tariffs are relatively low. The highest MFN tariffs in 2018 are in Lao PDR, which is slightly above 8%. For Malaysia, even though the average MFN tariffs are very low – below 1% – the MOP in 2018 is very high and the highest amongst AMS. This is because the MFN tariffs of most of healthcare products in Malaysia have already been eliminated. In Malaysia, MFN tariffs of 396 tariff lines out of total 417 tariff lines in the healthcare sector have already been eliminated. In this sector, increased MOPs are seen in Indonesia, Malaysia, the Philippines, Thailand, Cambodia, and Lao PDR. Thailand has the sharpest increase in the MOP, from 6.75% to 12.02%. This was because the measurable number of tariff lines decreased from 263 in 2010 to 158 in 2018 and most of the reduced tariff lines are those that have low MOP. This sector has relatively few products, and most of the ATIGA tariffs had been eliminated by 2012, as shown in **FIGURE 7-16**.

Table 7-10. Tariffs and margin of preference in PIS health care

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	1.60	0.00	12.33	0.13	0.00	5.00
Indonesia	4.31	0.00	5.99	5.43	0.00	6.73
Malaysia	0.86	0.00	15.56	0.60	0.00	16.33
Philippines	3.00	0.00	3.02	3.02	0.00	3.16
Singapore		0.00			0.00	
Thailand	5.35	0.00	6.75	4.84	0.00	12.02
Cambodia	7.31	3.00	6.02	6.62	0.00	10.07
Lao PDR	7.52	1.29	6.56	8.03	0.00	7.98
Myanmar	2.63	0.92	2.75	2.63	0.00	2.71
Viet Nam	4.27	1.04	12.34	3.45	0.00	10.27

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

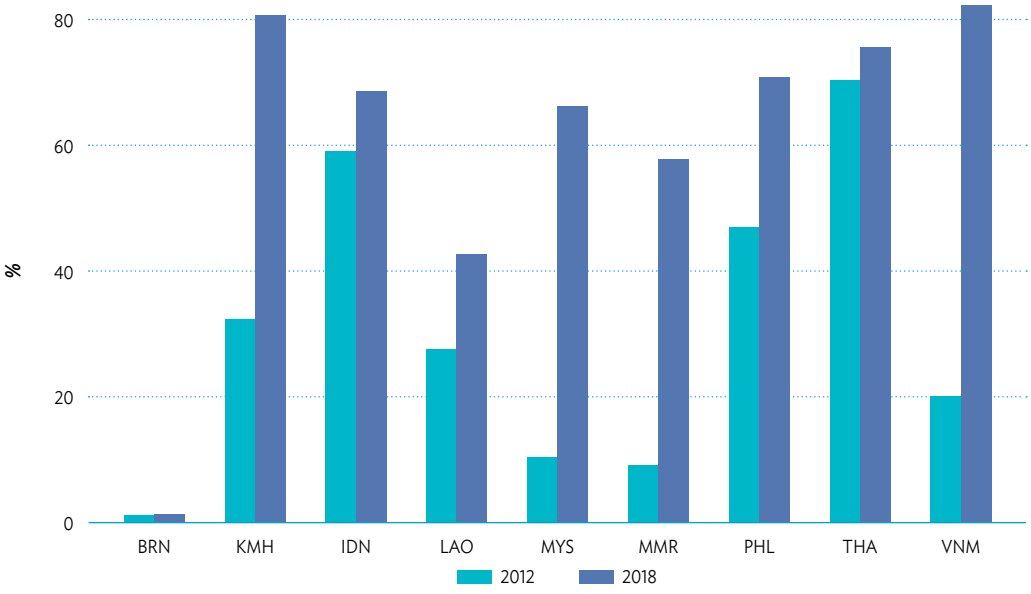
Source: Authors' calculation from tariff information.

Figure 7-16. Number of tariff lines in health sector with non-zero ATIGA tariffs by year

Source: Authors' calculation from tariff information.

FTA utilisation rates for this sector are shown in **FIGURE 7-17**. They are quite high in health-care related sectors, although it is not amongst the highest MOP sectors. All AMS except Brunei reported utilisation rates above 40%, with six AMS having utilisation rates above 60%. For Cambodia, this is the sector with one of the highest FTA utilisation rates, although it ranks fourth in the MOP offered for products in this sector (still substantially high at 10%). Malaysia (with the highest MOP) and Viet Nam have seen a three-fold increase in utilisation rate since 2012.

Figure 7-17. FTA Utilisation in healthcare related sector



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information.

J. Rubber-based products

Rubber-based products also come from various HS Chapters, mainly from Chapters 40, 64, and 85. Their tariff structure is shown in **TABLE 7-11**. For rubber-based products, the MFN tariff for Brunei has gone down significantly as its MOP has fallen sharply. The strong decrease in the average MFN tariff for Brunei was due to the tariff elimination of rubber-based products, such as tyres and inner tubes (HS 4011–4013) and insulated wire/cable (HS 8544). The average MFN tariff in Malaysia is 15.64%, which is the highest amongst AMS. The highest MOP is 20.54% which is also in Malaysia. The average MFN tariffs of five AMS, i.e. Indonesia, Malaysia, Thailand, Cambodia and Viet Nam, are above 11% and the rest are below 9%. The MOP of these AMS are also 12% and the rest are below 9%. The average of Cambodia's MFN tariffs has fallen but the MOP has increased. The

decrease in the MFN tariff was due to the reduced or eliminated tariffs of some rubber-based products such as bedding (9404), puzzles, and skipping rope (HS 9503). The MOP increase in Cambodia was due to the ATIGA tariff elimination of all products in the rubber-based sector from 5% in 2010. ATIGA tariff reductions in this sector are depicted in **FIGURE 7-18**. Many of the products were liberalised in 2012, and the rest in 2015. Viet Nam still has some products in this sector with non-zero ATIGA tariff.

Table 7-11. Tariffs and margin of preference in PIS rubber-based products

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	8.46	0.00	15.13	0.93	0.00	5.32
Indonesia	10.92	0.00	11.42	11.16	0.00	12.15
Malaysia	17.63	0.00	21.55	15.64	0.00	20.54
Philippines	7.19	0.00	7.39	7.35	0.00	7.73
Singapore		0.00			0.00	
Thailand	11.82	0.00	12.00	11.86	0.00	12.41
Cambodia	15.01	4.75	10.78	12.64	0.00	13.38
Lao PDR	9.14	0.73	8.50	8.56	0.00	8.56
Myanmar	4.22	1.98	4.22	4.28	0.00	4.31
Viet Nam	14.86	2.02	14.04	12.90	0.00	13.74

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

Source: Authors' calculation from tariff information.

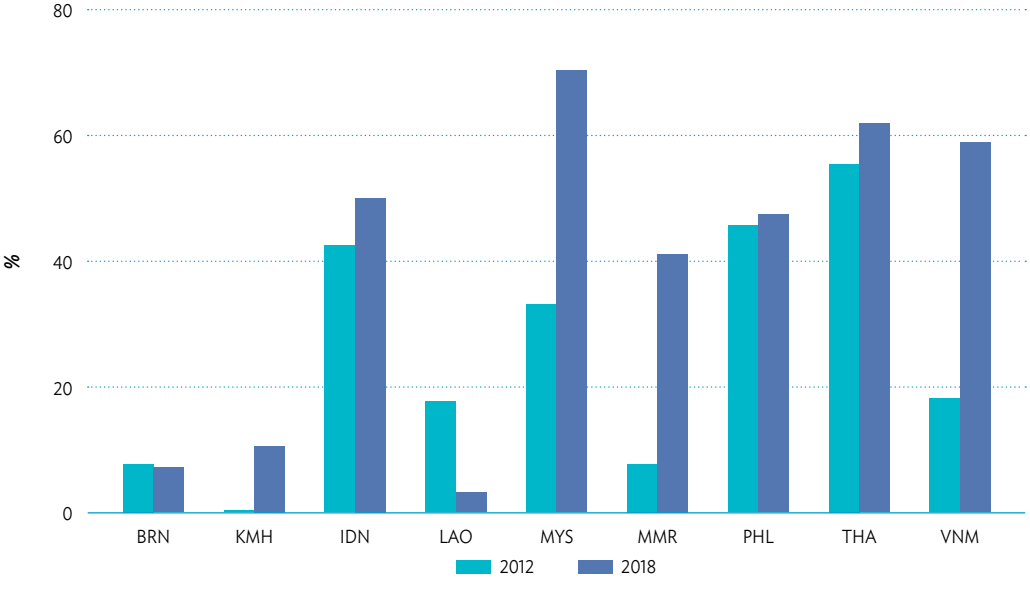
FTA utilisation rates are shown in **FIGURE 7-19**. It was above 40% in six of the nine AMS, with Viet Nam showing the biggest increase since 2012. Malaysia, which has the highest MOP in this sector, also reports the highest FTA utilisation rate, which has doubled since 2012. Brunei, Cambodia, and Lao PDR, despite their high MOPs, have not seen much change in FTA utilisation rates.

Malaysia's Form D imports in 2018 mostly come from three countries – Indonesia, Thailand, and Viet Nam, which together comprise over 95% of total Form D imports. The overwhelming share is from Thailand at 62%. This marks a drastic shift from 2013, when Singapore was the most important Form D exporter to Malaysia (accounting for 57%). At the time, Thailand's share was only 24% while Viet Nam's was less than 1%. There has been a shift in FTA utilisation rates of individual source countries as well. Viet Nam's share in total imports of Malaysia increased from 8% in 2012 to 22% in 2018 and its utilisation rate increased from 1% to 30%. During the same period, the utilisation rate of imports from Thailand increased from 19% to 80% and that of Indonesia increased from 21% to 58%.

Figure 7-18. Number of tariff lines in rubber-based sector non-zero ATIGA tariffs by year

Source: Authors' calculation from tariff information.

Figure 7-19. FTA Utilisation in rubber-based sectors



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information

K. Wood-based products

The products classified under PIS wood-based sector come overwhelmingly from HS Chapter 44. The tariff structure of AMS is summarised in **TABLE 7-11**. For wood-based products, the average MFN tariffs for all countries have slightly changed except for Brunei, where it fell significantly from 13.33% in 2010 to 3.64% in 2018. The significant decrease in Brunei's average MFN tariffs was due to a MFN tariff reduction from 20% in 2010 to 5% in 2018 for wood products such as wood sawn or chipped, particle board, etc. The slight change in the average MFN tariffs of other countries was a result of the AHTN transposition exercise. In 2018 Lao PDR had the highest average of MFN tariffs, at 40%, as well as the highest MOP. One tariff line of wood product in Malaysia also had a MFN tariff of 40%. It should also be noted that Malaysia's MFN tariffs in half the tariff lines of this sector were already at 0% in 2018, so that the average MOP is relatively high, but the average MFN is relatively low. MOP of five AMS are above 10% and the rest below 9%. As shown in **FIGURE 7-20**, Cambodia had liberalised its ATIGA tariffs by 2012, while Lao PDR's liberalisation occurred in 2015.

Table 7-12. Tariffs and margin of preference in PIS wood-based products

	2010			2018		
	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA	Average MFN Tariffs	Average ATIGA Tariffs	Average MOP where MFN>ATIGA
Brunei D.	13.33	0.00	18.42	3.64	0.00	5.00
Indonesia	4.76	0.00	8.84	4.58	0.00	8.64
Malaysia	10.00	0.00	20.00	9.23	0.00	19.42
Philippines	8.39	0.00	8.39	8.05	0.00	8.05
Singapore		0.00			0.00	
Thailand	8.79	0.00	9.05	6.43	0.00	8.54
Cambodia	10.58	5.00	5.58	10.49	0.00	10.49
Lao PDR	26.14	1.63	24.51	25.30	0.00	25.30
Myanmar	12.57	1.77	12.33	12.99	0.00	12.99
Viet Nam	7.94	1.81	11.00	7.74	0.00	13.67

Note: Average MOP is calculated by taking a difference between MFN and ATIGA rates for tariff lines where MFN is greater than ATIGA and taking an average across these product lines, whereas all tariff lines are used to calculate average MFN and average ATIGA. Hence, average MOP does not equal (average MFN – average ATIGA).

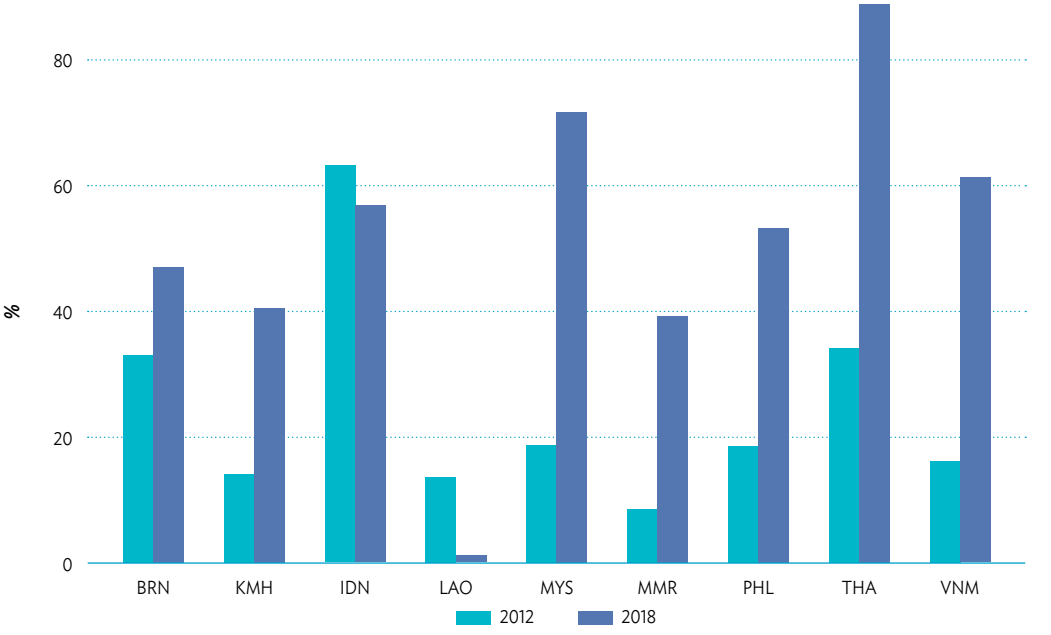
Source: Authors' calculation from tariff information.

Figure 7-20. Number of tariff lines in wood-based sector with non-zero ATIGA tariffs by year

Source: Authors' calculation from tariff information.

FTA utilisation rates in wood-based products, shown in **FIGURE 7-21**, are also at or above 40% for the majority of the AMS, with all AMS except Lao PDR showing an increase since 2012. The highest utilisation rate is found in Thailand, with over 80% of the imports from ASEAN coming under ATIGA preference, conditional on having a positive margin of preference. Malaysia's utilisation rate is also very high. Lao PDR's low utilisation again is puzzling given the high MOP. The majority of its imports of this sector come from Viet Nam which had an 83% share in 2018 while Thailand had the remaining 17%. However, there was virtually no Form D trade from Viet Nam, while imports from Thailand had utilisation rates of over 6%. This is despite the fact that the main import under wood at 4-digit subheading is 4401, which has an MOP of 10%. So, it is unclear why the utilisation rate is low. There may be other bilateral agreements governing trade between the two countries in this sector or it may be a result of high cost of compliance.

Figure 7-21. FTA Utilisation for wood-based products



Note: Percentage is calculated with total intra-regional imports excluding tariff lines where MOP less than or equal to zero.

Source: Authors' calculation from tariff information

L. Conclusion

The analysis is this section has shown the various levels of MFN tariff protection afforded to various sectors. In highly protected sectors, ATIGA has increased the MOP, thus providing opportunities for expansion of intra-ASEAN trade. And we do find some cases of growing intra-ASEAN trade, for example the case of agriculture imports by the Philippines from Thailand. However, the largest PIS sector in terms of import volume – electronics – also happens to be the one with some of the lowest MFN tariffs in the region. This is to be expected as electronics is highly integrated with the global value chain and a large part of this product group falls under the International Technology Agreement (ITA) which accords duty free MFN treatment.

There are some cases where utilisation seems low in the context of high MOP afforded by some AMS. This could because of the presence of other costs of compliance in these sectors which may be preventing firms from availing themselves of ATIGA preference. Another possibility is that other bilateral FTAs or Plus One FTAs are being used to trade due to use of inputs from non-AMS countries or that these goods are imported into Economic Zones which are allowed duty free importation. If the reason for low utilisation is high cost of compliance, these cases need to be examined more carefully to implement

reforms in the implementation of ATIGA. If sourcing of input is the main reason and use of alternative FTA is a further reason, there is little cause for concern. However, sourcing decisions could be related to lack of supply within ASEAN or other inefficiencies that may need to be mitigated. A more thorough analysis looking at trade between particular products within this sector amongst two or more trade partners to investigate the presence of any barriers that can be mitigated may be needed.

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This report is an outcome of ERIA's quantitative assessment of the impact of the ASEAN Trade in Goods Agreement (ATIGA) on intra-ASEAN trade. The study was conducted according to the mandate given by the ASEAN Coordinating Committee on ATIGA (CCA) and with support from the ASEAN Member States, who shared relevant trade and tariff data. The assessment of the performance of ATIGA is conducted through a descriptive analysis of tariff liberalization, examination of the margin of preference (MOP) between ATIGA and Most Favored Nation (MFN) tariffs, ATIGA utilization rates, and econometric analysis using the gravity model. As a direct consequence of ATIGA, tariffs on intra-ASEAN trade have been reduced to zero for almost all tariff lines. However, only a subset of these tariff lines offers a margin of preference high enough to incentivize firms to utilize ATIGA when trading within ASEAN. Furthermore, the cost of compliance with ATIGA provisions reduces the likelihood of utilization when MOP is low. Due to these reasons, the impact of ATIGA is limited to certain sectors and products where MOP remains high (due to high MFN tariffs). In addition, assessing the effectiveness of ATIGA by examining the relative growth of overall intra-ASEAN trade would be misleading due to reliance of AMS on imports from non-AMS, especially China and Japan, to produce their imports, and availability of many other preferences such as the ASEAN Plus One FTAs.

Our quantitative analysis finds that utilization rate of ATIGA, which is defined as the percentage of imports under ATIGA preference out of total imports of products that have positive MOP, is increasing in those products and sectors where MFN tariffs remain high. These include agriculture and automotive sectors. The gravity estimates done at the (HS 3 digit) product level show that only a handful of products have positive coefficient on ATIGA, indicating trade creation effect of ATIGA in only selected sectors. However, the trade creation effect is larger in products where utilization rates of ATIGA is greater due to higher MOP. The larger priority integration sectors (PIS) where ATIGA utilization has increased markedly include agriculture, processed agriculture, and automotive.

As AMS further liberalize their economies unilaterally and as new multilateral agreements (e.g RCEP) come into force, ATIGA needs to be updated to remain relevant. The key focus of reform should be on reducing the cost of compliance by, among other things, revamping the rules of origin or procedures for issuance of the certificates of origin. This would ensure that even small margins offered by ATIGA continue to be valuable to traders. Furthermore, the sectors where ATIGA is most effective due to high MOP are those where small and medium enterprises (SME) are involved. So, ATIGA can continue to be an important driver of SME engagement in intra-ASEAN trade. But to ensure ATIGA's success in doing so, specific information on barriers to utilization of ATIGA by these firms needs to be collected and underlying issues addressed.

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