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The ASEAN Free Trade Agreement: Building Bloc or Stumbling Bloc for Multilateral Trade Liberalization?

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Abstract

This paper investigates empirically whether the ASEAN Free Trade Agreement had a building bloc or stumbling bloc effect on subsequent changes in MFN tariffs of four major ASEAN members. The method resembles the one recently used by Nuno Limão. We use tariff data to test whether MFN tariffs were changed differently for preferential products compared to otherwise similar products without a preference. We find a significant building bloc effect for Indonesia, the Philippines and Thailand. MFN tariffs of preferential products were reduced by more than for non-preferential products. We obtain ambiguous effects for Malaysia. This suggests that overall the ASEAN Free Trade Agreement has rather helped than hindered non-discriminatory trade liberalization.

Contents

1. Introduction*

There has been an ongoing debate for more than 20 years whether regional trade agreements (bilateral or plurilateral) are "stumbling blocs" or "building blocs" for further multilateral and non-discriminatory liberalization of the world trading system.

Multilateral negotiations by WTO members have shown no serious progress since the Doha Ministerial, and more and more countries have negotiated FTAs since then.[1] A very similar process took place in the 80ies and early 90ies, prior to the conclusion of the Uruguay round (see Panagariya, 1999). Baldwin (2007) argues that the coincidence of temporal failure of the Uruguay round and an increasing number of FTAs triggered the debate on effects of regionalism on multilateralism.

Most bilateral agreements exist *within* regions (e.g. EU and surrounding countries) and much fewer exist so far *between* regions (e.g. EU and Mexico), but many of the agreements that are under consideration are inter-regional. Nevertheless, most of world trade can still be considered as MFN trade[2], and this will most probably remain so. But there is no doubt that FTAs are becoming more important for many trading partners.

Although an FTA liberalizes trade between its partners, obvious problems emerge that make many economists believe that regionalism is harmful: Countries outside the agreement are discriminated against, e.g. because trade diversion leads to fewer imports from the outsiders. It can also be shown that an FTA can even be welfare reducing for a member country if it leads to import sourcing from a less efficient trading partner (the FTA partner), instead of from a more efficient outsider.

FTAs also have many disadvantages compared to multilateral liberalization: even if all countries had low-tariff FTAs with all others, world trade would be far from "free"

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[1] Often-mentioned numbers of such trade agreements are in the range of around 300, though such numbers do not say much, as one has to take into consideration the nature of such agreements. One example: The EU accession of Bulgaria and Romania, together with the conclusion of the CEFTA agreement (which will probably enter into force in May 2007) will reduce the number of bilateral agreements by around 30. The Greater Arab Free Trade agreement (GAFTA, in force since 2006) has practically replaced around 25 bilateral agreements between its members. These developments obviously do not reflect a trend against regionalism.

[2] A rough estimate by the authors suggests that at least 75% of world trade in 2005 was between countries not having an FTA with each other (60% if one includes intra-EU trade). In addition, a big part of "FTA trade" is in fact MFN trade, as preferential margins for highly traded goods are often zero.

because the necessity of rules of origin would serve as a substantial barrier to trade. The Pan-European cumulation system could be seen as an example of how this problem can be partly solved, but it is hard to imagine that such a system would be used worldwide. Some FTA partners might also feel less "bound" by their FTA obligations (compared to bound MFN rates), and many FTAs do not include a jurisdiction system, as the WTO does.[3] Another potential problem is that countries might become less willing to engage in multilateral or unilateral trade liberalization, i.e. they see FTAs as a substitute for MFN tariff liberalization. This will be the main topic of this paper.

There is plenty of theoretical literature that offers explanations why countries might see FTAs as substitutes (stumbling bloc) or as complements (building bloc) to multilateralism (see for example Bhagwati (1992), or Baldwin (2007) for a very recent overview), but very little empirical work has been done so far. This paper tries to fill this gap for one specific regional trade agreement, namely the ASEAN Free Trade Agreement (AFTA). Liberalization in ASEAN provides a real life example of MFN liberalization *and* preferential liberalization at the same time: The major ASEAN members have substantially lowered their MFN tariffs over the last 15-20 years, while at the same time bringing down tariffs against their regional partners from high MFN tariffs to mostly 0-5% preferential tariffs.

We will first provide an overview of the available literature on the building bloc / stumbling bloc discussion. A brief summary of the development of AFTA follows and we also provide some statistics about trade flows and evidence on utilization of AFTA preferences. The main part contains an empirical analysis of whether ASEAN can be seen as a "building bloc" or "stumbling bloc". For that, we analyze tariff data of the major ASEAN members Indonesia, Malaysia, the Philippines and Thailand.

2. Literature review

Since the discussion on the building bloc / stumbling bloc effect started, numerous papers have been written about it. Krueger (1999) summarizes both arguments supporting a positive effect of regionalism on multilateralism ("building blocs"), as well as a negative effect ("stumbling bloc"). Another good overview is Bhagwati (1992).

[3] Worth mentioning is also that FTAs are usually not only about trade in goods or services, but also about investments, IPR, or pure politics, and it is often argued that developing country partners of

More recently, Baldwin (2007) provides another summary of arguments of both sides. There is no clear-cut definition of when we would define regionalism as a building bloc and when not. The signing of an FTA could for example affect the probability that a country supports a new WTO trade round; or a preferential tariff on a specific product could affect the countries' subsequent setting of the (bound and / or applied) MFN tariff of that particular product.

The major arguments of the optimists are as follows: FTAs[4] can lead to more support for multilateral liberalization if producers in one country face higher MFN tariffs on intermediate products than competing producers in the partner country (this could not happen in a customs union). They might then put increasing pressure on their government to bring MFN tariffs on inputs down to the MFN level of the partner country. AFTA might provide a good example where this argument could be used.

Another argument is that because of FTAs, countries outside of FTAs might be more willing to accept multilateral liberalization because of the disadvantages they face against the FTA partners. Baldwin (2004) argues that such "competitive liberalization" might have helped to promote the Kennedy round, as US exporters felt threatened by the emergence of preferences within the EEC. The opposite effect could be that countries inside the FTA oppose further MFN liberalization because they take advantage of their preferences. An example could be if one big country A has an FTA with small country B, but none with small country C. Exporters in B (to A) have an advantage, which they would loose if A's MFN tariff goes down, while exporters of C (to A) would rather support lower MFN tariffs. Country A might also oppose tariff reductions because there could be political reasons to support country B. This is why some developing countries fear MFN tariff liberalization. It partly "erodes" existing preferences granted by industrial countries.[5]

FTAs also have an indirect effect on the political economy within the country: Groups opposing multilateral liberalization could be weakened through an FTA, which changes the political economy of the country towards being less opposed to

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such agreements might find it more difficult than in the WTO to reach outcomes which are in their interest.

[4] We do not always distinguish between "FTAs" or "regionalism". Regionalism may of course consist of other forms of preferential agreements, e.g. autonomous preferences or customs union (the former being usually not very far-reaching, the latter do not play a big role in the current discussions, as few new custom unions emerge, except for the EU enlargement).

[5] Limão (2005b) provides anecdotal evidence of such a case. The US was reluctant to lower MFN tariffs on certain spirits because that would have eroded preferences for some Caribbean countries.

multilateralism – the “juggernaut” effect (Baldwin, 2007). An example could be the possible FTA on agricultural products between Switzerland and the EU: Such an FTA would lead to structural changes in the Swiss agricultural sector and might lower the pressure on the government to accept MFN liberalization in the WTO. However, the opposite might be true for export-oriented lobbies: FTAs already allow them to export more, so they might be less inclined to pressure (through their government) for additional MFN liberalization in other countries. Krueger also argues that trade diversion caused by FTAs creates rents whose owners are subsequently opposed to MFN liberalization.

Another stumbling bloc argument is the “cherry-picking stumbling bloc” (Baldwin, 2007): Similar countries could get most of the gains that they would get through global MFN tariff reduction also through an FTA (i.e. variety effects and comparative advantage effects), but would have to bear fewer costs (i.e. Stolper-Samuelson effect).

Several formal models have been developed: Baldwin (2007) shows with a Walrasian setting that multilateral trade liberalization can be welfare-reducing for a country that is member of an FTA because gains from the FTA can be higher than gains from global free trade. Bagwell and Staiger (1997) use a three-country, three-goods model and conclude that an FTA between two countries could have a lowering effect on their MFN tariffs, but it can also have an increasing effect, depending on how well multilateral cooperation works.

Most, though not all of these arguments can also be used for possible effects of regionalism on unilaterally set MFN tariffs – which is in fact what we can observe in ASEAN. Because the theoretical models do not provide us with clear-cut predictions, it remains open whether we should expect a building bloc or stumbling bloc effect.

Despite numerous theoretical papers, the building bloc / stumbling bloc theory has hardly been tested empirically. A relatively new attempt is the one by Nuno Limão, who looked at the effect of preferential tariff schemes of both the EU (2005b) and the US (2005a, 2006). He tested on product level whether EU and US preferential tariffs had a significant effect on the reduction of bound MFN rates during the Uruguay round and found a stumbling bloc effect of preferential schemes for both the EU and US. Both lowered their *bound* MFN tariffs by less during the Uruguay round for those products for which they were granting a preference to other countries. Parts of his

methodology are used in our empirical part, but a crucial difference is that we look at *applied* MFN rates.[6] Bound rates are almost always lowered or remain unchanged during a WTO trade round, but are usually not increased. This means that the EU and US are much more constrained in setting their bound MFN tariffs, and also in setting the applied rates (which are often close to the bound level). In contrast, the reduction of MFN tariffs in ASEAN has mostly been done unilaterally – it was not the result of multilateral WTO negotiations. Bound tariffs are usually well above applied rates and some tariffs are not bound at all. Therefore, these countries were quite free to set MFN tariffs and could even increase them over time. Thus, ASEAN members had much fewer constraints in setting their MFN tariffs after granting preferences to some products than the EU or US had.

Partly based on Limão's work, another recent working paper by Estevadeordal et al. (2006) examines the effects of regional trade agreements in Latin America on MFN tariff changes. This paper is somehow similar to ours, as it deals with FTAs (but also customs unions) between developing countries, rather than preferences granted by industrial countries. They also use applied MFN rates. However, the dataset and the estimation technique are very different from our approach.[7] They find a building bloc effect for FTAs, but less or no such effects for CUs.

There is plenty of literature on ASEAN in general and (though less) on AFTA in particular. However, these papers usually deal with the effect of AFTA on *trade*, not on (MFN) *tariffs.* One example for empirical literature looking at trade effects is Elliott & Ikemoto (2004). They use a gravity model which suggests that AFTA had no impact on intra-ASEAN trade. This is not very surprising, given the evidence for low utilization rates (see below).

Some authors use ASEAN as an example of "open regionalism", arguing that ASEAN members have liberalized their MFN tariffs unilaterally while also deepening AFTA (see for example Bergsten, 1997). However, we are not aware of any empirical analysis of the building bloc / stumbling bloc effect of AFTA or even a detailed

[6] In the US and EU, applied rates are usually close to the bound rates, which is not the case in developing countries. One could of course look at bound rates in ASEAN, but there is relatively little movement in bound tariff schedules of developing countries.

[7] They use tariff data aggregated on the ISIC 4-digit level and therefore only around 100 different products. This allows them to combine tariff data across time and across countries. This panel covers 12 years and 10 countries.

analysis of preferential tariff rates.[8] This is rather surprising, as most of the tariff data is readily available from several sources.

3. The ASEAN free trade agreement

3.1 A short history of the ASEAN free trade agreement

ASEAN was founded in 1967.[9] A first preferential trading scheme was implemented in 1977, the so-called "ASEAN Preferential Trading Arrangement" (PTA), which was further extended in 1987. Tariffs for covered goods were lower than the MFN tariff (but not necessarily zero). AFTA was signed by Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand in 1992 and entered into force on January 1, 1993. At that time it covered a selection of non-agricultural goods, known as the "inclusion list". Each country excluded some products temporarily, and some few products were on a "general exclusion list". The preferential tariff is called "CEPT" ("Common Effective Preferential Tariff").[10] Included products were either on a "fast track"-list[11] or in the "normal track". The tariff reduction scheme for the inclusion list was as follows (ASEAN 1993): For fast-track-products, tariffs above 20% had to be reduced to 0-5% until 2003, and other tariffs until 2000. For normal-track products, tariffs above 20% had to be reduced to 20% until 2001 and to 0-5% until 2008. Tariffs below 20% had to be reduced to 0-5% until 2003. Members were free to set tariffs until the end of the implementation periods, but encouraged to use a linear tariff reduction formula.[12]

In 1995, the six members[13] amended the 1992 agreement: Agricultural products were included and the timeframe for tariff reduction accelerated: Reduction of tariffs down

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[8] An exception is a paper by Manchin & Pelkmans-Balaoing (2007). They calculate preferential margins on HS-6 level to analyze whether AFTA had a trade effect.

[9] Original members were Indonesia, Philippines, Malaysia, Singapore and Thailand. Countries that joined later were Brunei (1984), Viet Nam (1995), Lao PDR (1997), Myanmar (1997) and Cambodia (1999).

[10] This is a slightly misleading term: ASEAN members do not have a "common tariff" as AFTA is not a customs union, but an FTA.

[11] There was only one fast-track list for all six countries, which included 15 product categories, for example textiles, cement and electronics.

[12] One principle in the early years of AFTA was reciprocity: A product only enjoyed preferential tariffs in another member country if the product was in the "inclusion list" of both the importing *and* exporting country and only if the exporting country applied a 20% or lower preferential tariff for that product. If the tariff were above 20%, it only enjoyed preferences in those importing countries that also had preferential rates above 20% (see ASEAN 1995). Unfortunately, we do not have data to capture that in our empirical analysis.

[13] Vietnam joined in 1995, but did not sign the amendment of the 1992 agreement.

to 20% had to be concluded until 1998 (instead of 2001), and to 0-5% until 2003 (instead of 2008). In 1999, a protocol was signed which defined country-specific sensitive[14] and highly-sensitive products[15] for agricultural products. Those had to be implemented into the CEPT scheme until 2001 and 2003, and tariffs for sensitive products have to be reduced to 0-5% until 2010 (20% for highly-sensitive products).[16] In 2003, members agreed that tariffs for all products of the inclusion list should be abolished by 2010.[17] In 2004, sector-specific agreements were concluded, which provide for accelerated tariff reduction for most products within a list of sectors.[18]

One characteristic of AFTA should be highlighted: Trade will eventually be completely liberalized within ASEAN members, with only very few exceptions allowed to remain permanently. But members enjoyed some freedom in choosing products for which they grant preferences and in setting their preferential tariffs during the implementation period (which is still ongoing). Starting point for tariff reductions were initial applied MFN tariffs, but subsequent changes in the MFN rate would have had no effect on the preferential rate. There was no requirement to apply, for example, a specific margin of preferences on the applied rate, at least since AFTA started.[19] This allows us to empirically look at how members set both the MFN and the CEPT rate over time.

What has been the result of these different agreements over the last years? The direct result is that the CEPT rates of four of the six original members have been reduced significantly and are now down to 0-5% for most products (Brunei and Singapore always had low MFN tariffs). A striking result is indeed that Indonesia, the Philippines and Thailand had also lowered their MFN tariffs since AFTA started in 1993 (and also before). Malaysia also lowered its tariffs, but by much less than the other countries, though Malaysia always had the lowest average tariff of those four

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[14] The sensitive lists only cover a few products per country and are available here: http://www.aseansec.org/sasp_2.htm

[15] The highly sensitive list only included rice (heading 1006) for Indonesia, Malaysia and the Philippines.

[16] Lao PDR, Cambodia, Myanmar and Vietnam had then also joined the AFTA agreement. These countries got granted longer implementation periods.

[17] Until 2015-2018 for Lao PDR, Cambodia, Myanmar and Vietnam.

[18] Sectors are for example: Agro-food products, healthcare, automobiles, fisheries and textiles. See http://www.aseansec.org/16659.htm for details.

[19] In the pre-AFTA "ASEAN Preferential Trading Arrangement", specific preferential margins were used (e.g. 70% of the MFN tariff = preferential tariff).

countries since 1993. Table 2 shows the development from 1993-2003 for these four countries.

The reduction of MFN tariffs was mostly done unilaterally, as developing country's concessions in the Uruguay round consisted mainly of binding their tariffs, and / or reducing bound tariffs only slightly from around 1995-2004.

This MFN liberalization can be seen as preliminary evidence that AFTA and pre-AFTA preferences were indeed "building blocs": After agreeing on preferences, the major ASEAN members did subsequently reduce their MFN tariffs. Of course, we do not know what would have happened otherwise. Therefore, we have to look at detailed MFN and CEPT tariffs to see whether this can be confirmed empirically.

3.2 Trade flows in ASEAN and the importance of AFTA

This section gives a brief overview of trade flows of the major ASEAN countries and of their trade with other countries. It also provides some stylized facts of today's importance of AFTA. Table 1 shows 2005 imports of the major ASEAN countries. One can clearly see that ASEANs mostly import from the rest of the world, with imports from ASEAN being only in the range of 19-30%. The major non-ASEAN trading partners are Japan, China, the US and the EU-25. However, despite being low, the share of intra-ASEAN trade has increased over the last decades (see figure 1). Whether this is due to regional trade liberalization is a disputed issue and it is sometimes argued that AFTA, at least today, does not really matter. It is certainly true that many FTAs are not used much (meaning that utilization rates are low), and might not necessarily have a substantial impact on trade flows. Baldwin (2006) gives some evidence for low utilization rates of AFTA. For example, utilization rates in 2002 have only been 4% for Malaysia and 11% for Thailand.

We did some calculations to check whether today's intra-ASEAN trade is mostly done in products that do receive low or no preference.[20] Using 2005 tariff and trade data of Indonesia, Malaysia, the Philippines and Thailand, we calculated the difference between the MFN and CEPT tariff for the 1000 HS-6 products[21] that are

[20] Manchin & Pelkmans-Balaoing (2007) have done a similar calculation and also found that most intra-ASEAN trade has a low preferential margin.

[21] There exist around 5000 HS-6 codes (subheadings) in the harmonized system. Calculations were not made for all, as trade in the remaining 4000 is very low, and some manual adjustments had to be made with the data, making a full coverage overly time-consuming.

mostly traded within ASEAN (table 3). The result is striking: Only few of the products have any substantial preference, while the MFN tariff is identical to the CEPT tariff for most of them – which means that both are usually 0-5%. While the average unweighted preference is between 5-9.8 %-points, the trade-weighted preference is well below that. This means that ASEANs give few preferences for products they are trading with each other. A substantial part of intra-ASEAN trade is in crude oil, gas and electric and electronic products of chapters 84 and 85. Some, though not all, of these products fall under the ITA and have therefore bound zero MFN tariffs. Tariffs on oil and gas are usually zero as well. We did similar calculations with the dataset that we had built for the regression analysis (table 3), and these suggest that simple and trade-weighted averages of absolute preferential margins were even lower in the past, with the only exception being Thailand (in 1993). Indonesia, Malaysia and the Philippines had trade-weighted preferences of 0.6-1.3 %-points in the years that we used as "base years" for our regression analysis, while Thailand's weighted average was at 21.6 %-points.

It is important to keep in mind that these results only show the potential (maximum) use of the CEPT scheme, not the actual use. The available trade data does not show whether or how frequently the preferential tariff has actually been applied for imports of a certain product. Certainly, it will often be too costly or impossible (because of rules of origin) to obtain a certificate of origin, so that utilization rates for a specific product could be well below 100%. It would obviously be much better if one had direct data on utilization, but these are not available.

The fact that AFTA has had and still has a low trade-weighted preferential margin does indeed not mean that AFTA has no impact on trade flows. First, the impact can be quite high for certain industries (e.g. the car industry). Second, and more important for the following parts of our paper, the impact might be an indirect one: The fact that many MFN tariffs are as low as the CEPT rates does not necessarily mean that the MFN rates would be as low without AFTA. The preferential scheme might indeed have worked as a building bloc towards unilateral MFN liberalization, and the next part of our paper mainly deals with the question whether this has been the case or not.

4. Empirical analysis

4.1 Introduction

We estimate the building bloc / stumbling bloc effect that preferences to other ASEAN members had on each country's subsequent setting of applied MFN tariffs. Our main idea is that granting a preference on a specific product has an effect on the subsequent change of the applied MFN tariff of that product. Products for which no preferential tariff is granted should therefore show a different pattern of their changes in MFN tariffs than those products for which a preference is granted. This can be done because there has been a substantial (and mostly unilateral) reduction of applied MFN rates since AFTA started, and because MFN tariffs and tariff reductions vary considerably across products. For the periods covered by our dataset (which differ across countries), the MFN tariff was considerably reduced in all countries except Malaysia. Also, all countries except Malaysia changed 2/3 or more of their tariffs, and Malaysia changed 41%. Without such a variation in MFN tariffs across time, we would obviously not be able to test for any effect of preferences on MFN tariffs.

Supporters of the stumbling bloc argument would expect that a country had lowered MFN tariffs by more if it had not granted preferences to other ASEAN countries, and supporters of the building bloc argument would assume the opposite. Obviously, we can not observe what would have happened if a country had granted no, less, or more preferences than it actually did. However, we can observe different degrees of preferences for different products. Observing tariffs on products with no preference can therefore serve as an alternative to the unfeasible option of observing the situation without a preferential scheme at all. If the stumbling bloc theory is correct, then MFN tariffs should, ceteris paribus, be higher (or reduced by less) if the country had granted a preference for that product.

We obviously have to control for other factors affecting the tariff change of a product. Doing this on a 6-digit or tariff line level however limits the available explanatory variables, as the only data we have available on that level is tariff data (MFN and CEPT over several years), and trade flows (import, export, over several years and by partner). Dummy variables can identify industry- or sector-specific factors. As tariffs are set within the political system of a country and as their setting is probably influenced by lobbying groups, these explanatory variables are certainly not

complete, but we assume that we can at least partly control for that by using industry-level dummies.

4.2 Empirical strategy

How can we now test empirically whether the preferences granted in early years influenced the MFN tariffs in the years afterwards? Clearly, the dependent variable must somehow reflect the level of the MFN tariff change between the early years of AFTA and a recent year, while the explanatory variables have to include a measurement of AFTA preferences. As far as we know, the only such empirical tests so far have been done by Nuno Limão (2005a and 2006) for the US, Limão & Karacaovali (2005b) for the EU and Estevadeordal et al. (2006) for Latin America. Limão's basic estimated equation for the US is:[22]

$$\Delta\tau_i = \beta_0 + \beta_1 D\_pref(t_0)_i + \beta_3 V_i + \varepsilon_i$$

with $\Delta\tau_i = \ln(1+MFN(t_1)_i) - \ln(1+MFN(t_0)_i) \approx MFN(t_1)_i - MFN(t_0)_i$ if $MFN(t_{0,1})_i \approx 0$.[23]

Therefore, $\Delta\tau_i$ approximates the absolute reduction in the US bound tariff during the Uruguay round. The dummy $D\_pref(t_0)_i$ (called "ANYPTA" in his paper) takes the value 1 if the US gave a preference for that product at time zero (before the start of the Uruguay round tariff reduction) *and* it has also been imported from a country eligible for that preference.[24] Additional explanatory variables are used, such as NTB prevalence, pre-UR liberalization, and a trade-weighted difference of GDP growth between the US and the partner country to represent bargaining power.[25] Chapter dummies are added to control for industry-specific effects. Limão also uses an IV-approach because of possible endogeneity of the preference dummy. Our approach resembles a basic version of Limão's approach.[26]

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[22] The approach used in Limão & Karacaovali (2005b) for the EU is quite similar.

[23] One can also interpret $\Delta\tau_i$ as the log of the tariff factor growth. Because tariff factors (=1+MFN_t) are close to one, the absolute difference of MFN rates and the tariff factor growth are very similar. However, using the log somehow smoothes peaks in tariffs and tariff changes. Regression results are very similar when we use $MFN(t_1)_i - MFN(t_0)_i$ as the explanatory variable.

[24] A different dummy is also used for preferential imports from *all* countries receiving a preference.

[25] It should be noted that his core results are not much affected by adding additional explanatory variables to the preference dummies or by using instruments.

[26] Estevadeordal et al. (2006) use a 10 year, 12 countries panel with only around 100 different products aggregated on ISIC-4 level. Similar to Limão (2006), they use the MFN tariff change as the independent variable. However, they use the import-weighted preferential tariff or the import-weighted absolute preferential margin as the main explanatory variable – which is quite different from both Limão's and our approach.

There are indeed some major differences. We only explain the reduction of *applied* MFN tariffs. Whereas applied and bound tariffs are usually very similar in industrial countries (such as the US), there is usually a wide gap between them in developing countries, and some tariffs might not even be bound at all. The liberalization in ASEAN countries has therefore mostly taken place through unilateral reduction of MFN tariffs, which have usually been below their bound levels all the time. Therefore, while using bound tariffs is the right choice for the US and EU, using applied tariffs is the right choice for our study. We use tariffs from two different years. $MFN(t_0)_i$ is the tariff in the base year, i.e. in the early years of AFTA. $MFN(t_1)_i$ is the tariff in a recent year.

In addition to the preference dummy used by Limão, we use additional measurements for preferential treatment: A preference dummy for a preferential tariff, whether there were any imports from the preference-receiving ASEAN countries, and the relative preferential margin.[27] The latter is a useful measurement for ASEAN because preferential tariffs are often well above zero. Again, this is not the case for industrial countries, which rather apply *zero* preferential tariffs, i.e. a 100% preferential margin.

We also argue that one should control for the absolute MFN tariff in the base year, $MFN(t_0)_i$.[28] Intuitively, it should be clear that $MFN(t_0)_i$ has a major impact on the absolute MFN reduction, just because tariffs cannot become negative.[29] Therefore, one could expect that higher tariffs are reduced by more compared to low tariffs. As we will show, this is indeed the case. This issue can well be explained by an example: In the extreme case of an overall linear tariff reduction formula of, let's say, 30% (not %-points), then high tariffs obviously will be reduced by more %-points, and the reduction can be completely explained by the base year tariff. If one then does not control for the base year tariff, one could wrongly conclude that there is a

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[27] Note that we do not use absolute preferential margins, except in our calculations for trade-weighted preferential margins (see above).

[28] Because we use a logarithmic form for the dependent variable, we also use one for $MFN(t_0)_i$ ($\ln(1+MFN(t_0)_i) \approx MFN(t_0)_i$) in our regression.

[29] Estevadeordal et al. (2006) also argue that one should take into account the MFN tariff level. However, they include not the MFN tariff, but a dummy for high MFN tariffs (10% or 25% highest). This dummy is negatively related to the absolute MFN reduction, i.e. high tariffs are reduced by more. This is in line with our findings for ASEAN members.

significant building bloc or stumbling bloc effect, depending on whether high- or low-tariff products received the preference prior to the reduction. As we will show below, the distribution of $MFN(t_0)_i$ indeed differs between preferential and non-preferential products – even in Limão's dataset on the US.

Our empirical model with the preference dummy is:

(E1) $\Delta\tau_i = \beta_0 + \beta_1 D\_pref(t_0)_i + \beta_2 MFN(t_0)_i + \beta_3 V_i + \varepsilon_i$

Here, i represents the HS-6 or tariff-line code and V is a vector of other explanatory variables. $D\_pref(t_0)_i = 1$ if $CEPT(t_0)_i < MFN(t_0)_i$ and $D\_pref(t_0)_i = 0$ if $CEPT(t_0)_i = MFN(t_0)_i$.

We also use a slightly different preference dummy $D\_pref\_\&\_impASEAN(t_0)_i$ that only becomes 1 if the product receives a preference *and* is also imported from any ASEAN country at t_0. This gives us equation 2:

(E2) $\Delta\tau_i = \beta_0 + \beta_1 D\_pref\_\&\_impASEAN(t_0)_i + \beta_2 MFN(t_0)_i + \beta_3 V_i + \varepsilon_i$

This dummy resembles the one used by Limão.

Our model with the preferential margin is:

(E3) $\Delta\tau_i = \beta_0 + \beta_1 (1 - \frac{CEPT(t_0)_i}{MFN(t_0)_i}) + \beta_2 MFN(t_0)_i + \beta_3 V_i + \varepsilon_i$

This raises the question whether one should leave out products with $MFN(t_0)_i = 0$. We decided to define $1 - \frac{CEPT(t_0)_i}{MFN(t_0)_i} = 0$ if $MFN(t_0)_i = 0$. This makes $1 - \frac{CEPT(t_0)_i}{MFN(t_0)_i} = 0$ easily comparable with $D\_pref(t_0)_i$ because $1 - \frac{CEPT(t_0)_i}{MFN(t_0)_i}$ has the value 0 if there is no preference (including cases with $MFN(t_0)_i = 0$) and 1 if the preferential tariff is zero. It has values *between* 0 and 1 if there is only a tariff *reduction* (but still a positive CEPT tariff). Note that in our robustness test, we only consider products with $MFN(t_0)_i > 0$, in which case there is no ambiguity in the definition of the preferential margin. We define $1 - \frac{CEPT(t_0)_i}{MFN(t_0)_i}$ = prefmargin from now on.

Chapter dummies are added to all models. With around 96 different chapters, this should capture any industry-specific effect. Tariffs and tariff changes vary across industries and can be determined by industry-specific factors (such as political influence of an industry, perceived strategic importance of an industry etc.). The use of dummies helps to separate such effects from the building bloc / stumbling bloc effect. We also used 4-digit industry dummies as a robustness test.

We decided to use trade data only for defining $D\_pref\_\&\_impASEAN(t_0)_i$. However, we did some preliminary regressions for which we used some indicators based on trade data (e.g. the share of imports coming from ASEAN or the share of total imports for a particular product) and found (somehow surprisingly) few significant results.

Other variables are dummies for agricultural products (chapters 1-24)[30] and a dummy if the product had been subdivided (only when we use HS-6 aggregates instead of tariff line data). With that, we control for any bias due to the aggregation.

The interpretation of (E1), (E2) and (E3) is straightforward: If β_1 is negative, then there would be a building bloc effect, and a positive β_1 indicates a stumbling bloc effect. We test all three models both with and without controlling for $MFN(t_0)_i = 0$.

It should be noted that all regressions are made for each country separately. The main reason is that matching tariff data across countries would considerably reduce the coverage of our dataset because countries use different product classifications and data is not available for the same years across countries.[31]

4.3 Econometric issues

Heteroskedasticity is a potential problem. We tested for that using a score test ("hettest" in Stata) and usually found heteroskedasticity when using OLS. We therefore used so-called Huber/White/Sandwich estimators for the variance to get adjusted t-values.

Endogeneity is another potential problem: It could be that preferences were granted for products by already having in mind future MFN reductions (a reverse-causality). A

[30] This is not exactly the same definition as used by the WTO. For example, it includes fishery products.

[31] Estevadeordal et al. (2006) matched data across countries, though this comes at a high cost: They aggregated the data on a much higher level (ISIC-4) so that there remain only 100 products, while our dataset covers around 5000-8000 products per country.

country might grant preferences for those products for which they want to reduce the MFN tariff anyway (or possibly for those for which they do *not* want to reduce the MFN tariff). There is no obvious way to solve this potential problem, as we would have to find an instrument for the preferential tariff. We therefore assume that this problem is negligible. One can argue that the MFN reductions that happened over a period of 5-8 years *after* granting the preferences can only partly have been known at the time of granting the preferences (and thereby having possibly determined the preferences).[32]

Another issue is misspecification. We surely leave out some variables that explain the change of MFN tariffs. Tariffs are set within the political system of a country, and unless a common and transparent policy regarding tariff changes (like a formula) is in place, policy makers can set tariffs discretionary. As long as such variables are not correlated with our error term, there is no problem, but we obviously do not know whether that is the case. Given the limited data we have, we assume that adding dummies for each industry (represented by 96 different chapters of the harmonized system) should capture specific situations in different industries. We can then still not explain the MFN change in a particular industry (i.e. chapter), but we assume that all missing variables that influence a certain chapter do so in the same way for all products within a chapter. This is of course not completely satisfying, but, again, there is no better solution for that, given the data that is available.

4.4 Data and descriptive statistics

Two types of data were used: Tariff data and trade data.

Tariff data: The main source for tariff data was TRAINS, accessed via World Integrated Trade Statistics (WITS). WITS contains applied[33] tariff data of most major countries from 1988. We also received some data directly from the ASEAN secretariat. However, data availability is limited for most countries, especially for applied *preferential* rates. Therefore, we had to choose different years for the different countries, as can be seen from table 5.

[32] Limão (2006) addresses this as well and also argues that using pre-determined preferences, together with industry dummies, is a sufficient solution for that problem.

[33] Tariffs are always applied – not bound - tariffs.

Our data is not complete for two reasons: Products with specific tariffs had to be taken out and products for which the classification changed over time had to be taken out as well. This is because data was only available separately for different years, and matching tariff data from different years is a cumbersome procedure: Products can be grouped differently, subheadings change every few years, etc. However, as shown in table 5, our dataset covers 95-98% of products representing 78-94% of base year imports.

We used tariff-line data for both Malaysia and the Philippines. For Indonesia and Thailand, we aggregated the tariff on HS-6 (subheading) level (simple average) because product codes changed considerably between the two periods, which does not allow for the (otherwise preferred) matching on tariff-line level. Conversion tables from WITS were used to match HS-6 data across different classifications.[34] Preferential tariffs were set to be equal to the MFN tariff if they were above the MFN tariff or non-existent.[35]

Trade data: We used trade data only to define the dummy for preferential imports, which is one only if a preferential tariff is applied for a product *and* if there are any imports of that product from any ASEAN country. Trade data was taken from Comtrade or IDB (access via WITS). Imports for the base year, and if not available, for a year close to that were used. We used trade data of the same aggregation level (tariff line or HS-6) as the tariff data.

Descriptive statistics:[36] Tables 5 and 6 show summary statistics for each country. Even though there are only a few years between the observations we use for each country, between 64% and 97% of the MFN tariffs of Indonesia, the Philippines and Thailand changed over these periods and almost all of them were reduced. The simple average tariffs of these three countries were reduced by more than half. The

[34] The harmonized system (HS) is slightly changed every 4-5 years.
[35] There were only few cases with CEPT > MFN. Obviously, the CEPT rate would not be used in such a case, so that the MFN rate applies.
[36] All figures are based on the data that is used in the empirical part, by leaving out tariff lines that could not be used for the regressions (e.g. due to non-availability in some years).

only exception is Malaysia, where we observe many unchanged (59%) and increased (24%) tariffs and a slight overall increase of 0.4 %-points on average.[37]
As shown by table 5, preferential products had their tariffs reduced relative to non-preferential products. The difference-in-difference figures are all negative. In all countries but Malaysia, MFN tariffs of both product types were reduced, but more so for preferential products. This is a first indicator for an building bloc effect.

Between 24% and 83% of products received preferences in the base year. However, according to trade statistics, many of these products were not imported at all from any ASEAN country, so the preference could not have been used.[38] We use this fact to distinguish between preferential products and products with preference *and* imports in the empirical part. The latter ones have a share of 16% to 42%.

The tariff data is best summarized by using two different graphs per country, showing the distribution of tariffs and tariff changes for both preferential and non-preferential products (see figures 2a and 2b).[39] As shown by the difference-in-difference calculation, preferential products show a clear tendency towards *more* MFN-tariff reduction in Indonesia, the Philippines and Thailand, while the picture is somewhat less clear for Malaysia.[40] Peaks occur at zero change because many products have a zero tariff in both periods, especially in Malaysia. These products are – by definition – non-preferential products. These graphs therefore indicate a building bloc effect for all countries except for Malaysia: Preferential products had their MFN tariffs subsequently reduced by more. This is in line with our empirical results. In his paper on the US, Limão uses such a graph as well, but it looks quite different: Products with a preference had their MFN tariff reduced by *less*, indicating a stumbling bloc effect. We reproduced the graph with Limão's dataset (figure 4, left graph). The regression results in Limão (2006) are also in line with the graph.

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[37] The average tariff of Malaysia has only been slightly reduced since 1993 (see table 2). However, one should be cautious with any interpretation because these figures show unweighted averages. It may well be that Malaysia has in fact liberalized its import regime by much more than these numbers may suggest.
[38] We do not have data on utilization rates. It can be assumed that many preferential products were imported without actually receiving a preference, e.g. due to stringent rules of origin and/or too small preferential margins.
[39] Remember that a negative tariff change represents an MFN reduction.
[40] We provide additional graphs for Thailand and Malaysia that will be used for the interpretation of the estimation results (see below).

However, we argue that one should control for the base year MFN tariff. This is shown by the graphs on the right-hand side of figures 2a, 2b and 3. They show the distribution of base year MFN tariffs for both preferential and non-preferential products. We clearly see that products with a preference tended to have *higher* MFN tariffs than products without a preference, at least in Indonesia, Malaysia and the Philippines. This is confirmed by the different base year MFN averages for preferential and non-preferential products as shown in table 5 (bottom). Therefore, we can expect that adding the base year MFN tariff in the regression will lower or even reverse the building bloc effect that we observe otherwise. This is indeed mostly the case.

To see how this graph looks like for the US, we added the US base year MFN tariffs (i.e. the pre-Uruguay round bound MFN tariffs) to Limão's dataset, so that we can calculate the base year MFN tariff distribution.[41] Figure 4 (right graph) shows the somehow surprising result: In the US, preferential products tended to have *lower* MFN tariffs than non-preferential products – which is the opposite of what we observe in ASEAN. Therefore, at least part of the US stumbling bloc effect might come from the fact that MFN tariffs on preferential products were reduced by *less* because they were already lower than tariffs for non-preferential products. We replicated the basic OLS regression in Limão (2006) and added the base year MFN tariff to check whether his stumbling bloc result remains. It does, but its magnitude is reduced by half.[42]

Another useful way to summarize the data is shown in figure 5: Here, we plot the absolute change in the MFN tariff against the preferential margin (which is between 0 and 1). One can see that products with a high preferential margin tend to have their MFN tariffs reduced by more. Again, we do not control for the base year MFN tariff, i.e. the negative relationship might be caused by products that already had zero MFN tariffs in the base year (and therefore a zero preferential margin and no tariff reduction).

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[41] Limão only shows the distribution of MFN tariff *changes* (replicated in figure 4, left), which suggests that preferential products have their MFN tariff reduced by less – as confirmed by his regression results.

[42] We could only calculate base year tariffs for 4848 out of 5079 products used by Limão. Preferential products are those with ANYPTA=1 in Limão (2006).

One can obviously not draw a conclusion from these graphs alone because one has to control for other factors influencing the tariff change, but the regression results are mostly in line with what one might expect from the graphs.

5. Estimation results and discussion

We present six regression results for each country, i.e. using the equations (E1), (E2) and (E3), and each with and without controlling for the base year tariffs (see tables 7-10).[43] For Indonesia and the Philippines, we find that β_1 is negative and significant for all six different estimations. We get the same result for Thailand, with the exception of (E2), the model with $D\_pref\_\&\_impASEAN(t_0)_i$. This means that we find strong building bloc effects for 3 out of 4 countries. For Malaysia, β_1 is only negative when we do not control for $MFN(t_0)_i$, and positive otherwise, so we rather get a stumbling bloc effect.

Indonesia (table 7): Looking at ID-1, we see that preferential products in 1995 had their MFN tariff subsequently reduced by around 2.7 %-points more until 2001 than those without a preference. But this result is partly caused by the fact that preferential products also had much higher MFN tariffs in 1995, as we could already expect from figure 3a. If we control for the MFN tariff in 1995, $D\_pref(t_0)_i$ remains negative and significant (ID-2), but is much smaller. The results are similar for $D\_pref\_\&\_impASEAN(t_0)_i$ (ID-3 and ID-4), but the building bloc effect is somewhat smaller. The same effect can be found for the preferential margin. The higher the preferential margin, the more is the MFN tariff reduced. The high magnitude of $prefmargin$ (-30.7 in ID-5 and -5.7 in ID-6) is not surprising because $prefmargin$ is on average much smaller than $D\_pref(t_0)_i$ or $D\_pref\_\&\_impASEAN(t_0)_i$, but – to put it simple - has to explain the same magnitude of MFN reduction.

The dummy D_subdivided is not significant, which suggests that the necessary aggregation on HS-6 level does not significantly affect our results. Agricultural products had their MFN tariff reduced by much less than industrial products.

[43] All estimations are tagged with the two-letter country code (ID, MY, PH and TH) and a number, i.e. ID-1.

Malaysia (table 8a): We get ambigious results for Malaysia. The first regression (MY-1) suggests that AFTA had a small building bloc effect. But when we control for MFN1997, we see that the sign of $D\_pref(t_0)_i$ is reversed (MY-2). This is not surprising, as we know from the distributions of the MFN tariff change and the initial MFN tariff that preferential products have no tendency towards more reduction, but had much higher initial MFN tariffs. With $D\_pref\_\&\_impASEAN(t_0)_i$, we get a stumbling bloc effect in both modifications (MY-3 and MY-4). However, we get a significant building bloc effect when using prefmargin instead of the dummies (MY-5 and MY-6). The difference between MY-2 and MY-6 is somewhat surprising. A possible interpretation is the following: Full-margin products (i.e. prefmargin=1) show on average a high MFN reduction, but products with only a partial preferential margin (which is usually between 0.2 and 0.6 in Malaysia) show on average a slight increase. The estimated coefficient for prefmargin goes up when we control for the initial MFN tariff, but remains negative because both products with a full preferential margin and those with only a partial preferential margin have a very similar distribution of their initial MFN tariffs – while non-preferential products have much lower initial tariffs.[44] This means that the initial MFN tariff does not explain the different MFN *reductions* of full-margin and partial-margin products.

Philippines (table 9): The results very much resembles those of Indonesia. We find a significant building bloc effect in all six modifications, but generally a significant, but smaller effect when controlling for the MFN tariff in the base year 1998. This is again what we expected because of the distribution of both the MFN change and the base year MFN tariff.

Thailand (table 10): The results for $D\_pref(t_0)_i$ and prefmargin are similar to those of Indonesia and the Philippines – we get a significant building bloc effect. The effect is nearly the same if we control for the base year MFN tariff in 1993. One could at least partly explain this by the fact that preferential products do not show a clear tendency

[44] We provide two additional distribution graphs to show this (figure 3a, dashed frames). They are constructed in the same way as the other graphs, but distinguish between non-preferential products, products with partial and with full preferential margin.

to have higher or lower base year MFN tariffs than non-preferential products (see figure 3b) – in contrast to the other countries. The estimations for $D\_pref\_\&\_impASEAN(t_0)_i$ are not significant, suggesting that there was neither a building bloc nor a stumbling bloc effect of *real* preferences – those preferences given to products that were actually imported from other ASEAN members. Only around half of all products with a preference in 1993 were also imported from ASEAN in that year. Figure 3b shows two different distributions of Thailand's MFN tariff changes for preferential and non-preferential products: One is based on $D\_pref(t_0)_i$ (as the distributions shown for the other countries), and the second one (dashed frame) is based on $D\_pref\_\&\_impASEAN(t_0)_i$, i.e. it compares products that received a preference *and* were imported with the other products. The result is striking: Both types of products show a nearly identical distribution of MFN tariff changes, while the distribution is very different between non-preferential and preferential products. This is very much in line with the regression results: $D\_pref(t_0)_i$ is significant, and $D\_pref\_\&\_impASEAN(t_0)_i$ is not.[45]

Are these results also significant from an economic point of view? The results for Indonesia, the Philippines and Thailand suggest that granting a preference means that the MFN tariff is reduced by roughly 1 to 5 %-points more than otherwise. This is quite a lot compared to the average MFN reduction of Indonesia (8.5 %-points) and the Philippines (5 %-points) and the average initial tariffs of these countries (15% and 10%). Thailand had very high tariffs in the base year (46%) and reduced them by 30 %-points. Therefore, the average effect of a preference of 2 %-points is relatively small, but not neligible. Results for Malaysia have mixed signs, but the estimated coefficients for the preference dummy are also relatively high compared to the average tariff level of roughly 8%.

[45] This additional distribution is only shown for Thailand. For the other countries, there is no such obvious difference between the tow types of distribution.

6. Robustness tests

As a first robustness test, we repeated all regressions, but took out all products that had a zero MFN tariff in the base year.[46] In his paper on the US, Limão (2006) also only considered products with a positive MFN tariff before the Uruguay round, arguing that preferences are irrelevant for zero MFN products and that these products are also "likely to share an unobserved common characteristic". We do not necessarily share this notion for the case of ASEAN, but nevertheless checked for whether our results might be affected by these zero-tariff products. The share of products with a zero MFN tariff in the base year varies across countries. Malaysia has the highest share with 46.8% and Indonesia comes second with 10.5%. The Philippines and Thailand had very few zero tariff products (0.2% and 0.3%, see table 5). Not surprisingly, the results for Indonesia, the Philippines and Thailand are very similar to the results of our main regressions.[47] But even for Malaysia, the results are quite similar (see table 8b). The sign and overall magnitude of the relevant explanatory variable is identical and all results remain significant. The constant is much lower because tariffs were on average reduced by much more – the zero MFN tariffs could not have been reduced (in fact, 11% of them were increased, the others remained zero). It therefore seems that our results do not depend on whether we include zero tariff products or not.

A few chapters do only conclude products that receive a reference or only those without a preference. We therefore repeated all regressions, but by including only chapters that consist of both preferential *and* non-preferential products.[48] The results were very similar. This is indeed not surprising, since we use chapter dummies in all regressions.

We also did a robustness test with 4-digit industry dummies (i.e. on "heading" level). We only include headings that cover at least one preferential product and one non-

[46] By definition, the CEPT is then also zero.
[47] The results are therefore not shown.
[48] We used D_Pref as the definition of preferential products, not D_pref_&_impASEAN. The remaining observations, as a share of total observations, are 69% for Indonesia, 93% for Malaysia, 88% for the Philippines and 83% for Thailand.

preferential product.[49] This leaves much less observations compared to our original dataset: 14% for Indonesia, 45% for Malaysia, 25% for the Philippines and 16% for Thailand. The reason is that most headings either only consist of preferential products or only of non-preferential products. Because of that, we do not believe that the results are particularly meaningful. Table 11 shows the results for the most relevant estimated variable β_1. We re-estimated only equations 1 and 3. The sign of β_1 in equations 1 and 3 is identical to our main results for Malaysia (for which we could also use a rather high share of the observations). The estimates for equation 3 are identical for Thailand, but estimates for equation 1 are not significant. β_1 becomes insignificant (Philippines) or positive (Indonesia) when we control for the initial MFN tariff, but are otherwise identical. This means that our results are not entirely robust if we control for product-specific characteristics on a 4-digit level, but our dataset does not allow us to do such a test in a reasonable way because we can only use a few observations. We therefore believe that chapter dummies are the most useful level on which we should control for product-specific characteristics.

7. Conclusion and outlook for further research

Do free trade agreements affect non-discriminatory trade liberalization? Empirical research based on tariff schedules has just started recently, and the main available evidence that we have so far from Nuno Limão suggests that FTAs rather hinder the reduction of MFN tariffs. Estevadeordal et al. find the opposite effect for some Latin American countries, but by using a different approach with more aggregated data. By using a method similar to Limão's, but applying it to major members of ASEAN and also controlling for the initial level of MFN tariffs, we get very different results. Our results for three out of four countries that we looked at (Indonesia, the Philippines and Thailand) suggest that MFN tariffs were reduced by more if a preferential tariff were applied to products – a building bloc effect. These results do not depend on whether we use the original approach used by Limão or our slightly different approach (taking into account the base year MFN tariff). We only get ambiguous results for Malaysia, which might be related to the fact that our data for Malaysia covers a period in which the average MFN tariff remained unchanged and a lot of

[49] Otherwise we would have to use more than 1000 heading dummies, of which many represent only a single product. All preferences are defined using D_Pref, rather than D_pref_&_impASEAN. Limão

liberalization had already taken place beforehand. This means that Limão's results can not easily be transferred to other countries. In fact, it might well be that FTAs have worked as building blocs in many countries.

Further research could be done in two directions: Using our dataset on ASEAN, one could use more advanced econometric techniques, though this most probably won't change much of our qualitative results. One could also use more explanatory variables, especially trade data. Finding interesting relationships between trade data and tariff data would itself be a very interesting topic and could be done with our data. This could also be used to shed more light on the question of whether AFTA preferences had any direct impact on trade flows. So far, economists have almost exclusively tried to answer that question using the gravity approach on a very aggregated level of trade flows, but the available data suggests that one could do so on a much more detailed level.
The other direction would be to apply the same method to other countries. ASEAN members are a very good example because the preferential agreement has existed for a sufficiently long period of time, MFN tariffs subsequently changed and the tariff data is available. But there certainly exist other countries for which these conditions are fulfilled, e.g. in Latin America or the Middle East.

A conclusion that one could draw from our paper is that AFTA might have had a bigger impact than the very low utilization rates and trade-weighted preferential margins might suggest: Even though few traders seem to actually use AFTA, it might have been a stepping stone to MFN tariff reductions of the major ASEAN members. The unilateral and non-discriminatory trade liberalization that these countries have undergone over the last decades is indeed remarkable and was probably necessary to develop export-oriented industries that often rely on imports of intermediate products from many countries, both inside and outside ASEAN.[50] Regionalism alone would not have been sufficient for that.

(2005) uses a very similar robustness check.
[50] See figure 2 (taken from Baldwin (2006)) for an enlightening example. It shows the sources of inputs for hard disc production in Thailand.

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9. Figures and tables

Table 1: Trade flows in ASEAN in 2005

importing country	Total in million USD	ASEAN	Singapur	Thailand	Malaysia	Indonesia	Philippines	other ASEAN	extra-ASEAN	Japan	China	US	EU-25	other extra-ASEAN
Singapur	200050	**26.1%**		3.8%	13.7%	5.2%	2.3%	1.1%	**73.9%**	9.6%	10.3%	11.7%	11.5%	30.8%
Thailand	118164	**19.5%**	4.6%		6.8%	2.6%	1.6%	3.8%	**80.5%**	22.0%	9.4%	7.4%	9.1%	32.6%
Malaysia	114584	**25.5%**	11.7%	5.3%		3.8%	2.8%	1.9%	**74.5%**	14.5%	11.5%	12.9%	11.6%	23.9%
Indonesia	57701	**30.0%**	16.4%	6.0%	3.7%		0.6%	3.4%	**70.0%**	12.0%	10.1%	6.7%	10.1%	31.0%
Philippines	46954	**19.3%**	7.9%	3.5%	3.8%	2.3%		1.8%	**80.7%**	17.1%	6.5%	17.5%	7.8%	31.7%
Sum	537453	**24.3%**	6.0%	3.5%	7.3%	3.5%	1.9%		**75.7%**	14.3%	10.0%	11.0%	10.5%	29.8%

Source: Own calculations, based on ITC TradeMap. Data is for 2005 and is reported by the importing country.

Table 2: Average CEPT and MFN rates by country (in %)

Country	Scheme	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Indonesia	CEPT	17.3	17.3	15.2	10.4	8.5	7.1	5.4	4.8	4.3	3.7	2.2
	MFN	23.3		20.7	15.4			13.4	11.3	8.7	8.7	8.7
Malaysia	CEPT	10.8	10	9.2	4.6	4.1	3.5	3.2	3.3	2.7	2.6	2
	MFN	16.8			13.6	13.6				13.6	13.4	13.4
Philippines	CEPT	12.5	11.4	10.7	9.6	9.2	7.7	7.3	5.2	4.5	4.1	3.8
	MFN	27.5	26.6	23.6			13	11.6	9	8.6	6.4	5
Thailand	CEPT	19.9	19.8	18.2	14.2	12.9	10.2	9.6	6.1	5.7	5	4.6
	MFN	54.6		25.9					19.6	18.9		17.8

Source: CEPT tariffs are taken from Austria (2004). MFN tariffs are taken from UNCTAD, Handbook of Statistics 2005. The MFN tariff covers only non-agricultural and non-food products. Our own calculations based on raw data therefore differ from figures in this table.

Table 3: Weighted and unweighted absolute preferential margins in ASEAN

year	MFN minus CEPT	Indonesia	Malaysia	Philippines	Thailand
2005	simple average	7.1%	7.7%	5.0%	9.8%
	trade-weighted (average)	3.6%	2.5%	2.7%	3.7%
	trade-weighted (maximum)	5.6%	3.8%	3.3%	4.3%
	covered trade	98%	96%	98%	93%
base year	year	1995	1997	1998	1993
	simple average	2.2%	3.9%	1.5%	22.9%
	trade-weighted (average)	0.9%	1.3%	0.6%	21.6%
	covered trade	90%	78%	94%	91%

Source:
2005: Tariff data is from the ASEAN secretariat, trade data from ITC TradeMap.
base year: Same data used as for empirical analysis.
Explanations:
"Covered trade" shows how much of total imports are covered by the calculations. Preferences were calculated on tariff-line or HS-6 level and then matched with HS-6 trade data by using a simple average. However, the trade-weighted preference for 2005 is calculated in two ways: By using the tariff calculated with a simple average and by using the highest preference within each HS-6 line ("maximum"). This figure therefore shows the hypothetical maximum trade-weighted preference that might exist. The true value could only be calculated with tariff-line import data, which is not available in a form that it can be matched with the tariff data. The simple average was calculated on tariff-line level.
Results for 2005 and "base year" are based on different data and should therefore be compared carefully. No calculations have been made for Singapore, as Singapore has zero MFN tariffs on practically all products (except for a few alcoholic beverages).

Table 4: Definitions of variables

Variable	Description	Source
$\Delta\tau_i$ (*year1,year0*)	=100*(ln(1+MFN(*year1*))-ln(1+MFN(*year0*))) (logarithmic form of MFN tariff reduction, dependent variable)	WITS and ASEAN secretariat
D_pref*year*	=1 if the CEPT tariff is below the MFN tariff in that year (only used for base year)	WITS
D_pref*year*_&_impASEAN	=1 if D_pref*year*=1 and if product is imported from any ASEAN country	WITS
prefmargin*year*	= 1-cept*year*/mfn*year* (=0 if mfn*year*=0) (only used for base year)	own calculation
MFN*year*	=100*(ln(1+MFN_tariff(*year*)) (logarithmic form of MFN tariff)	WITS
D_subdivided	= 1 if there is further subdivision below the HS-6 level in the base year (only used Thailand and Indonesia)	-
D_Agri	= 1 if the product falls within chapters 1-24 (approximately the WTO agriculture definition)	-

Table 5: Sources and main indicators by country

	Indonesia	Malaysia	Philippines	Thailand
Base year and final year	1995 - 2001	1997 – 2003	1998 - 2003	1993 – 2001
Source for tariff data	WITS (TRAINS)	WITS (TRAINS), ASEAN secretariat	WITS (IDB)	WITS (TRAINS), ASEAN secretariat
Source for trade data	COMTRADE	WITS (IDB)	WITS (IDB)	COMTRADE
Level of aggregation	HS-6-digit	Tariff-line	Tariff-line	HS-6-digit
How many of available product codes could be used?	4928 of 5013 (98%)	8258 of 8733 (95%)	5396 of 5678 (95%)	4774 of 4969 (96%)
Which share of imports in t(0) is covered by available tariff data?	90%	78%	94%	91%
Share of products that received preferences in t(0)	53%	26%	24%	83%
Share of products that received preferences in t(0) and were also imported from ASEAN	35%	17%	16%	42%
Share of products that had their MFN tariff reduced (-), increased (+) or unchanged (=) between t(0) and t(1)	(-) 67% (+) 1% (=) 32%	(-) 17% (+) 24% (=) 59%	(-) 64% (+) 0% (=) 36%	(-) 95% (+) 2% (=) 3%
Share of products with MFN=0 in base year	10.5%	46.8%	0.2%	0.3%
Average MFN tariff change (%-points, not with log)				
- all products	-8.552	0.403	-5.403	-29.798
- preferential products	-11.051	-0.888	-12.030	-31.590
- non-preferential products	-5.741	1.346	-3.361	-21.065
- difference-in-difference	-5.310	-2.234	-8.669	-10.525
Average base year MFN tariff (%-points, not with log)				
- all products	15.433	8.128	10.448	45.890
- preferential products	18.607	16.914	19.198	46.553
- non-preferential products	11.861	1.717	7.752	42.661

Table 6: Additional summary statistics by country

Indonesia (4928 observations)	**Mean**	**Std. Dev.**	**Min**	**Max**
$\Delta\tau_i$ (2001,1995)	-7.338	8.413	-64	66
D_pref1995	0.529	0.499	0	1
D_pref1995_&_impASEAN	0.348	0.476	0	1
Prefmargin1995	0.091	0.116	0	1
CEPT1995	13.274	11.963	0	200
MFN1995	15.433	13.718	0	200
MFN2001	6.881	9.669	0	170
MFN1995 (log form)	13.720	10.993	0	110
D_subdivided	0.389	0.488	0	1
D_Agri	0.138	0.345	0	1
Malaysia (8258 observations)	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
$\Delta\tau_i$ (2003,1997)	0.296	8.709	-105	69
D_pref1997	0.422	0.494	0	1
D_pref1997_&_impASEAN	0.235	0.424	0	1
Prefmargin1997	0.247	0.347	0	1
CEPT1997	4.199	8.591	0	187
MFN1997	8.128	11.628	0	187
MFN2003	8.532	12.268	0	200
MFN1997 (log form)	7.330	9.503	0	105
D_subdivided	-	-	-	-
D_Agri	0.124	0.330	0	1
Philippines (5396 observations)	**Mean**	**Std. Dev.**	**Min**	**Max**
$\Delta\tau_i$ (2003,1998)	-4.738	5.325	-25	17
D_pref1998	0.236	0.424	0	1
D_pref1998_&_impASEAN	0.163	0.369	0	1
Prefmargin1998	0.085	0.170	0	1
CEPT1998	8.904	9.538	0	80
MFN1998	10.448	10.682	0	80
MFN2003	5.046	5.851	0	50
MFN1998 (log form)	9.526	8.816	0	59
D_subdivided	-	-	-	-
D_Agri	0.142	0.349	0	1
Thailand (4774 observations)	**Mean**	**Std. Dev.**	**Min**	**Max**
$\Delta\tau_i$ (2001,1993)	-22.135	13.624	-64	21
D_pref1993	0.830	0.376	0	1
D_pref1993_&_impASEAN	0.424	0.494	0	1
Prefmargin1993	0.470	0.291	0	1
CEPT1993	22.950	16.166	0	100
MFN1993	45.890	25.150	0	200
MFN2001	16.092	13.832	0	80
MFN1993 (log form)	36.388	16.348	0	110
D_subdivided	0.035	0.183	0	1
D_Agri	0.132	0.338	0	1

Remark: All tariff data is shown in percentage points.

Table 7: Regression results for Indonesia

Dependent variable: $\Delta\tau_i$ (2001,1995)	Equation 1		Equation 2		Equation 3	
	ID-1	**ID-2**	**ID-3**	**ID-4**	**ID-5**	**ID-6**
D_pref1995	-2.681	-0.808				
	(6.66)***	(2.53)**				
D_pref1995_&_impASEAN			-1.138	-0.489		
			(4.08)***	(2.48)**		
Prefmargin1995					-30.738	-5.703
					(17.29)***	(3.49)***
MFN1995		-0.633		-0.635		-0.618
		(46.36)***		(47.69)***		(39.25)***
D_subdivided	-0.320	0.011	-0.286	0.036	-0.161	0.024
	(1.63)	(0.09)	(1.43)	(0.28)	(0.85)	(0.20)
D_Agri	8.981	-2.579	9.774	-2.218	-1.233	-2.181
	(4.26)***	(3.34)***	(4.25)***	(2.89)***	(1.21)	(2.95)***
Constant	-9.590	3.444	-11.247	2.851	0.430	2.838
	(4.84)***	(9.41)***	(5.14)***	(10.88)***	(0.70)	(11.23)***
Observations	4928	4928	4928	4928	4928	4928
R-squared	0.49	0.82	0.49	0.82	0.55	0.82

Note for these and all other regression results: * significant at 10%; ** significant at 5%; *** significant at 1%. All estimations with OLS using robust (Huber/White/Sandwich) estimators to correct for heteroskedasticity. Robust t-statistics in parentheses.
Results for chapter dummies are not shown.

Table 8a: Regression results for Malaysia

Dependent variable: $\Delta\tau_i$ (2003,1997)	Equation 1		Equation 2		Equation 3	
	MY-1	**MY-2**	**MY-3**	**MY-4**	**MY-5**	**MY-6**
D_pref1997	-0.773	5.834				
	(3.73)***	(11.18)***				
D_pref1997_&_impASEAN			0.448	3.804		
			(2.15)**	(10.91)***		
Prefmargin1997					-6.824	-3.202
					(22.63)***	(5.91)***
MFN1997		-0.508		-0.403		-0.288
		(13.79)***		(12.63)***		(8.11)***
D_Agri	5.621	5.402	5.272	5.639	5.088	6.201
	(3.19)***	(3.03)***	(3.14)***	(3.05)***	(2.94)***	(2.73)***
Constant	1.282	1.899	0.933	1.965	1.631	2.750
	(1.22)	(2.45)**	(0.81)	(2.47)**	(1.52)	(2.79)***
Observations	8258	8258	8258	8258	8258	8258
R-squared	0.37	0.49	0.37	0.47	0.40	0.46

Notes: see above

Table 8b: Regression results for Malaysia – robustness test (without zero MFN tariff products in 1997)

Dependent variable: $\Delta\tau_i$ (2003,1997)	Equation 1		Equation 2		Equation 3	
	MY-7	**MY-8**	**MY-9**	**MY-10**	**MY-11**	**MY-12**
D_pref1997	-0.480	2.898				
	(1.65)*	(6.82)***				
D_pref1997_&_impASEAN			0.955	2.070		
			(3.95)***	(7.61)***		
Prefmargin1997					-9.913	-8.853
					(24.75)***	(21.44)***
MFN1997		-0.353		-0.315		-0.235
		(11.55)***		(11.70)***		(9.10)***
D_Agri	11.159	12.154	10.205	5.703	3.725	5.181
	(.)	(141.08)***	(42.18)***	(115.54)***	(12.40)***	(15.97)***
Constant	-4.399	-6.054	-4.879	0.930	5.034	5.119
	(15.14)***	(18.11)***	(.)	(3.75)***	(12.57)***	(12.17)***
Observations	4390	4390	4390	4390	4390	4390
R-squared	0.57	0.62	0.58	0.62	0.63	0.66

Notes: see above

Table 9: Regression results for the Philippines

Dependent variable: $\Delta\tau_i$ (2003,1998)	Equation 1		Equation 2		Equation 3	
	PH-1	**PH-2**	**PH-3**	**PH-4**	**PH-5**	**PH-6**
D_pref1998	-5.669	-1.882				
	(34.26)***	(14.40)***				
D_pref1998_&_impASEAN			-4.408	-1.315		
			(28.16)***	(12.41)***		
Prefmargin1998					-10.859	-3.265
					(25.50)***	(11.23)***
MFN1998		-0.496		-0.515		-0.509
		(46.86)***		(50.10)***		(48.51)***
D_Agri	3.758	0.379	7.014	1.261	3.958	0.416
	(5.41)***	(0.68)	(9.33)***	(3.98)***	(5.65)***	(0.75)
Constant	-4.224	0.949	-7.479	0.135	-4.423	0.959
	(7.92)***	(1.73)*	(12.36)***	(0.44)	(8.19)***	(1.75)*
Observations	5396	5396	5396	5396	5396	5396
R-squared	0.57	0.85	0.52	0.84	0.54	0.85

Notes: see above

Table 10: Regression results for Thailand

Dependent variable: $\Delta\tau_i$ (2001,1993)	Equation 1		Equation 2		Equation 3	
	TH-1	**TH-2**	**TH-3**	**TH-4**	**TH-5**	**TH-6**
D_pref1993	-2.424	-1.978				
	(5.85)***	(5.30)***				
D_pref1993_&_impASEAN			0.109	0.108		
			(0.50)	(0.58)		
Prefmargin1993					-10.870	-9.448
					(18.43)***	(18.13)***
MFN1993		-0.585		-0.589		-0.553
		(29.10)***		(29.55)***		(29.25)***
D_subdivided	2.154	1.573	2.097	1.521	2.707	2.088
	(3.73)***	(2.96)***	(3.52)***	(2.80)***	(5.14)***	(4.36)***
D_Agri	20.674	-1.827	21.481	-1.635	3.202	-2.374
	(33.52)***	(3.36)***	(45.96)***	(2.72)***	(2.33)**	(4.21)***
Constant	-19.058	8.167	-21.517	6.359	-15.786	9.629
	(30.42)***	(7.57)***	(45.06)***	(6.29)***	(34.79)***	(10.49)***
Observations	4774	4774	4774	4774	4774	4774
R-squared	0.78	0.83	0.78	0.83	0.80	0.85

Notes: see above

Table 11: Robustness test with 4-digit industry dummies (results for β_1 only)

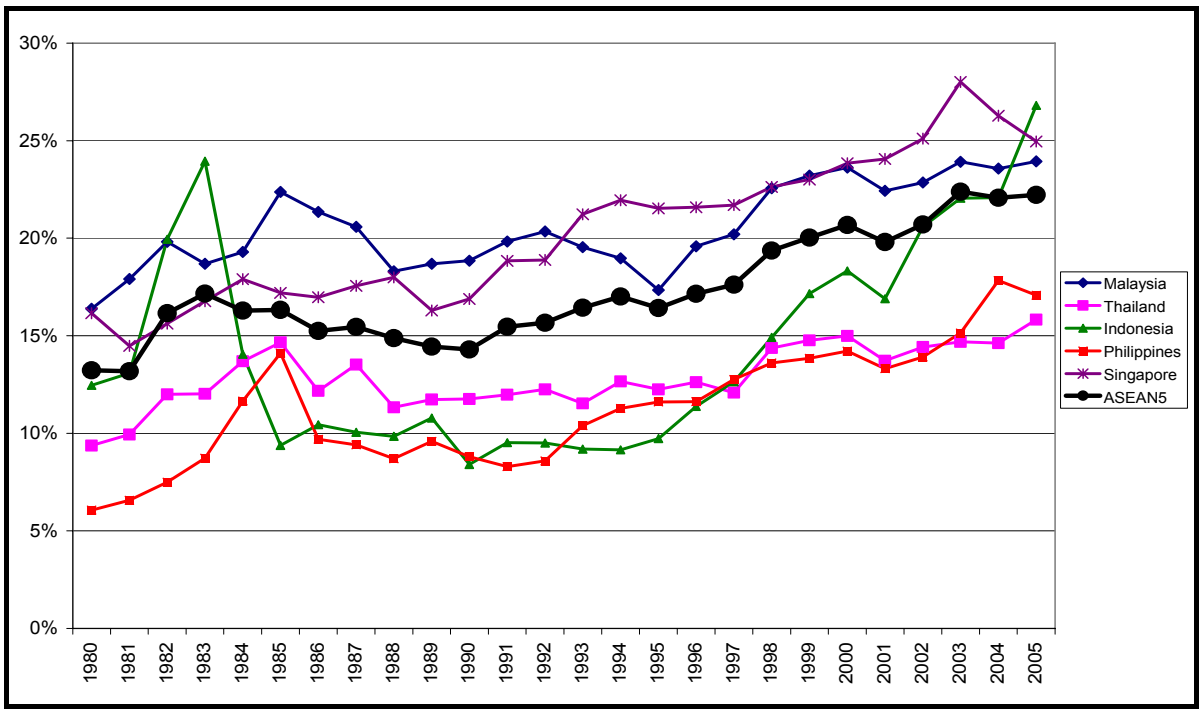
Dependent variable: $\Delta\tau_i$	Equation 1 (D_pref)		Equation 3 (Prefmargin)	
Controlling for $MFN(t_0)_i$	**no**	**yes**	**no**	**yes**
Indonesia (671)§	-1.537	1.040	-16.414	7.834
	(2.86)***	(4.95)***	(4.34)***	(3.97)***
Malaysia (3676)§	-1.064	2.328	-4.733	-3.18
	(4.48)***	(6.27)***	(12.23)***	(7.86)***
Philippines (1338)§	-4.844	-0.193	-8.975	0.145
	(17.76)***	(0.38)	(14.06)***	(0.35)
Thailand (783)§	-0.514	-0.551	-2.957	-3.052
	(1.30)	(1.43)	(3.32)***	(3.47)***

All estimations with OLS using robust (Huber/White/Sandwich) estimators to correct for heteroskedasticity. Robust absolute t-statistics in parentheses. Only results for β_1 are shown.

* significant at 10%; ** significant at 5%; *** significant at 1%

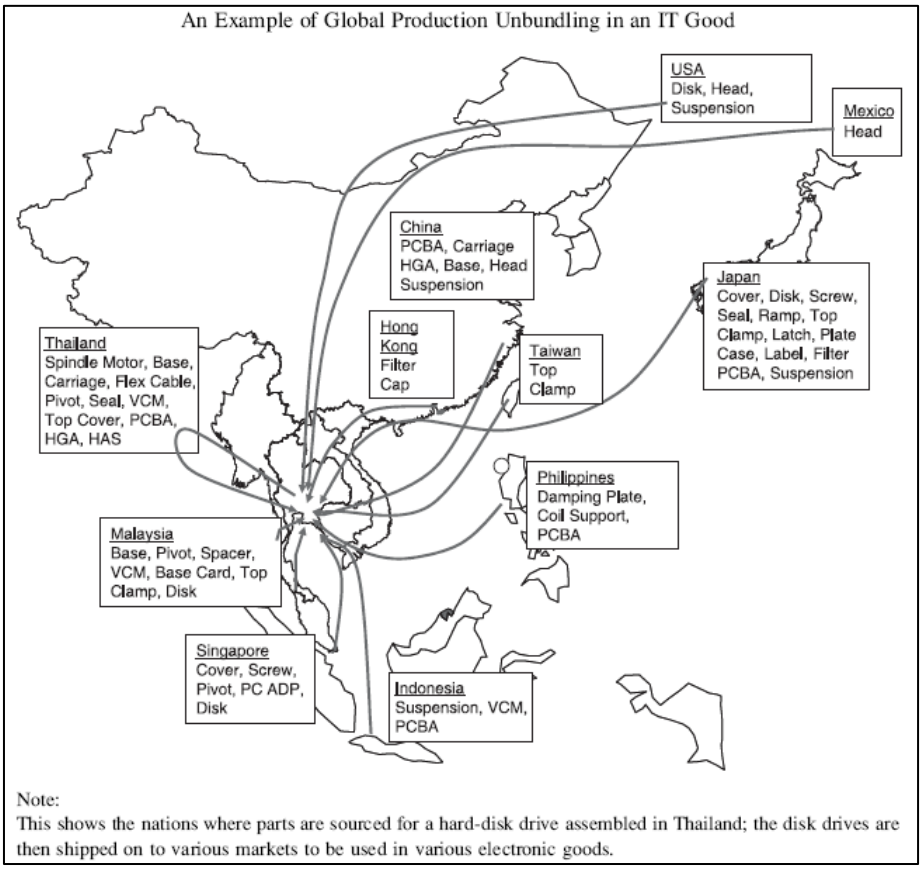
Results for 4-digit industry dummies are not shown. §: number of observations

Figure 1: Share of intra-ASEAN trade 1980-2005



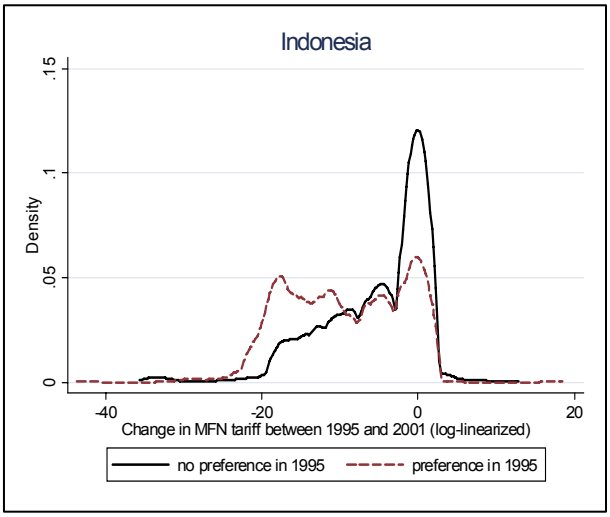
Source: WITS (Comtrade). ASEAN5 refers to the 5 countries shown in the graph.

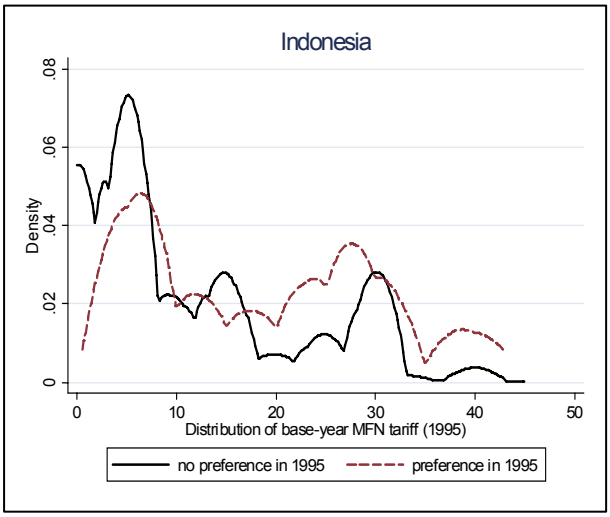
Figure 2: Example of production unbundling in Thailand

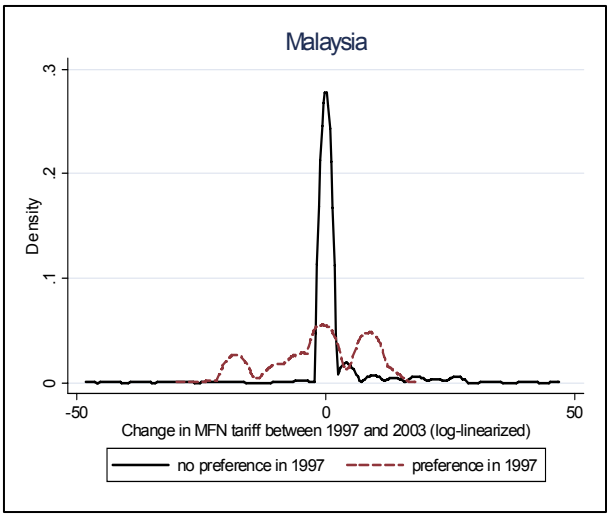


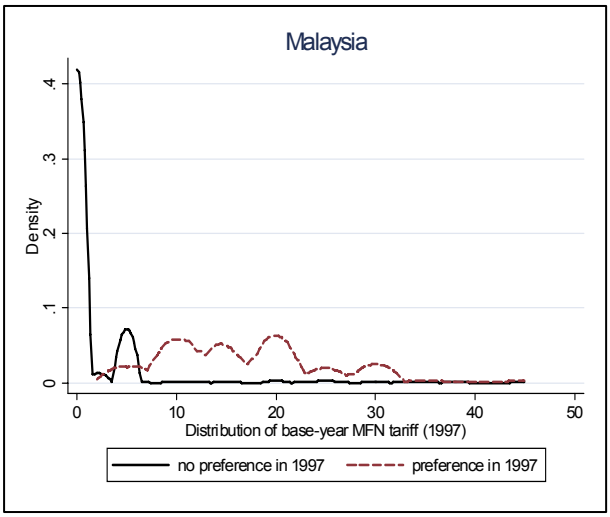
Source: Baldwin (2007)

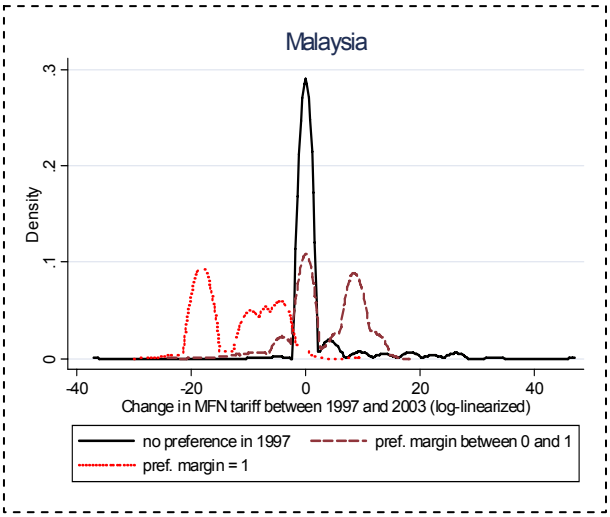
Figure 3a: Distribution of MFN tariff changes (left) and MFN tariffs in base year (right) for Indonesia and Malaysia[51]

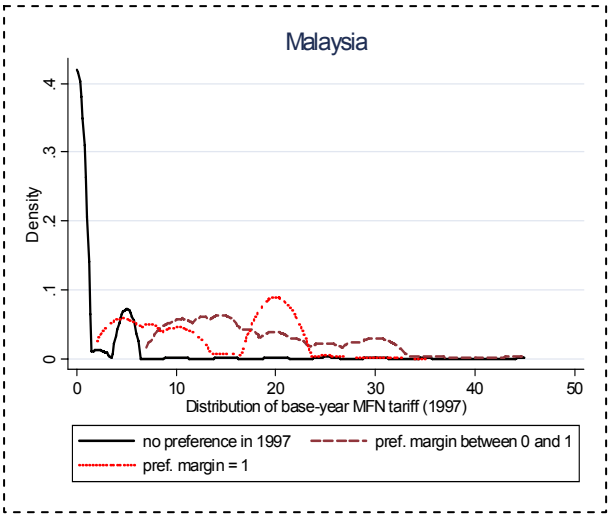






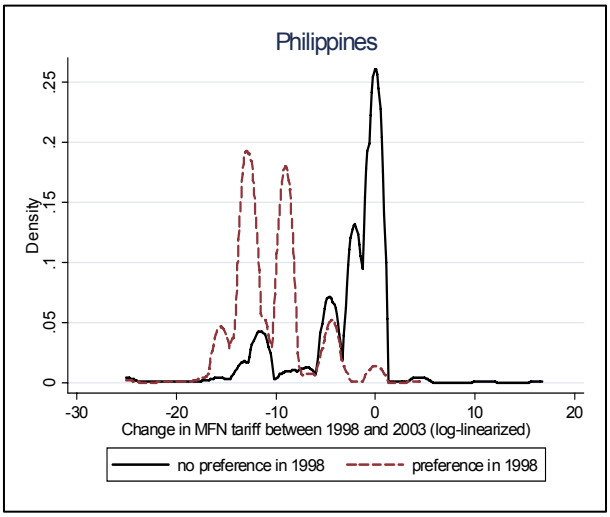


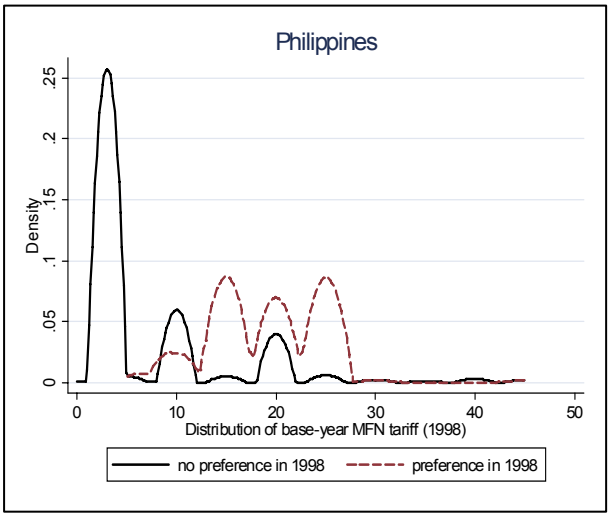


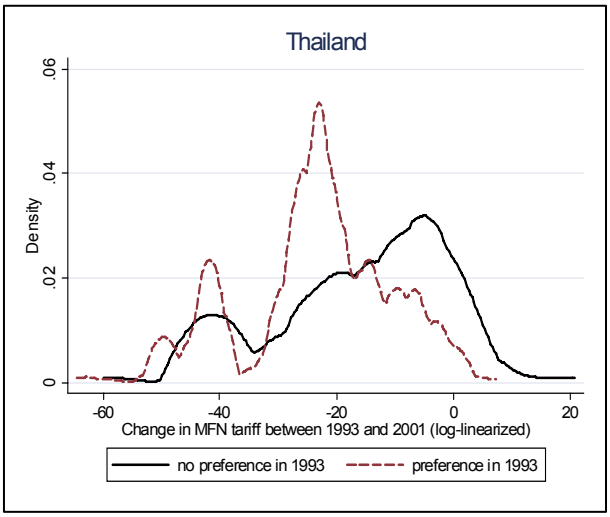


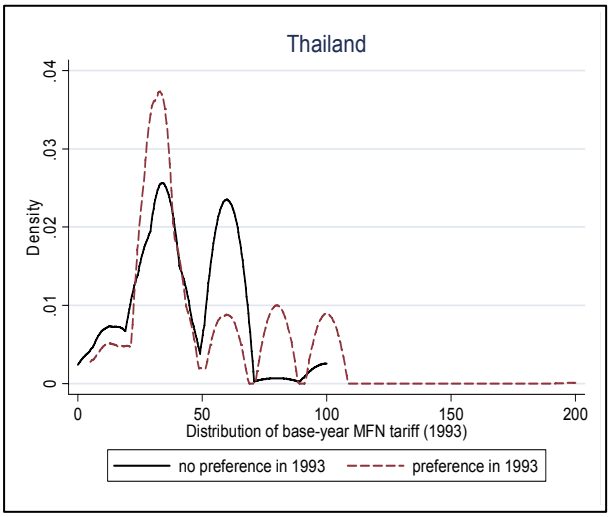
[51] Notes for graphs on this page:
Indonesia and Malaysia: only tariffs with ¦MFN¦<50 are shown.

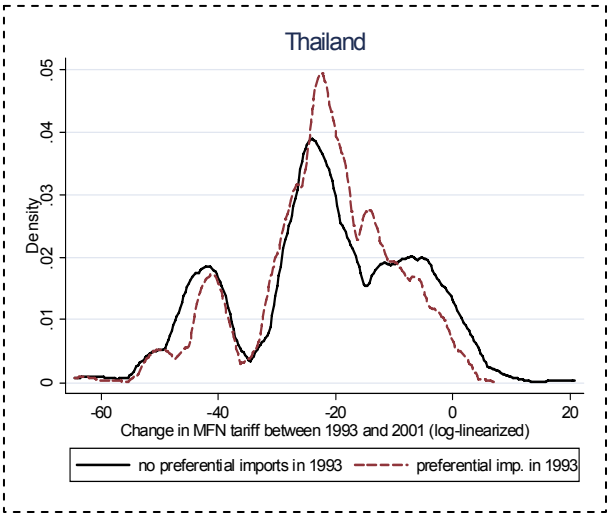
Figure 3b: Distribution of MFN tariff changes (left) and MFN tariffs in base year (right) for the Philippines and Thailand[52]





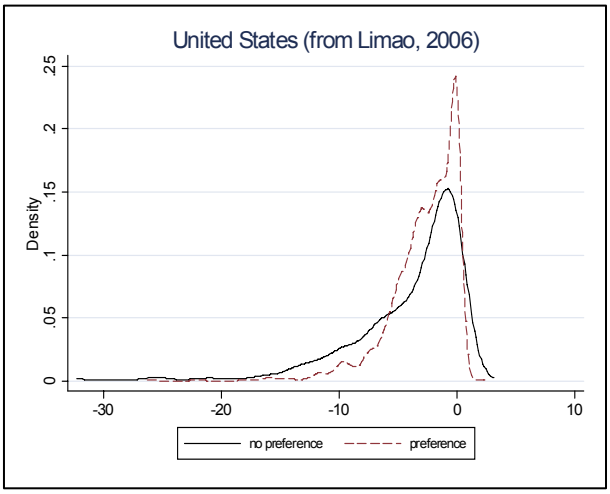






[52] Notes for graphs on this page:
Thailand: The lower graph shows the distribution based on preferential imports (i.e. preference *and* imports from ASEAN) as explained in the text.
Philippines: The right graph only shows tariffs with MFN<50.

Figure 4: Distribution of MFN tariff changes (left) and MFN tariffs in base year (right) for the US[53]



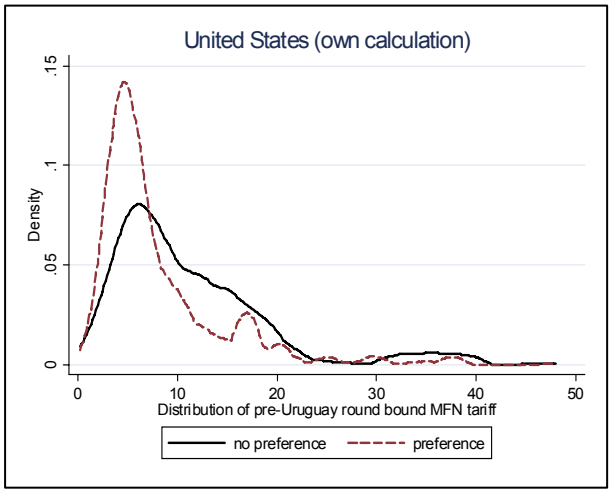
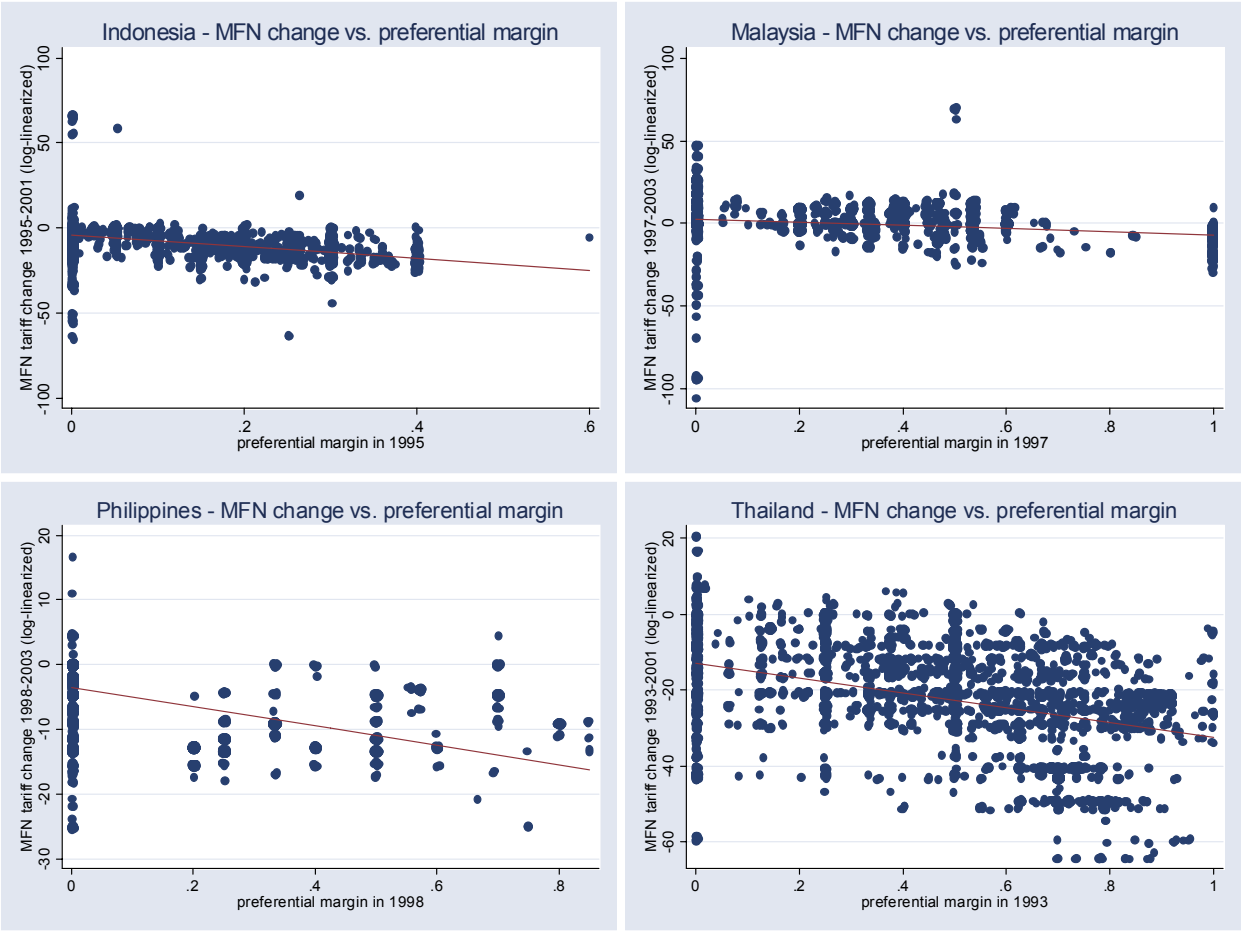


Figure 5: MFN changes and preferential margins[54]



[53] Source: left graph: Limão (2006), right graph: own calculation

[54] Plots are done with Stata. To make clusters more visible, all dots are randomly distributed with a 1% margin around their exact values (using the "jitter"-function of Stata).