CHAPTER 5

Analysis of Tariff Changes

August 2021

This chapter should be cited as:
ERIA Study team (2021), 'Analysis of Tariff Changes', in ERIA (eds.), *Impact of the ASEAN Trade in Goods Agreements (ATIGA) on the Inter-ASEAN Trade*. Jakarta: ERIA, pp.43-70.

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

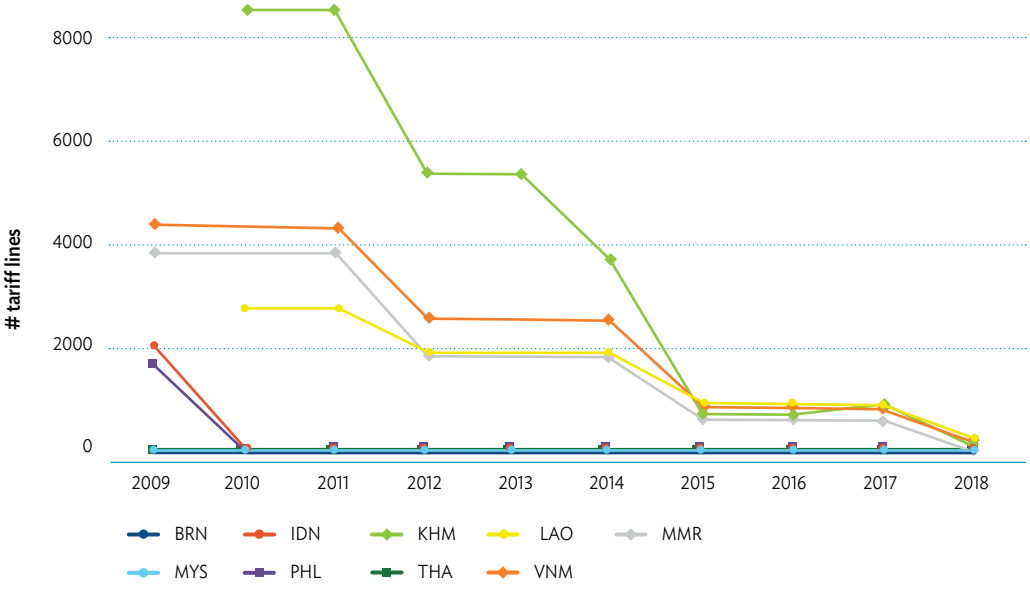
	2009 (AHTN 2007)	2010 (AHTN 2007)	2014 (AHTN 2007)	2015 (AHTN 2007)	2018 (AHTN 2007)
Brunei D.	87.22	99.07	99.27	99.27	99.20
Indonesia	78.97	98.72	98.87	98.87	98.83
Malaysia	82.34	98.69	98.74	98.74	98.64
Philippines	81.89	98.63	98.62	98.62	99.21
Singapore	100.00	100.00	100.00	100.00	100.00
Thailand	80.04	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.

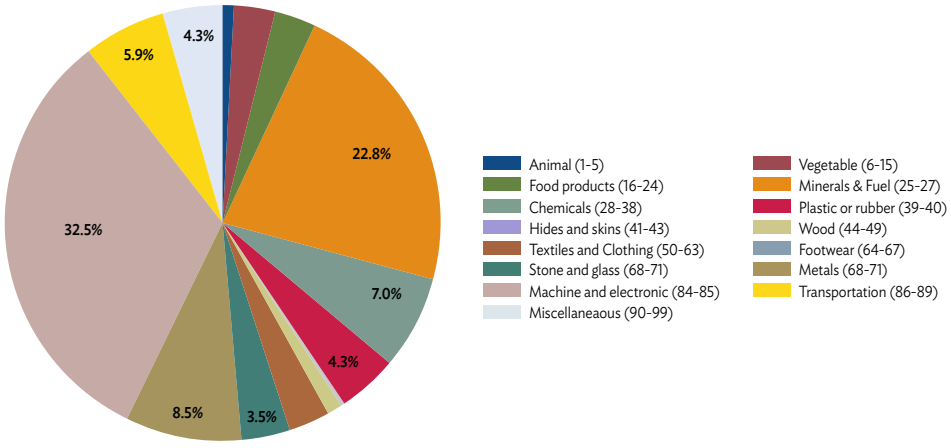
Source: Authors' calculation from tariff data.

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



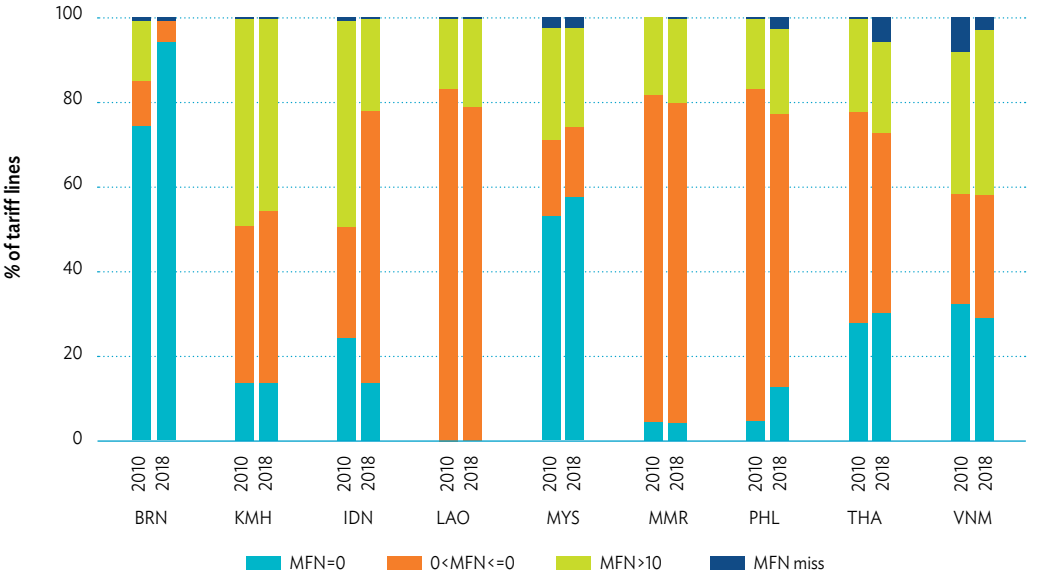
Note: Sectoral classification of HS Chapters follows World Bank WITS. Chapter numbers indicated in bracket.

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

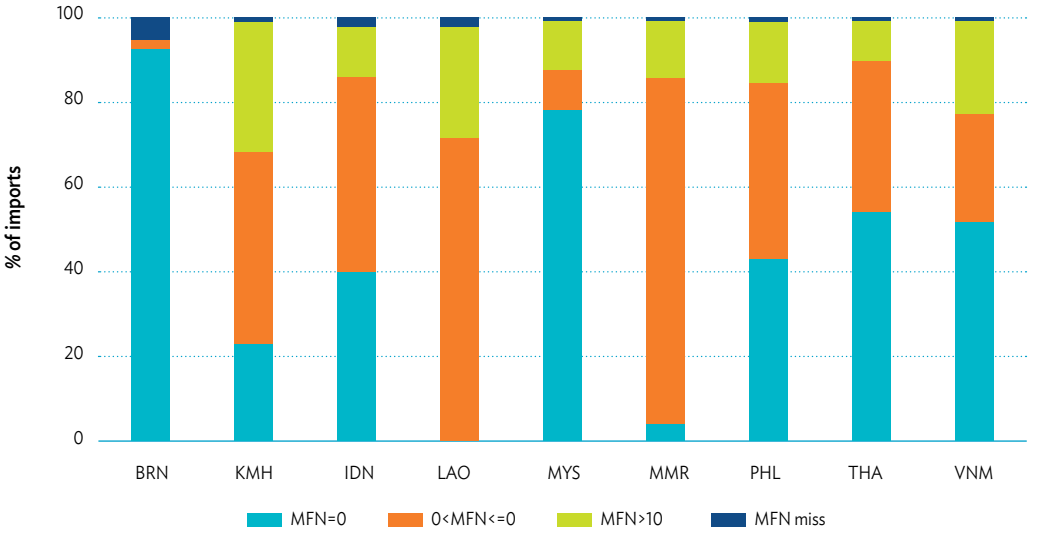


Note: Figure shows percentage of tariff lines under each bracket of MFN rate. Data for 2010 is in tariff classification version AHTN 2007 and for 2018 is in ATHN 2017. The number of tariff lines is 8330 for AHTN 2007 and 10300 for AHTN 2017. MFN NAV indicates that MFN rates are not in ad valorem format. 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.

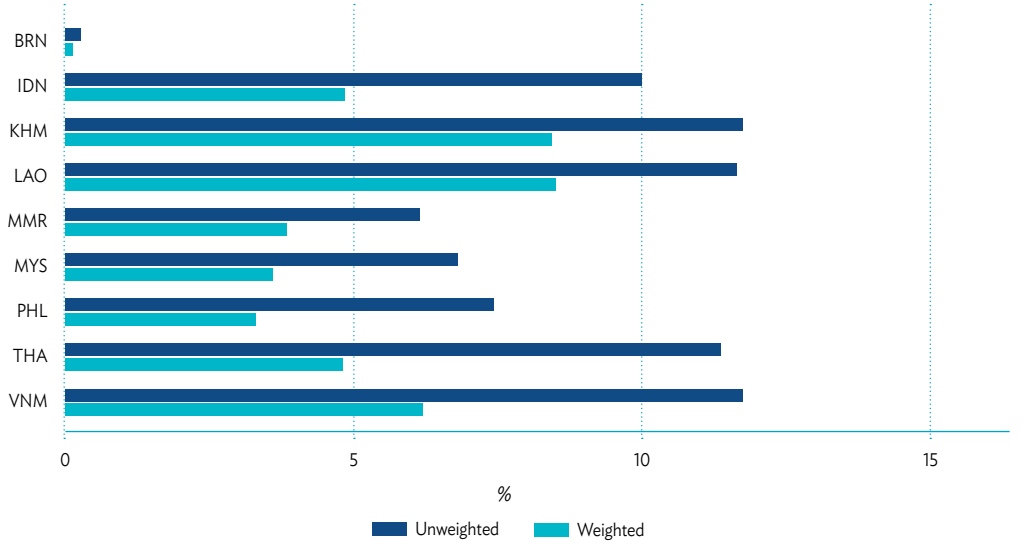
The importance of weighting is illustrated by the fact that when we in fact weight each product line by its importance in each AMS' imports, we find that tariff lines with MFN zero have much greater importance in AMS trade than suggested by just looking at Figure 5-3 above. In **FIGURE 5-4**, we see 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



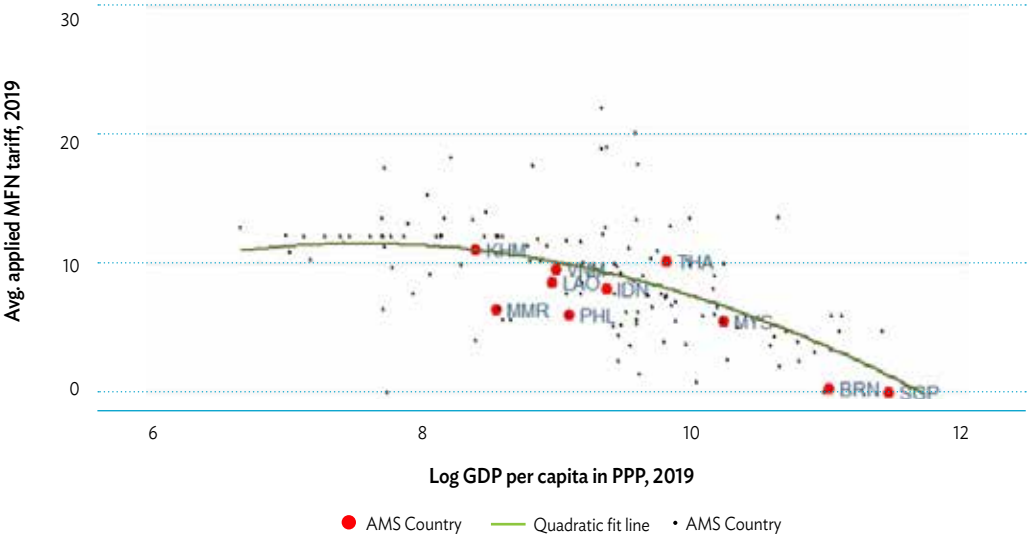
Source: Authors' calculation from tariff data.

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.

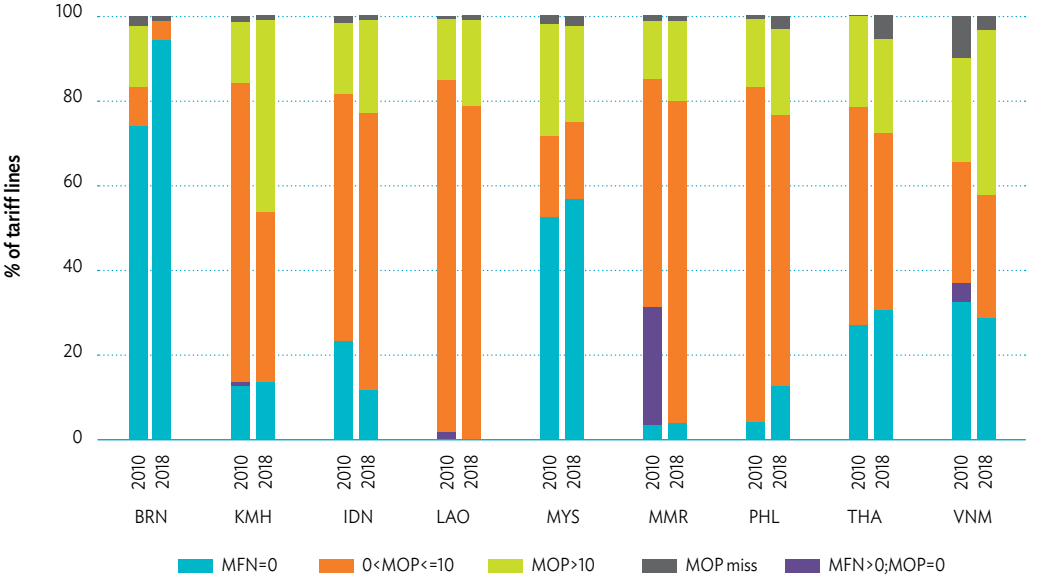
C. Margin of preference over MFN tariff

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

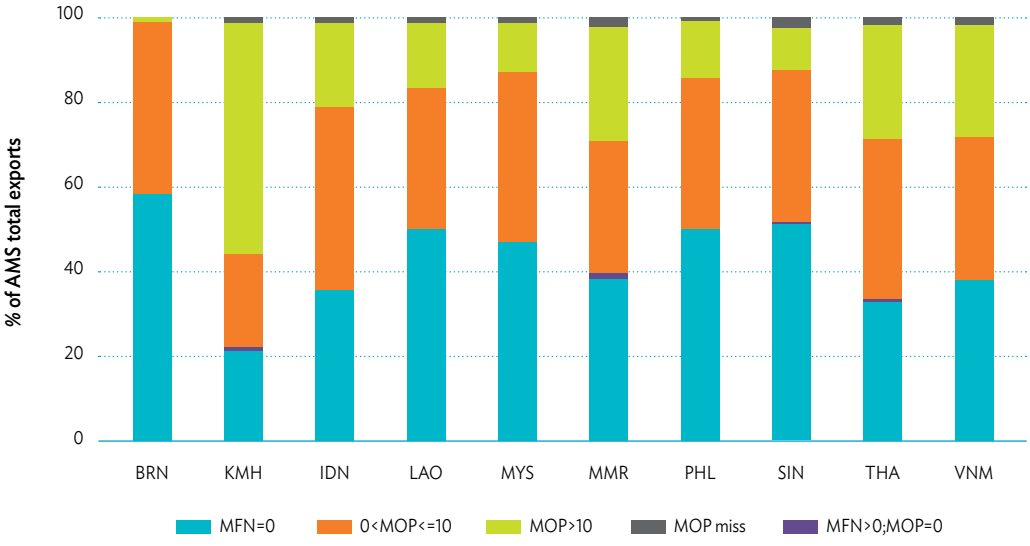
Note: *Some AMS reported having higher tariff rates under ATIGA than MFN for a small number of product lines.

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:

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

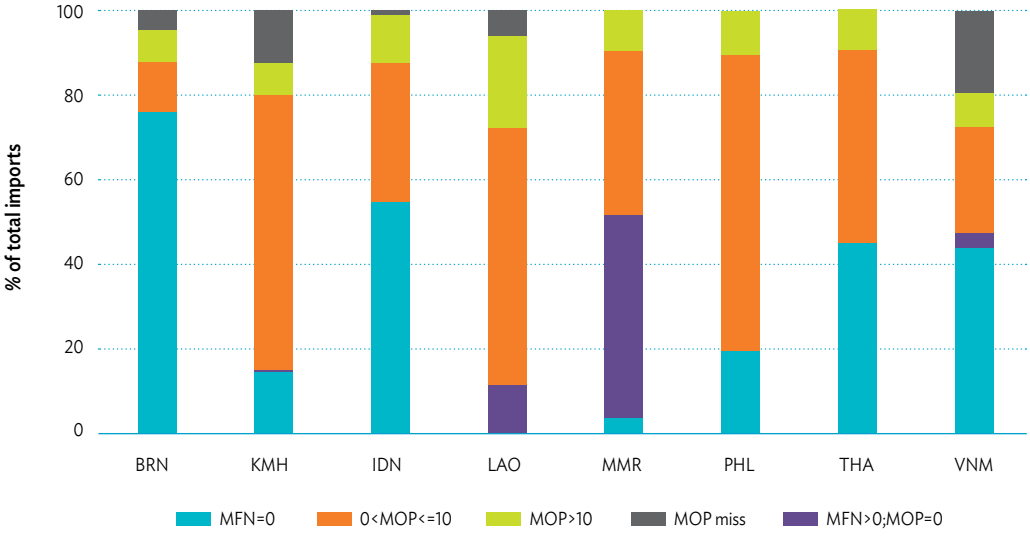
$$= \frac{M_A \text{in cat } 1}{M_w \text{in cat } 1} x \left(\frac{M_W \text{in cat } 1}{M_W}\right) + \frac{M_A \text{in cat } 2}{M_w \text{in cat } 2} x \left(\frac{M_W \text{in cat } 2}{M_W}\right) + \frac{M_A \text{in cat } 3}{M_w \text{in cat } 3} x \left(\frac{M_W \text{in cat } 3}{M_W}\right)$$

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?

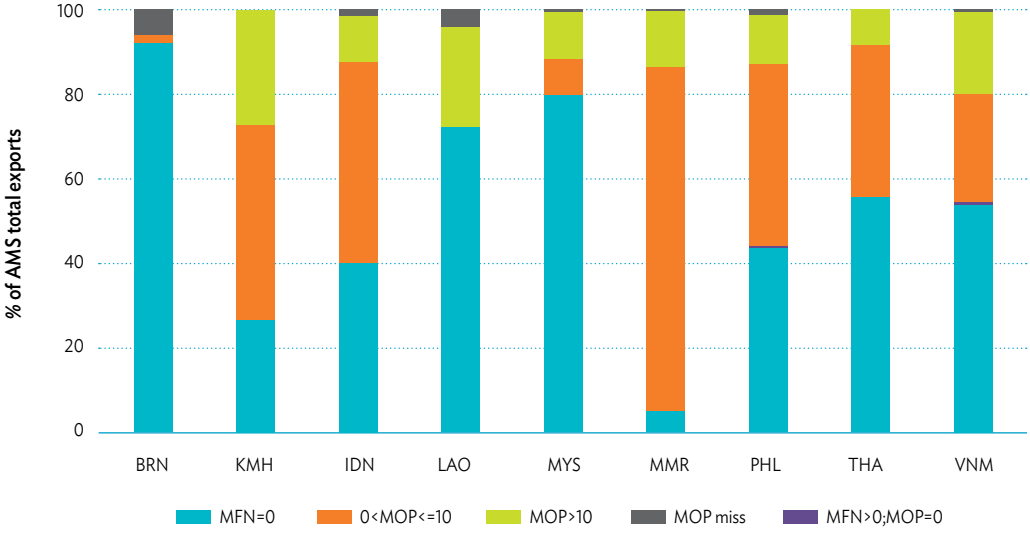
The distribution of AMS imports in 2012 across the three types of product lines are depicted in FIGURE 5-9. The figure reveals that the percentage of AMS imports in products in which they offer the highest MOP is actually very small, with the highest share found in Cambodia, Lao PDR, and Thailand. Likewise, 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

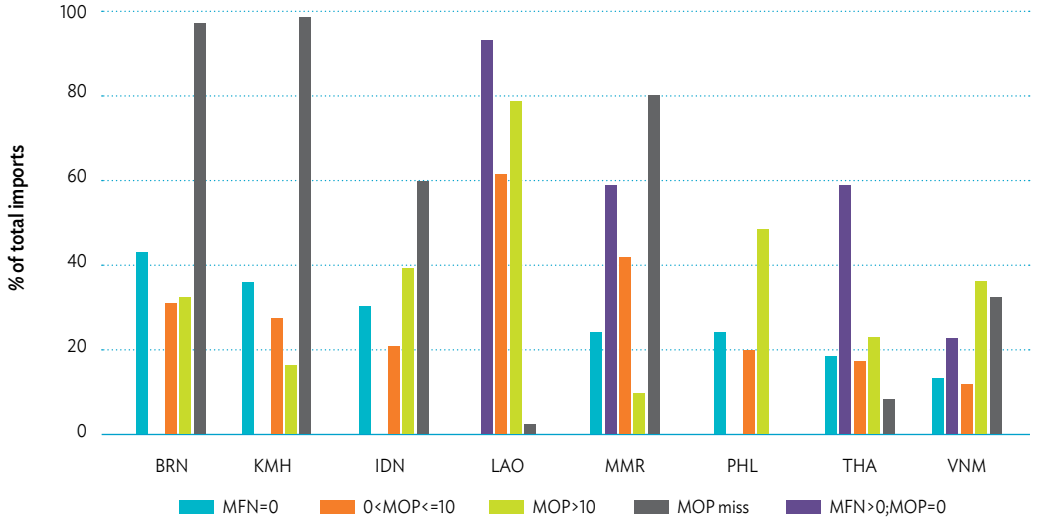
Note: Malaysia is excluded because extra-ASEAN import data is available at 6-digit level only. Singapore is excluded because most tariff lines have MFN zero.

Source: Authors' calculation.

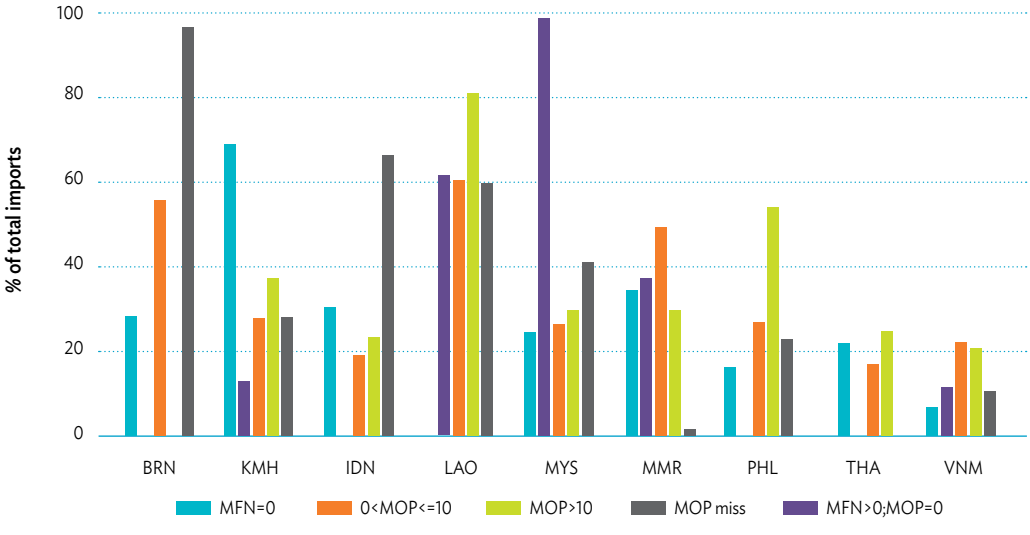
To understand ASEAN's share of imports within each category of product lines, we compute the total imports of each AMS from all countries, and total imports from within ASEAN. Then we divide the second by the first to calculate the share of ASEAN in AMS' total imports by type of product. This calculation 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.

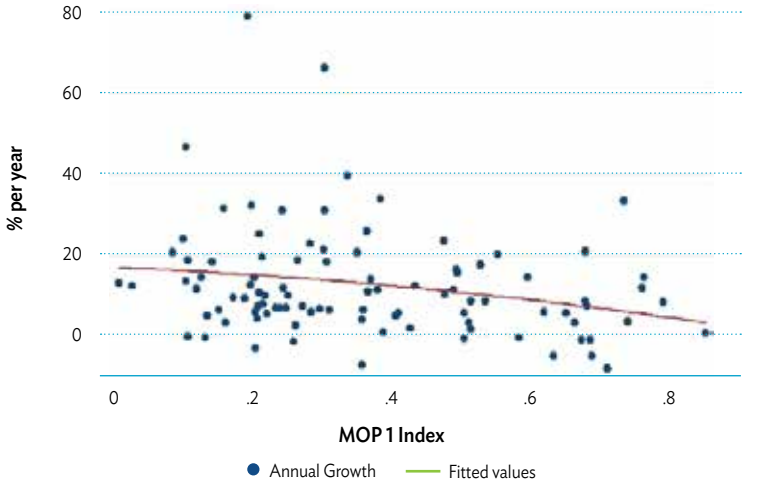
How is intra-ASEAN trade in a product related to its MOP? To answer this question, we first create an index of MOP for each HS 2-digit level. Since each AMS' tariff structure is different, we need to somehow summarise all the variation into a single value for each HS-2 product category. To do this, we 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

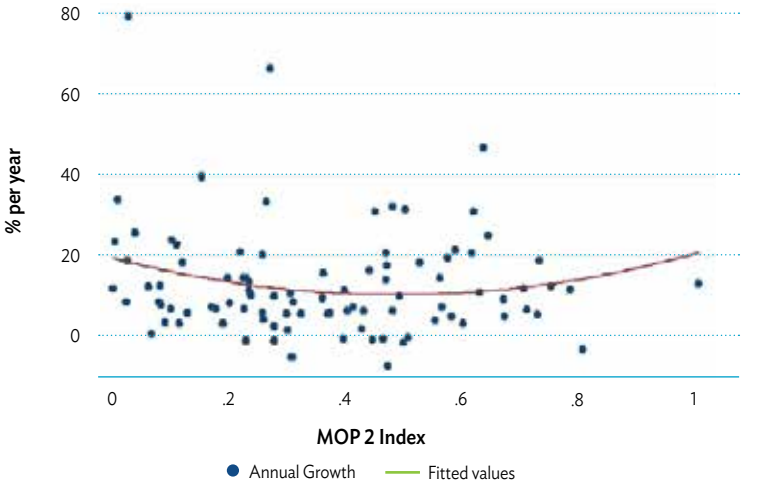
$$growth_i = \frac{intra\ ASEAN\ imports\ 2019_i - intra\ ASEAN\ imports\ 2009_i}{intra\ ASEAN\ imports\ 2009_i} \times 10.$$

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.

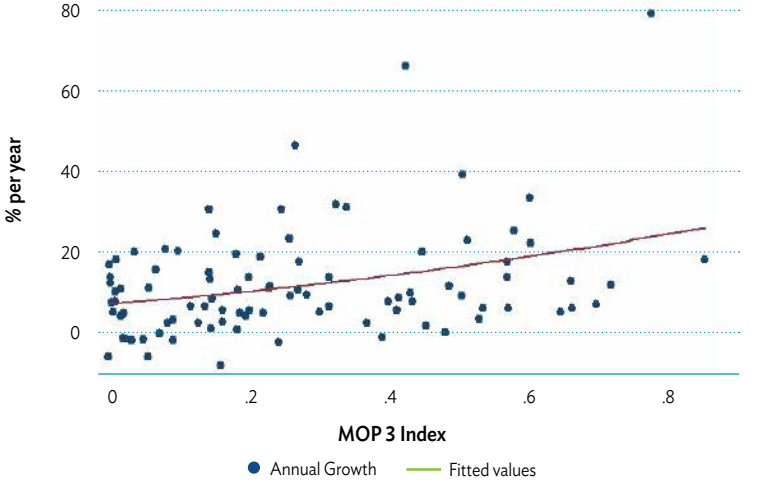
Figure 5-11. Relationship between margin of preference and growth in intra-ASEAN imports at HS 2 digit level.



(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]

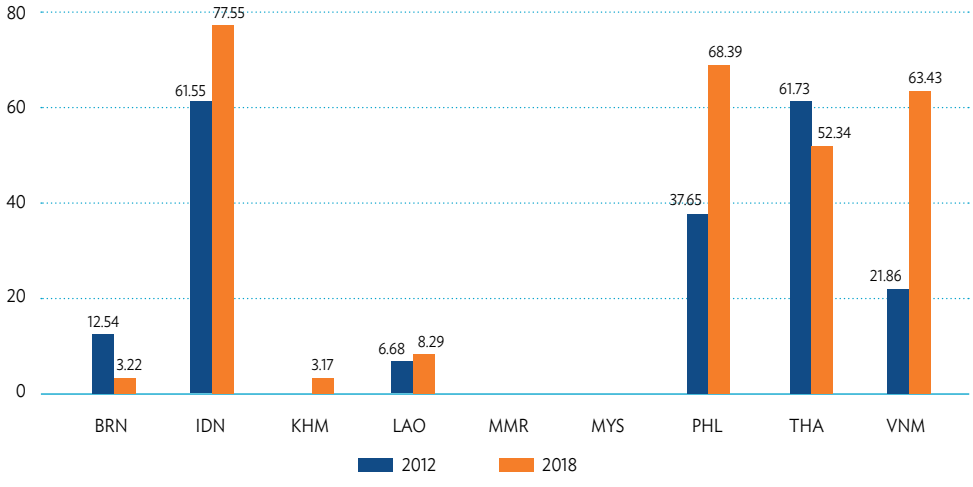
[3] It is important to note however that firms may still wish to use Form D even if there is no margin of preference for many reasons, e.g. to show cumulation to qualify for regional value content-based preference margins at a later stage.

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

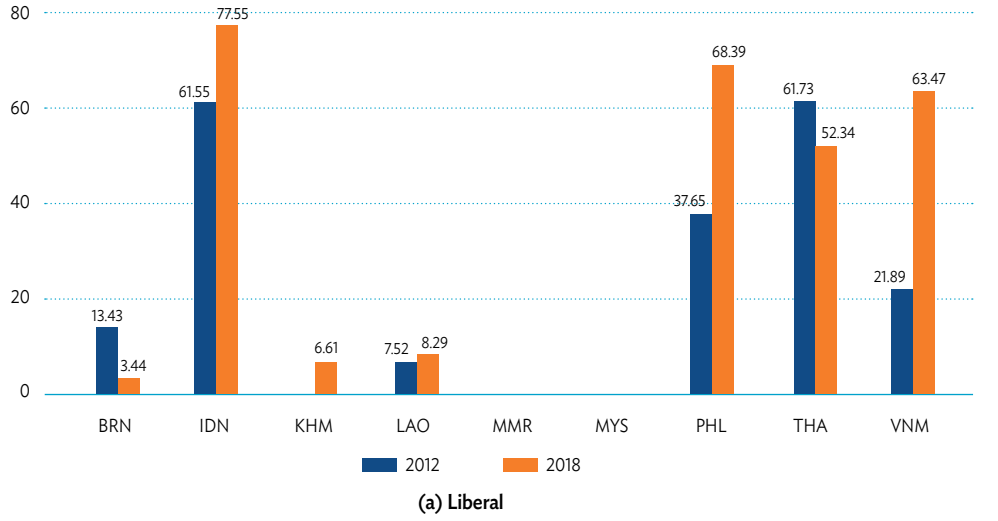
We also have to worry about consistency of the Form D data, as in some cases the Form D values reported were greater than the total imports submitted by the member states or recorded in ASEAN Stat database. This could be due to errors in recording (for example wrong placement of decimal points) but it 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



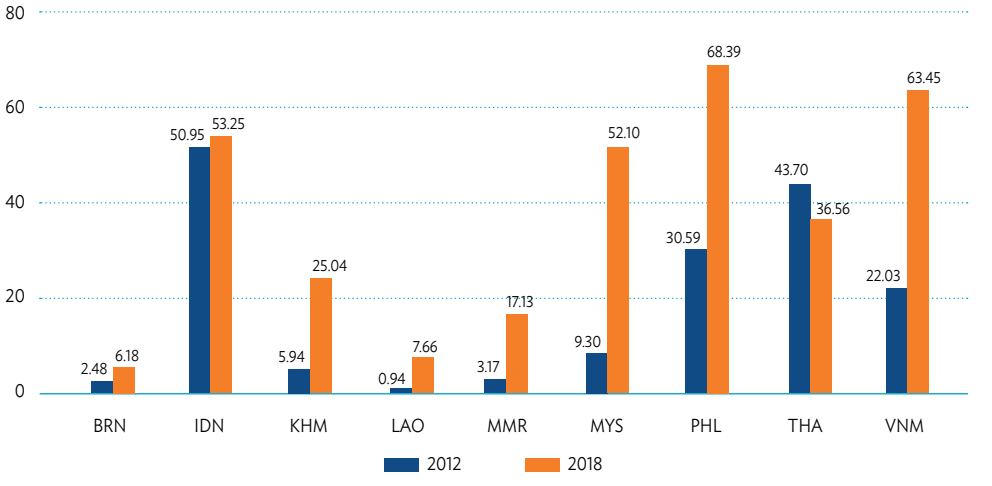
(a) Liberal

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.

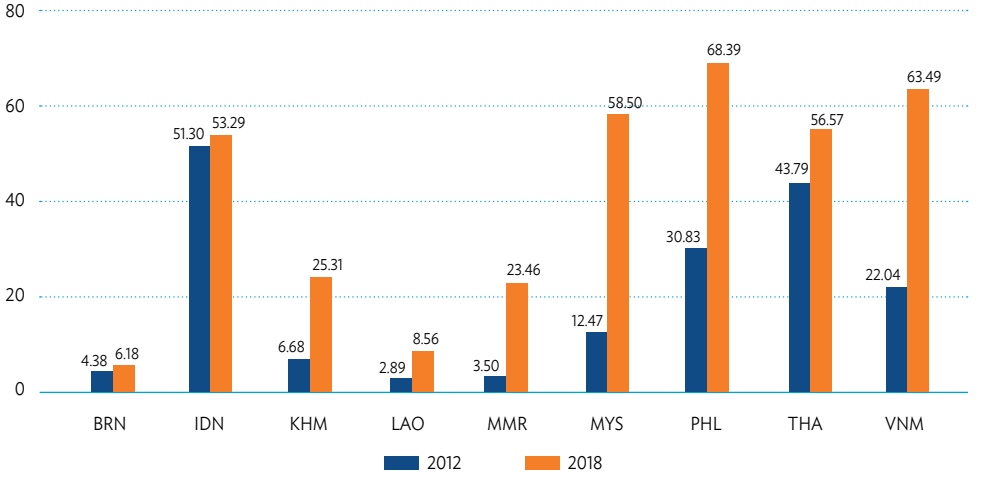
Source: Authors' calculation from tariff data.

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



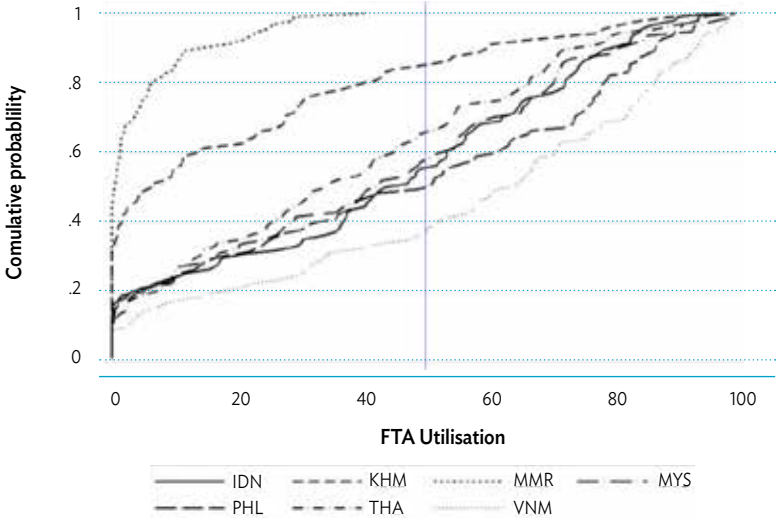
(b) Liberal

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

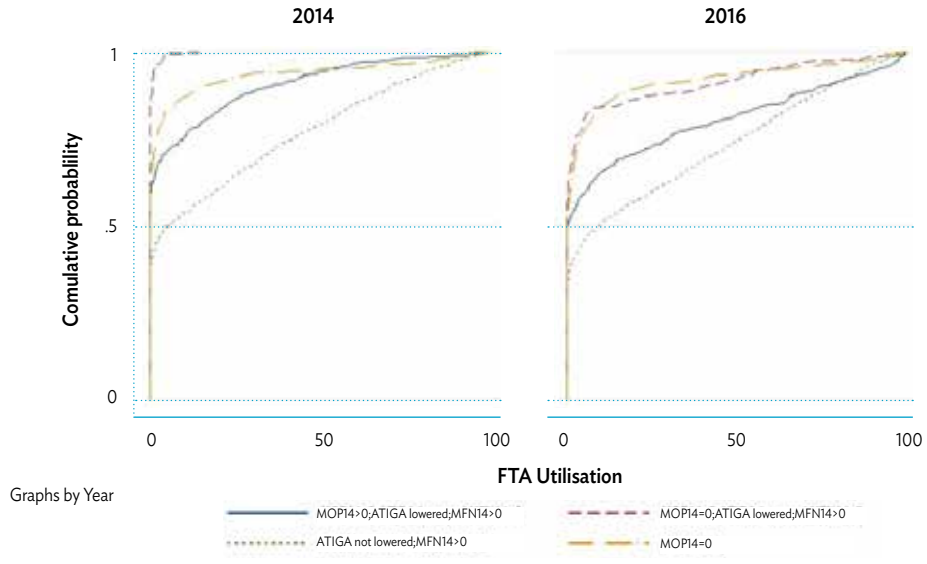
Source: Authors' calculation.

F. Evidence from ATIGA reductions in 2015

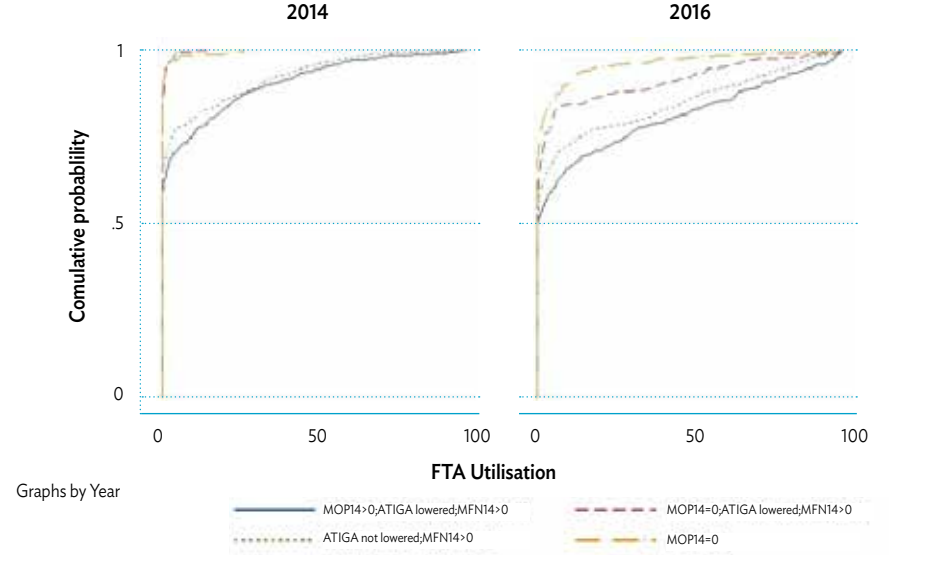
To examine more closely the relationship between reduction in ATIGA tariffs and FTA utilisation, we look at the change that took place in 2015, when CLMV countries increased the number of tariff lines with zero ATIGA rates. If MOP is related to FTA utilisation, we should see increase in utilisation following 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.