Ex-Post assessment of six EU Free Trade Agreements

An econometric assessment of their impact on trade | November 2010

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PREFACE

This report entitled *"Ex-Post Assessment of EU Free Trade Agreements"* looks at how EU trade deals have impacted on trade. The report has been prepared for the European Commission, DG Trade, by Copenhagen Economics in cooperation with Professor Jeffrey Bergstrand, University of Notre Dame, and Associate Professor Scott Baier, Clemson University. The report is prepared under framework contract TRADE/07/A2.

This report summarises the key points based on a set of estimations to measure the impact of six EU FTAs on trade flows with these partner countries. The methods and results are described in a technical background note (see annex enclosed to this report).

Copenhagen, November 2010
Martin H. Thelle (Project Manager)

Chapter 1 TRADE DEALS INCREASE TRADE A GREAT DEAL

EU trade deals with non-EU partners increase trade a great deal. That makes them good deals in the sense that they fulfil one of the objectives, namely that of leading to more trade.

1.1. SUMMARY

In this study we have examined whether EU Free Trade Agreements (FTAs) have a measurable and statistically significant impact, both on EU exports and imports.[1] We look at the following six EU FTAs (ranked by size, year of entry into force in brackets): South Africa (1999), Mexico (2000), Morocco (2000), Tunisia (1998), Chile (2003) and Jordan (2002). Taken together, these six FTAs cover around five percent of EU27 goods exports and around four percent of EU27 goods imports.[2]

We find that EU exports to Chile, South Africa, Tunisia, and Morocco show strong evidence of increasing as a result of the FTAs. The latter three FTAs increase between 50-80 percent, and EU exports to Chile appear to more than double as a result of the FTA. EU imports from Chile, Mexico, and Jordan also show evidence of increasing by 50-90 percent as a result of the FTAs.

Not all trade flows have increased as a result of the FTAs. We find no significant FTA related impact on EU exports to Mexico and no impact on EU imports from South Africa, Tunisia, and Morocco. However, even these insignificant results are very much in line with expectations. The FTA impact on EU exports to Mexico is insignificant because the tariff reductions are spread out over a long transition period and still on-going. It is not surprising that our result shows that EU imports from South Africa, Tunisia, and Morocco did not increase as a result of the FTAs, since EU tariffs on imports from these countries were already low or fully eliminated due to other trade instruments such as the Generalised System of Preferences (GSP) and earlier trade agreements.

All in all, we found econometric evidence of a strong impact of FTAs on trade where initial tariffs were high and where these tariffs were removed quickly and substantially across all types of goods and sectors (as for example in the EU-Chile FTA). For FTAs where tariffs were already low, we found little measurable effects (as is the case for EU imports from Morocco, Tunisia, and South Africa). FTAs that are recent or with long phasing-in provisions (as in the case of Mexico) cannot be expected to show measureable and significant impacts at this early stage. From these results we do not claim that "front loading" (early and deep tariff cuts) is necessary to deliver measurable benefits, we only say that frontloading makes the benefits more measurable at an early stage. "Back loading" (long phasing-in) may also result in measurable benefits, but only later on.

[1] We use two econometric models to do this. One method is a so-called *asymmetric gravity model* and the other is so-called *matching econometrics*. The results of these models are explained below and detailed in Annex 3.
[2] This report covers only extra-EU27 trade, not exports and imports between EU Member States.

While these results are based on the newest techniques of ex-post impact assessments, our results are still subject to certain caveats regarding the available data. The available data allows us to detect the impact including trade in the year 2008. The lack of detailed data measuring the actual progression over time of the trade liberalization forces us to use rather crude representations of the FTAs, whereby each individual FTA is represented by a simple zero-one variable indicating the year that the FTA was entering into force.

1.2. METHODS AND DATA

Estimating the ex-post impact of a bilateral trade agreement is difficult. The evolution of bilateral trade between the partners in itself is not a good indicator of the success of a FTA. Many other factors can affect the volume of bilateral trade. Statistical methods and counterfactual analysis are required to isolate the impact of the FTA on the volume of bilateral trade. After 50 years of experience with Economic Integration Agreements (EIAs) and Free Trade Agreements (FTAs), methods are gradually becoming available. Combining data on bilateral trade flows with data on presence or absence of FTAs allows us to distil the impact on trade flows, and determine whether bilateral trade increases as a result of the trade agreement, or just as a result of a general increase in trade. In the following, we describe the data and methods used in this study to estimate the isolated effect of FTAs.

Data used

The trade data used consists of bilateral trade flows among pairs of 176 countries from 1966-2008 (every three years used). We use aggregate trade data for goods, not sector or tariff line level data. As such, this method looks at changes in total trade flows. It does not allow verification of the impact of differences across sectors, and the impact of time profiles of tariff dismantling schedules shall be used to interpret the estimated trade impact of an FTA.

To measure the impact of FTAs, a data set on all bilateral or regional FTAs in force between all these 176 countries has been established. FTA dummy variables have been created for every country-pair for every year. This FTA dummy takes the value of 1 if a country-pair has a FTA in force, and a value of 0 if there is no operational FTA between the two countries.

Besides the FTA variable we also use data on other factors that are known to have a measurable impact on trade. These control variables are included to isolate the impact of the FTAs from other factors, and they include *inter alia* size of the economy, distance between trading partners, common borders, common language, and a range of other structural control variables that do not change with the presence or absence of an FTA.[3]

[3] Refer to Annex 3 for a full set of variables and their definition.

Methods used

Two different methods are used to test whether the FTAs have a measurable and statistically significant impact on trade flows. The first is the *gravity-approach* (parametric approach) and the second is the *matching-approach* (non-parametric approach).

The *gravity-approach* is inspired by the law of gravity known from physics. The simple idea is to estimate trade flows between all countries in the world by an equation that includes the size of each country's economy and the distance between them (including also other types of friction than distance, e.g. different languages). Larger economies and countries close to each other trade more than smaller economies and countries that are far apart. This equation has proven to be a very good estimator of trade flows, and is therefore used to control for non-FTA factors that matter for trade. Adding the FTA dummy variable to the equation allows us to isolate the impact of the FTA from other factors.[4]

The *matching-approach* is similar to testing methods used for treatment effects in medicine (e.g. whether a patient is better off with a given treatment than without the treatment). This approach lends itself to trade data, and here the approach is based on a simple key idea: The researcher creates groups of country-pairs with an FTA and control groups without FTAs. The two groups are selected in such a way that they are (virtually) identical in all relevant economic characteristics (size of the economy, distance, etc) except in having a FTA. We compare their trade flows.[5]

For each of these two approaches, a *symmetric* and an *asymmetric* variant are applied. In the symmetric variant, the average effect on total bilateral trade is estimated. This variant assumes a symmetric impact of the FTA on trade flows – i.e. that EU exports to the partner increases as much as EU imports from the partner. The asymmetric variant allows for measuring the impacts on EU exports to, and EU imports from, the partner separately.

1.3. RESULTS

Using these two methods, we can examine whether each of these six FTAs can be said to have had a measurable and statistically significant impact on trade flows. Here we focus on the asymmetric results allowing for different effects on imports and exports. Having six FTAs, we look at 12 bilateral trade flows (imports and exports between the EU and each partner) [6]. Our econometric estimates confirm the expected results for all of these 12 trade

[4] While this method sounds simple, the practical estimations control for a range of other factors, as explained in Annex 3.

[5] To use an example: For EU exports to Chile, the matching approach compares actual trade flow changes over time to an average of the changes of the matched pairs. For example, Germany's exports to Chile are compared to Germany's exports to Bolivia and a number of other destinations that resembles Chile on a number of observable factors. The matched pairs are trade flows that are otherwise similar, but have no FTA, and it can sometimes be a small number of pairs and consequently there is considerable room for imprecision. See Annex 3 for more detail. The theoretical foundation for using matching techniques to trade data is presented in Baier and Bergstrand (JIE, 2009).

[6] To enhance estimation precision, we actually use bilateral trade flows of individual EU member states in the econometric work.

flows. Table 1.1 shows the asymmetric gravity results and a comparison of the empirical results with our prior beliefs.

The gravity approach provided statistically significant results of a positive and measurable impact on trade for the trade where an impact could be expected, and no significant impact on the trade flows where no impact was expected. The gravity results are either highly significant at the one percent level – namely in the cases where we expected to see an impact – or not significant at all (below the 10 percent significance threshold).

The matching approach has not produced results with the same high level of significance (see Annex 3). This is primarily due to the fact that the number of matching country pairs turned out to be very small, thereby limiting the statistical significance of the test. Still the matching results point in the same direction as the gravity results.

One can conclude that the matching results do not contradict the gravity results and thereby provide at least a weak support to the robustness of the latter. We base our conclusions on the asymmetric gravity estimates and use the matching results to check robustness. Symmetric estimates are presented in Annex 3.

Below we summarise how the gravity estimation results match the priors we expect, based on the tariff reduction schedules stipulated in the agreements.[7]

EU-Chile FTA

The EU-Chile FTA has comprehensive and fast liberalisation, which suggests a significant impact on trade. However, a relatively low level of initial tariffs would also suggest moderate size of these effects. The gravity equation results show a strong and statistically significant effect of the agreement on EU exports and an economically (but not statistically) significant effect on EU imports.

EU exports to Chile

- **Our prior**: Before the agreement, Chile imposed a flat rate of 6 percent on almost all imported goods. The EU-Chile FTA comprised a rapid reduction of these tariffs, with 92 percent of EU exports to Chile becoming zero in the first year of the agreement and 98 percent becoming duty free trade after five years. The trade weighted average tariff drops from six percent in 2002 to less than 0.1 percent in the first year of the agreement. Our prior is therefore that EU exports to Chile should increase significantly as result of the FTA.
- **Our results**: Estimation results are in line with our prior. According to our gravity model estimates, EU exports to Chile can be said to have increased markedly as a result of the FTA. The impact is an estimated 148 percent increase as a result of the

[7] Annex 2 provides a detailed description and summary of the agreed tariff reductions in each of the six agreements.

FTA and the result is statistically significant. The result is not supported by the matching estimate.

EU imports from Chile

- **Our prior:** On the EU side, the tariff reductions were small. Before the FTA, 86 percent of the EU's imports from Chile already entered free of duty. In the first year of the FTA, this increased only slightly to 89 percent. As a result, the EU's effective trade-weighted imports tariffs on goods from Chile were already low before the FTA (app. 1.5 percent), and this is reduced to less than 0.1 percent in year one of the FTA. It is also worth noticing that full duty free access for imports from Chile is only planned for 2013, and a share of around 10 percent of the trade volume has a long phased-in on the EU side. Our prior on EU imports is therefore that only a small impact could be expected as a result of the FTA.
- **Our results:** Estimation results are in line with our prior. We find a smaller, but economically important effect corresponding to an increase of 46 percent more imports as a result of the FTA. The impact on EU imports from Chile is much smaller than the impact on EU exports to Chile and the result is less statistically significant. The matching estimate shows no significant impact.

EU-Mexico FTA

The EU-Mexico agreement contains long phasing-in periods on the Mexico side, and much of the EU's exports to Mexico would not be liberalised until at least 2008 (the year were our data ends). Consequently, we did not expect to see much impact of the agreement on EU exports to Mexico yet. This was confirmed. Since Mexico already had preferential access to the EU under the GSP, we would not expect much change in EU imports from Mexico. However, we also note that the liberalisation on the EU side is more rapid than in the EU-Chile agreement. Consequently, we found evidence of increases in EU imports.

EU exports to Mexico

- **Our prior**: Before the agreement, Mexico imposed an average trade weighted tariff of 16 percent on goods from the EU. The EU-Mexico FTA comprises a long phasing-in period for the reduction of these tariffs, with only 16 percent of EU exports to Mexico becoming duty free in year one of the agreement and only one third of trade being liberalised by 2006 (six years into the agreement). 60 percent of EU's exports to Mexico is liberalised over eight years or more. Our prior is therefore that EU exports to Mexico would not increase significantly as result of the FTA until after 2008, and we do therefore not expect to be able to measure much impact at this stage of the implementation.[8]
- **Our results**: Estimation results are in line with our prior. According to our gravity model estimates, EU exports to Mexico *cannot* be said to have increased markedly

[8] Previous estimates found in the research show that FTAs take 10-15 years to generate their full effects.

as a result of the FTA. The impact is statistically insignificant and not different from zero. This result is also confirmed by the matching estimate.

EU imports from Mexico

- **Our prior:** On the EU side, the FTA with Mexico comprised some tariff liberalisation. Before the FTA, only 54 percent of EU's imports from Mexico entered free of duty. In the first year of the FTA, this increased to around 69 percent, and tariff liberalisation on the EU side was 99.7 percent completed by 2003. As a result, EU's trade opening vis-à-vis Mexico was relatively fast. Like Chile, Mexico already benefitted from low tariffs through GSP. Our prior on the EU side is therefore that a small impact could be expected for EU imports from Mexico, and imports could increase more than from Chile because of a more rapid opening on the EU side.
- **Our results:** Estimation results are in line with our prior. We find an economically important and statistically significant effect corresponding to an increase of 92 percent more imports as a result of the FTA. The impact on EU imports from Mexico is larger than the impact on EU imports from Chile. The result could not be confirmed by the matching estimate.

EU Association Agreements with Jordan, Morocco, South Africa, and Tunisia

The EU Association Agreements (AAs) are an older generation of free trade agreements structured over the agreements reached with the Mediterranean countries. Besides tariffs, these AAs also cover non-trade matters. In later generations of EU FTAs development issues have been kept out of the trade agreements and dealt with in separate agreements.

Prior to the entry into force of the current AAs, the EU already had in place virtually free trade on their imports from Tunisia, Morocco, South Africa, and Jordan under the GSP and through earlier EU-Mediterranean agreements. With this in place, there was little expectation that EU imports from these countries would change noticeably due to these agreements.

However, varying degrees of liberalisation took place for the EU's exports to each of these countries. The agreements with Morocco and Tunisia gave duty free access for around half of the tariff lines for EU goods[9], whereas the agreements with South Africa and Jordan provided slightly less duty free access, corresponding to around one third of tariff lines, and Jordan will keep the initial low level of liberalisation on EU exports to Jordan until 2013. Of the four countries, Jordan is the country with a priori highest tariffs into the EU with average trade weighted tariffs into the EU being higher than for Morocco, Tunisia and South Africa. For this reason, the impact could be expected to be the highest for Jordan because there is de facto a higher initial protection.

[9] Electronic files with tariff dismantling schedules were not available for these Agreements, only for the Chile and Mexico agreements. For this reason, trade-weighted estimates of tariff dismantling (tariff line x trade volume) could not be made, at least not without going through a tedious process of manually typing in all tariff lines and corresponding tariffs for each year of the transition period. Estimates were limited to a manual count of the number of tariff lines with zero tariffs.

We found evidence in three of the four cases – Morocco, South Africa, and Tunisia – that EU exports were positively impacted by the agreements, while we found no statistically significant evidence that EU imports increased, in line with the already low degree of imports barriers of EU countries on goods from these three countries. None of the estimates for the EU-Jordan agreement are statistically significant, but the result indicate an increase in EU imports as could be expected from the higher initial effective tariff average. We therefore find that the empirical results are in line with what could be expected from these agreements.

Table 1.1 Asymmetric bilateral trade effects of agreement membership (a)

(1) Bilateral flow between FTA partners	(2) Gravity results (% points)	(3) Expected results (our priors)	(4) Expected results confirmed by gravity results?
EU Exports to Chile (2003)	**148*** (3.64)	We expect EU exports to increase	Confirmed. The gravity estimate confirms that EU exports did increase as result of the FTA
EU Imports from Chile (2003)	46 (1.60)	We only expect a small increase in EU imports	Confirmed. The gravity estimates confirms a small, but insignificant increase
EU Exports to Mexico (2000)	-15 (-0.68)	We do *not* expect EU exports to increase	Confirmed. The gravity result shows no impact different from zero
EU Imports from Mexico (2000)	**92*** (3.10)	We expect EU imports to increase	Confirmed. The gravity estimate confirms that EU exports did increase as result of the FTA
EU Exports to South Africa (1999)	63 (1.08)	We expect EU exports to increase	Not confirmed, but the gravity estimates shows an increase, although insignificant
EU Imports from South Africa (1999)	-24 (-1.40)	We do *not* expect EU imports to Increase considerably	Confirmed. The gravity results do not detect a statistically significant result.
EU Exports to Tunisia (1998)	**81*** (2.90)	We expect EU exports to increase	Confirmed. The gravity estimates confirms that EU exports increased as a result of the FTA
EU Imports from Tunisia (1998)	5 (0.26)	We do *not* expect EU imports to Increase considerably	Confirmed. The gravity results do not detect a statistically significant result.
EU Exports to Morocco (2000)	**79*** (2.70)	We expect EU exports to increase	Confirmed. The gravity estimates confirms that EU exports increased as a result of the FTA
EU Imports from Morocco (2000)	-35 (-2.06)	We do *not* expect EU imports to Increase considerably	Confirmed. The gravity results do not detect a statistically significant result.
EU Exports to Jordan (2002)	-17 (-0.86)	We do *not* expect EU exports to increase yet because of slow phase-in	Confirmed. Gravity estimate shows an insignificant change by 2008.
EU Imports from Jordan (2002)	72 (2.42)	We do *not* expect EU imports to Increase considerably	Confirmed. Gravity estimates shows an increase, although not significant at 10% level

*Note: (a) These are the effects for the respective memberships, where the effect is allowed to differ whether the EU is the importer or exporter. Effects are reported as percentage changes. * (and boldface) denotes statistically significant effect in two-tailed test at the 1 percent significance level. t-critical = z-critical = 2.576. The significant results are significant at a 1% level, no other of the results are significant at a lower level.*

Source: Estimation results from Jefferey Bergstrand and Scott Baier, see annex.

1.4. EVALUATION OF THE METHODS USED

Part of the purpose of this study was to test the usefulness of these two methods for assessing the ex-post impact of FTAs on trade. The evaluation of the methods should not be turned into a competition between the methods on delivering the most statistical significance. The purpose of applying two different methods is exactly that they are different, and since they aim at answering the same fundamental question of whether FTAs increase trade, the two methods can help to judge the robustness of the results. If the size of the percentage increase is confirmed by both methods, the result is more robust than if just confirmed by one method.

Another way to assess the usefulness of the methods is to compare the results with what could be expected. We note that all gravity estimates are in line with the formulated priors, and that the results of these estimates are as could be expected from the structure of the agreements. We also note that the matching (non-parametric) estimates confirm our priors in eight out of the twelve cases.

In the case of EU's exports to South Africa we do not get high statistical significance with either method, but both methods point to a high economic importance of a 63-64 percent increase as result of the FTA. In the case of EU exports to Morocco, we also find similar size of the impact from the two methods, with a gravity estimate of 79 percent and a matching estimate of 59 percent. The matching estimates also confirm the no-impact result for EU exports to Mexico and Jordan and the no-impact results for EU imports from South Africa, Tunisia, and Morocco. We also note that the strong and significant impact on EU exports to Chile and to Tunisia and the equally strong and significant result on EU imports from Mexico could not be confirmed by the matching method.

1.5. SUGGESTIONS FOR IMPROVEMENTS AND FUTURE RESEARCH

We have found robust and in many cases statistically significant results in line with the expected results for the six FTAs in this study. These findings should be interpreted with the necessary care however, as a preliminary set of indicative results. Weaknesses in the underlying data sets should be taken into account:

- The analysis was carried out at the highest level of aggregation, on overall trade flows, not taking into account tariff differentiation between sectors and goods, or time profiles of tariff dismantling.
- The time series of trade data available since entry into force of these six FTAs is in most cases less than 10 years, in the case of Chile no more than 5 years. At the same time, most of these have provisions for long tariff dismantling periods (up to 12 years) that have not fully passed yet. This assessment is therefore necessarily partial only.
- The data available on comparable FTAs between other country pairs not involving the EU is equally limited. That limits the statistical significance of this exercise.

Even the best methods require good input data. Here we point in particular to:

- The need for better and more complete data in electronic format on the tariff reduction schedules for individual FTAs. We have identified such data for the EU-Chile agreement and for the EU-Mexico agreement, but such data do not seem to be available for other FTAs. If such data on the phasing-in profiles of the tariff reductions over time were available, one could attempt to improve the representation of the FTAs by replacing the currently used binary 0-1 variables with a more gradual variable that increases over time as tariff reductions are phase-in. This is likely to provide more precise estimates, and to formulate better priors about the impact. However, it will require major efforts to establish such a data set for all – or at least for the most important –FTAs in the world.[10]

- Even these data would only reflect the planned liberalisation as stated in the agreements. It can be assumed that actual tariffs reductions follow the plans, but since some of the agreements, in particular the earlier ones, includes the possibility to scale back some of the tariff reductions; it would be desirable to have data on the actual tariff reductions as they are implemented rather than as they are planned.

Another possible research frontier could be to take the assessment methods to the sectoral level rather than estimating the impact on aggregated trade flows as done in this study. It is no trivial task to run either gravity equations or matching techniques on a large array of industries' trade flows for a panel of all countries in the world over 50 years, even applying the same methodology as above. This is posing several methodological questions that would need to be addressed before we can proceed with such work.

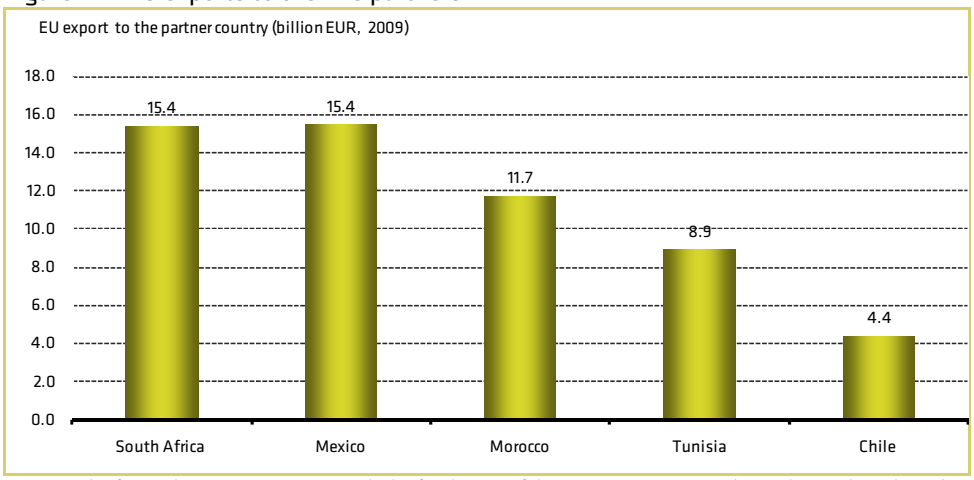
[10] As of 31 July 2010, some 474 Regional Trade Agreements, counting goods and services notifications separately, have been notified to the GATT/WTO.

ANNEX 1 TRADE WITH THE SIX PARTNERS

EU exports to the six FTA partners

Of the six partner countries in question, South Africa and Mexico are the largest destinations of EU exports accounting each for around €15 billion each in 2009, cf. Figure A1.1.

Figure A1.1 EU exports to the five partners



Note: The figure shows EU exports to with the five largest of the six FTA partners in the study. Trade with Jordan is small in volume, and is omitted from the figure. Data is in € billion.

Source: World Integrated Trade System (WITS).

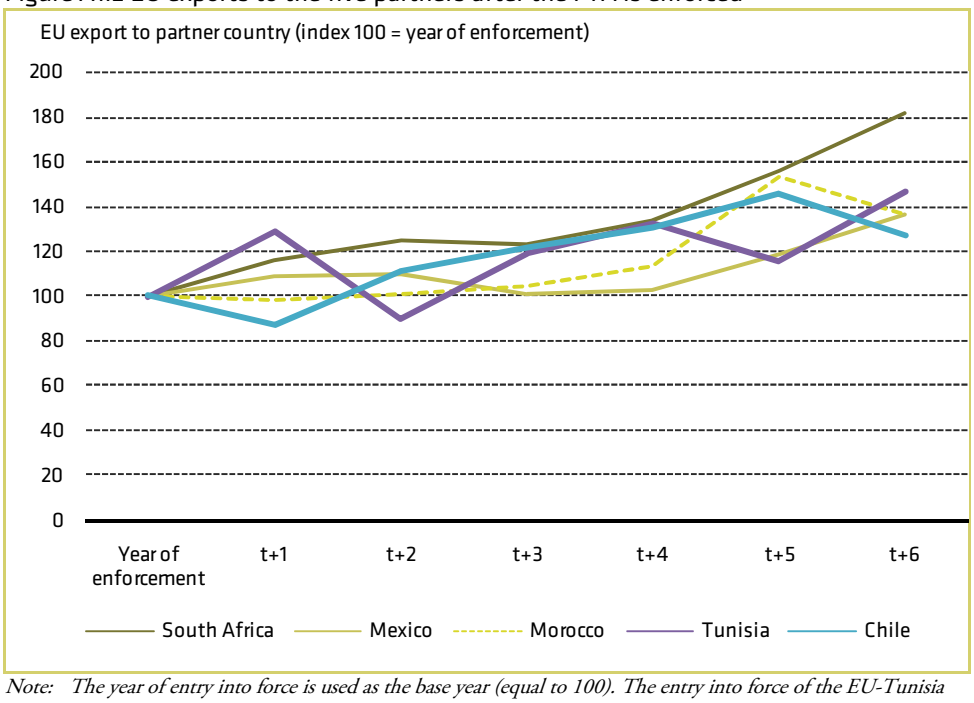
Development in trade since the enforcement of the FTA

In order to compare how trade has developed for the six FTAs, we define *t* to be the year of enforcement of the FTA, and we use this year as a base year in which trade is indexed to 100. We then look at how trade has developed relative to this index, and the numbers can therefore be interpreted as percent increases in trade since the enforcement of the FTA.

We find that exports to South African appears to be the most successful in that EU exports almost doubled during the first six years of the FTA, cf. Figure A1.2 .This is the case even though the FTA was only provisionally applied in 2000 and only came fully into force in 2004 after ratification by the signatory parties.

The four other FTA depicted in the figure appear to be almost equally supportive of EU exports. However, since the year of enforcement of the EU-Chile FTA is 2003, and the other FTAs were 1999/2000, we should keep in mind that trade is also influenced by business cycle effects when we compare the EU-Chile FTA with the other FTAs.

Figure A1.2 EU exports to the five partners after the FTA is enforced



Note: The year of entry into force is used as the base year (equal to 100). The entry into force of the EU-Tunisia FTA is set to 1999 since this is the first year for which data was available. EU exports in the six years following the enforcement of the agreement is given at t+1, t+2, t+3, t+4, t+5 and t+6.

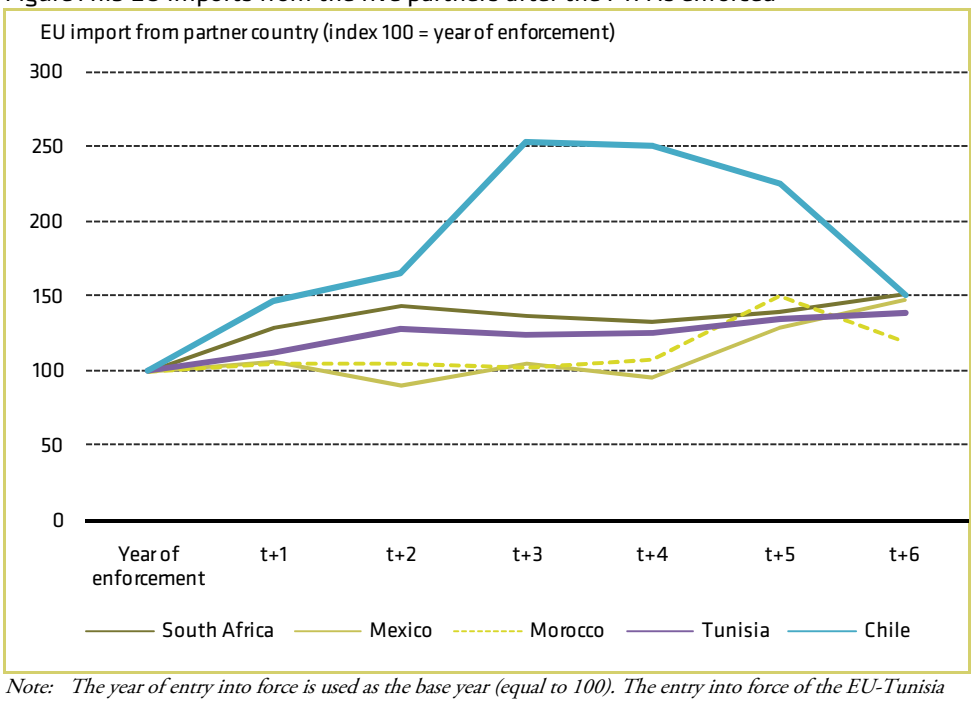
Source: World Integrated Trade System (WITS).

The business cycle effect is also what is causing the EU imports from Chile to look different than EU imports from the other FTA partners, cf. Figure A1.3. Figure A1.3 EU imports from the five partners after the FTA is enforced

EU imports from Chile peaked in t+4 or, in other words, in 2007 after which the economic crisis caused dramatic slumps in global trade. For the four other FTAs, the economic slowdown did not take place until after t+6.

EU imports from South Africa, Mexico, Morocco and Tunisia has increased by 25-50 percent, with South Africa again representing the largest increase and Tunisia being at the lower end.

Figure A1.3 EU imports from the five partners after the FTA is enforced



Note: The year of entry into force is used as the base year (equal to 100). The entry into force of the EU-Tunisia FTA is set to 1999 since this is the first year for which data was available. EU imports in the six years following the enforcement of the agreement is given at t+1, t+2, t+3, t+4, t+5 and t+6.

Source: World Integrated Trade System (WITS).

ANNEX 2 DEGREE OF LIBERALISATION FOR THE SIX FTAS

In this annex we assess the degree of liberalisation of the six FTAs. The degree and speed of trade liberalisation vary between the agreements, and the initial trade protection also varies being high in some cases and low in others. The insight into the degree of liberalisation gained in this chapter is used as background information in our assessment of the impact of the six FTAs on trade.

Overview of the FTAs

This report analyses the impact on trade flows of two full-fletched FTAs – the EU-Chile and the EU Mexico FTAs – and four less comprehensive agreements – namely the agreements with South Africa, Tunisia, Morocco and Jordan. Based on their slow and asymmetric tariff elimination schedules, the last four agreements are so-called Association Agreements (AAs). The South African AA is slightly different from the three other AAs in that EU tariffs were only gradually removed whereas tariffs on most industrial products in the EU-Tunisia, EU-Morocco and EU-Jordan AAs were eliminated immediately at the date of enforcement. The treatment of tariffs for agricultural products varies for the three AAs. The agreements are summarised below:

- *The 2003 EU-Chile Free Trade Agreement*. The EU-Chile FTA meets the norms of a FTA. The scope of goods and services covered under the Agreement, the degree to which trade was liberalised for goods and services, and the elimination of duties from the year of entry into force make this a comprehensive FTA.

- *The 2000 EU-Mexico Free Trade Agreement*. The EU-Mexico FTA was the first FTA of the EU with a Western Hemisphere country. Although the Agreement was comprehensive in scope, like the EU-Chile Free Trade Agreement, the EU-Mexico Free Trade Agreement had a slower implementation, as Mexican tariffs for only 50 percent of the tariff lines on EU products were eliminated upon entry into force in 2000, while the remaining lines were removed in 2007.

- *The 1999 EU-South Africa Trade, Development, and Cooperation Agreement*. This Agreement is similar to the EU-Mediterranean Association Agreement in structure. The EU-South Africa agreement – concluded in 2004 – stipulates the phasing-in of the free trade area over a 10 year period for 95 percent of the EU imports from South Africa and over 12 years for 86 percent of South African imports from the EU.

- *The 1998 EU-Tunisia Association Agreement*. This agreement liberalised trade barriers on most EU imports from Tunisia immediately after the date of enforcement, but liberalised Tunisian tariffs on imports from the EU only over a period of 0-15 years.

- *The 2000 EU-Morocco Association Agreement* and the *2002 EU-Jordan Association Agreement* were similar in the sense that EU tariffs on most industrial goods

were eliminated immediately whereas the partner's tariffs are being phased-in after 10-12 years. Due to the high sensitivity of agriculture products and processed food, the EU has exempted tariffs on some agricultural products from the agreements. Due to their similarity these three AA will therefore be analysed together as a group.

In the following sections we summarise the key content of each of the six FTAs with respect to the planned tariff liberalisation schedule. For Chile and Mexico, we have received data which allows us to calculate the planned tariff reduction on a trade weighted basis. For the four AAs such data has not been made available, and we will rely on the number of product lines for which tariffs are being eliminated within a given year as a proxy for the degree of liberalisation in the four AAs.

No obligations on non-tariff barriers

The six agreements contain provisions on regulatory cooperation regarding non-tariff barriers that may reduce trade costs, though there are no well-defined legal obligations to achieve further regulatory convergence. While we cannot exclude that such cooperation has fostered more trade, our impact assessment is focussing on the planned trade liberalisation focuses on tariff liberalisation and how this is phased-in for the different products.

Already substantial duty free access provided by GSP prior to the agreements

Many of the six partner countries already benefitted from the general system of preferences (GSP), which ensured very low tariffs on exports to the EU, cf. Box A2.1. For this reason we expect low or no measureable impact of most these FTAs on partner exports to the EU.

Box A2.1 The EU's Generalised System of Preferences (GSP)

The EU's GSP provides developing countries preferential access to the EU market through reduced tariffs. The system covers 176 developing countries, and the six countries in our study all benefitted from the GSP before the enforcement of agreement with the EU. However, Chile's coverage under GSP was ended in 2007.

Of the 10,300 tariff lines in the EU's Common Customs Tariff, roughly 2,100 products have a MFN duty rate of zero and tariff elimination in a FTA is not relevant for these products. Of the 8,200 products that are dutiable, the GSP covers roughly 7,000, of which about 3,300 are classified as non-sensitive and 3,700 as sensitive. Of the rest of the tariff lines not covered by the GSP, a number of them fall into HS chapter 93, arms and ammunition.

Non-sensitive products have duty free access and sensitive products benefit from tariff reduction. The *non-sensitive category* covers most manufactured products but excludes some labour-intensive and processed primary products - such as textiles, clothing and footwear.

For the *sensitive products*, the tariff preference is a flat 3.5 percentage point reduction from the corresponding ad valorem MFN tariff rates (e.g. from 6 percent to 2.5 percent or from 15 percent to 11.5 percent). Agricultural products covered by the EU's Common Agriculture Policy are deemed to be too sensitive to be granted duty free market access from any potentially large and competitive suppliers.

Source: DG Trade website and Caris (2009).

The six countries differ in their trade structure and thereby also in the share of their exports to the EU that falls under each regime. In 2008, 70 percent of Chile's exports to the EU entered duty free, and four percent of Chile's exports to the EU still faced non-zero MFN tar-

iffs, cf. Table A2.1. Mexico, South Africa and Jordan have similar shares of exports to the EU that fall under the MFN regime where tariffs are fully eliminated. For Morocco and Tunisia, a much smaller share of exports to the EU falls under the tariff-free regime.

The analysis further shows that 20 to 30 percent of the imports from Chile, Mexico, South Africa and Jordan is duty free due to other preferences (the FTAs supposedly). For Morocco, 76 percent of the exports to the EU is duty free due to other preferences than the GSP. A small share of trade has preferential non-zero tariffs under other preferential agreements (again the FTA).

Table A2.1 Share of each regime in each partner's exports to the EU

Country	MFN=0	MFN>0	GSP=0	GSP>0	Other preferences=0	Other Preferences>0	Total imports (€million)
Chile	70%	4.3%	-	-	19%	6.1%	9.72
Mexico	60%	8.7%	0.3%	0.2%	29%	0.7%	12.57
South Africa	61%	6.0%	6.0%	1.2%	21%	3.0%	20.20
Morocco	13%	4.5%	0.1%	0.9%	76%	5.3%	7.23
Tunisia	28%	4.0%	0.4%	0.4%	66%	0.3%	8.68
Jordan	55%	12.8%	0.9%	0.0%	31%	0.5%	2.17

Note: Since 2007 Chile no longer benefit from the GSP. Around 1 percent of trade falls under an unknown tariff regime and is not shown. Data is from 2008.
Source: Caris (2009), Annex Table A.2.

Looking at the average weighted tariff by each country in 2008, the first column in Table A2.2 ("actual") shows the weighted average tariff currently facing each country. This tariff takes into account both unilateral preferences and preferences from different art XXVI agreements. The second and third columns apply the trade structure of the countries to a hypothetical tariff (MFN or GSP). As way of example, and in the case of Chile, the "actual" column shows that Chile paid an average tariff of 0.3 percent on exports to the EU in 2008. The MFN column tells us that if Chile was to face MFN tariffs only, then the average weighted tariff would be equal to 2.2 percent. The GSP column then tells us that if Chile was to face the GSP tariff and to fully utilise the preferences, then the average applied tariff that it would face in the EU would be equal to 1.5 percent.

Table A2.2 Average weighted hypothetical tariff by regime, 2008

Country	Actual	MFN	GSP
Chile	0,30%	2.2%	1.5%
Mexico	0.39%	3.0%	1.6%
South Africa	0.29%	1.5%	0.5%
Morocco	0.56%	7.9%	5.0%
Tunisia	0.39%	5.6%	3.5%
Jordan	0.86%	2.9%	1.0%

Note: Data is from 2008.
Source: Caris (2009), Annex Table A.4.

All six countries obviously face low actual tariffs on their exports to the EU by 2008, since the FTAs are fully phased-in for almost all products (see next section). Morocco and Tunisia would have the highest average tariffs of the six if only MFN would apply (7.9 percent and 5.6 percent, respectively). Applying the GSP regime would reduce these tariffs, but not so much for Morocco and Tunisia as for others.

All in all, due to differences in the structure of their trade with the EU, Jordan, Tunisia, South Africa and Morocco already enjoy substantially more benefits under the GSP relative to the MFN regime when comparing with Chile and Mexico.

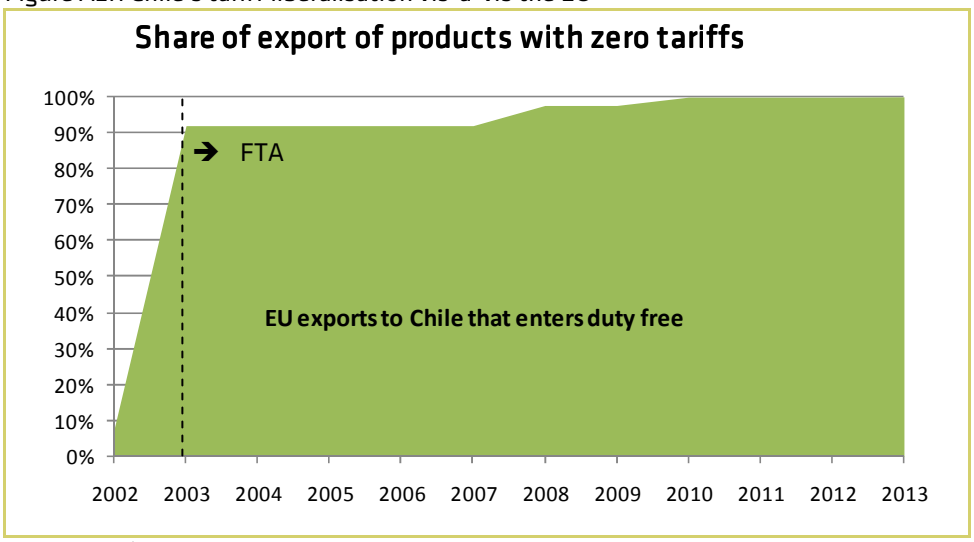
The EU-Chile Free Trade Agreement (2003)

The trade-related articles of the EU-Chile FTA were provisionally applied since December 2002. The Agreement fully entered into force on 1, January, 2003 after ratification by all signatory parties.

Exports of products originating in the EU

Before the enforcement of the bilateral FTA, only eight percent of EU exports to Chile would enter duty free, cf. Figure A2.1.This share goes up to 92 percent of the exported volume in the first year of the Agreement (2003) and remains at this level until the fifth year after the Agreement, where 98 percent of EU's exports to Chile becomes tariff-free. This level of liberalisation stays in place until 2010, where Chile's tariff liberalisation schedule is fully phased-in.

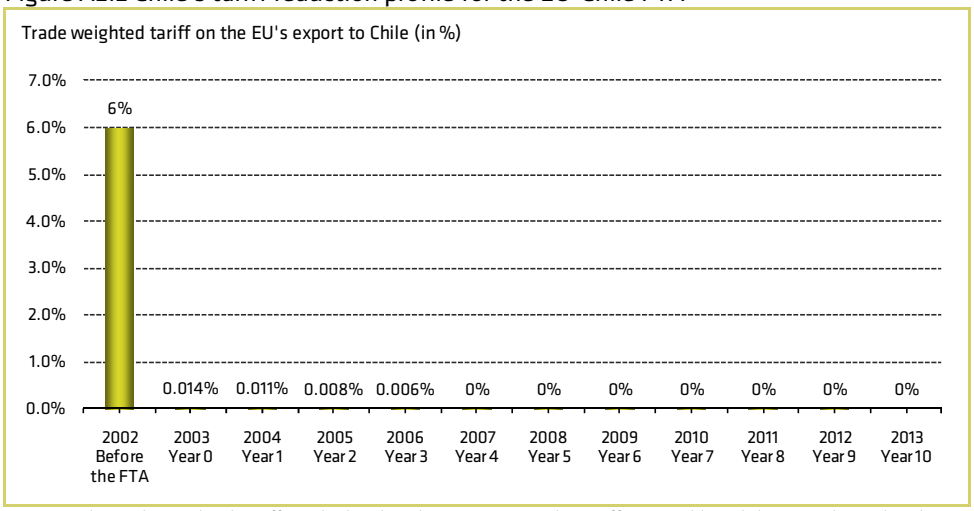
Figure A2.1 Chile's tariff liberalisation vis-à-vis the EU



Source: Copenhagen Economics.

Computing the average trade-weighted tariff on EU's exports to Chile indicates that the average tariff is close to six percent before the FTA. Chile imposed almost a flat rate tariff of six percent on all imported products. The average trade-weighted tariff is reduced to 0.01 percent in the first year of Agreement and is gradually reduced to zero in 2007, cf. Figure A2.2 Chile's tariff reduction profile for the EU-Chile FTA

Figure A2.2 Chile's tariff reduction profile for the EU-Chile FTA



Note: The trade weighted tariff is calculated as the average over the tariff imposed by Chile on (industrial and agricultural) goods originating in the EU weighted by the share in total exports from the EU to Chile.
Source: Copenhagen Economics.

Considering the share of trade within each of the agreed categories, we find that there is only very little trade in the categories with high initial tariffs and long phasing-in, cf. Table A2.3.

The EU has only 0.1 percent of its exports to Chile in the most restrictive category with a 10 year phasing-in period and a tariff of six percent.

Table A2.3 The weighted tariff in each category of EU's exports to Chile

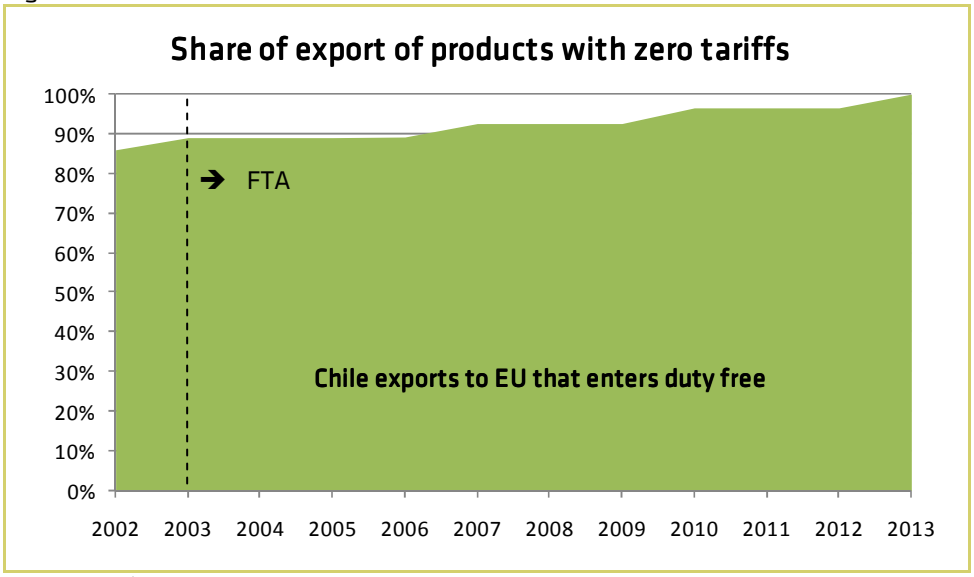
Category	Description	Share of EU exports, 2003	2002	2005	2008	2011	2013
Year 0	Tariffs reduced to zero in year 0 for 7205 industrial and agriculture products	91.8%	5.5%	0.0%	0.0%	0.0%	0.0%
Year 5	Tariffs phased-in over 5 years for 274 industrial and agri-culture products	5.7%	6.0%	3.0%	0.0%	0.0%	0.0%
Year 7	Tariffs phased-in over 7 years for 171 industrial and agri-culture products	2.4%	6.0%	3.7%	1.5%	0.0%	0.0%
Year 10	Tariffs phased-in over 10 years for 80 industrial and agri-culture products	0.1%	6.0%	4.4%	2.8%	1.1%	0.0%
Total		100%					
Average tariff across all products			**5.99**	**1.00**	**0.00**	**0.00**	**0.00**

Note: The table only shows data for every third year.
Source: Copenhagen Economics.

Exports of products originating in Chile

Before the entry into force of the FTA, 86 percent of Chile's exports to the EU already entered duty free. This share rises to 89 percent of the exported volume in the first year of the Agreement (2003) and remains at this level until the fourth year of the Agreement, where 93 percent of Chile's exports become tariff free. The share stayed at this level until 2009, where the share increased to 97 percent. The remaining protection will be eliminated in 2013, the year by which the EU's tariff schedule is fully phased-in.

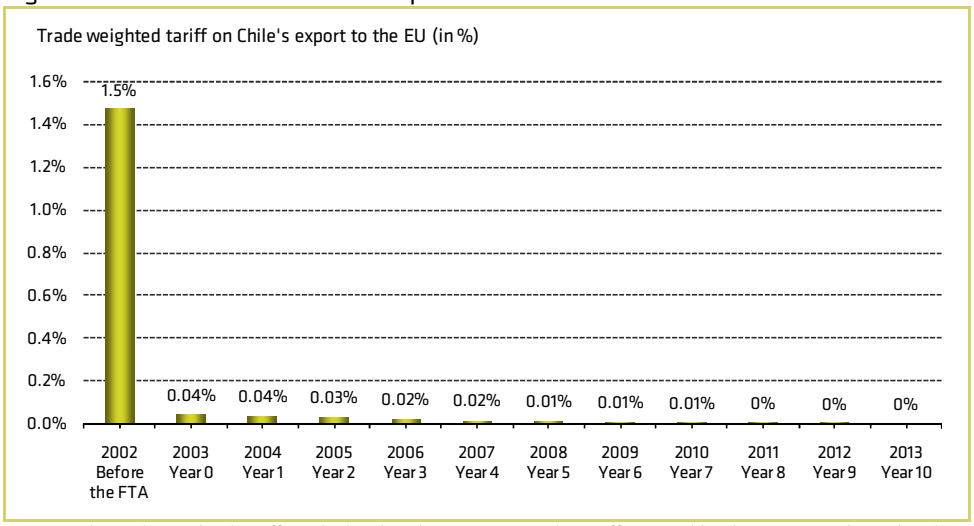
Figure A2.3 EU's tariff liberalisation vis-à-vis Chile



Source: Copenhagen Economics.

Computing the average trade weighted tariff on Chile's exports to EU indicates that the average tariff was only 1.47 percent before the FTA, which is reduced to 0.04 percent in the first year after the enforcement. The trade weighted tariff is very low, and fully reduced to zero by 2011. cf. Figure A2.4.

Figure A2.4 The EU's tariff reduction profile for the EU-Chile FTA



Note: The trade weighted tariff is calculated as the average over the tariff imposed by the EU on (industrial and agricultural) goods originating in Chile' weighted by the share in total exports from Chile to the EU.
Source: Copenhagen Economics.

Considering the share of trade within each of the agreed categories, it can be easily seen that there is only very little trade in the categories with high initial tariffs and long phasing-in, cf.

Table A2.4. Only five percent of Chile's exports to the EU fall in the most restrictive tariff reduction category where tariffs are phased-in over 10 years starting out with a trade-weighted tariff equal to 17.6 percent.

Table A2.4 The weighted tariff in each category of Chile's exports to the EU

Category	Description	Share 2003	2002	2005	2008	2011	2013
Year 0	Tariffs reduced to zero in year 0 for 7739 industrial and agriculture products	85%	0.2%	0.0%	0.0%	0.0%	0.0%
Year 3	Tariffs phased-in over 3 years for 941 industrial and agriculture products	0%	3.7%	0.9%	0.0%	0.0%	0.0%
Year 4	Tariffs phased-in over 4 years for 484 industrial and agriculture products	4%	10.9%	4.4%	0.0%	0.0%	0.0%
Year 7	Tariffs phased-in over 7 years for 207 industrial and agriculture products	5%	13.9%	8.7%	3.5%	0.0%	0.0%
Year 10	Tariffs phased-in over 10 years for 241 industrial and agriculture products	5%	17.6%	12.8%	8.1%	3.3%	0.0%
Total		100%					
Average tariff across all products			**1.5%**	**0.03%**	**0.01%**	**0.00%**	**0.00%**

Note: The table only shows data for every third year.
Source: Copenhagen Economics.

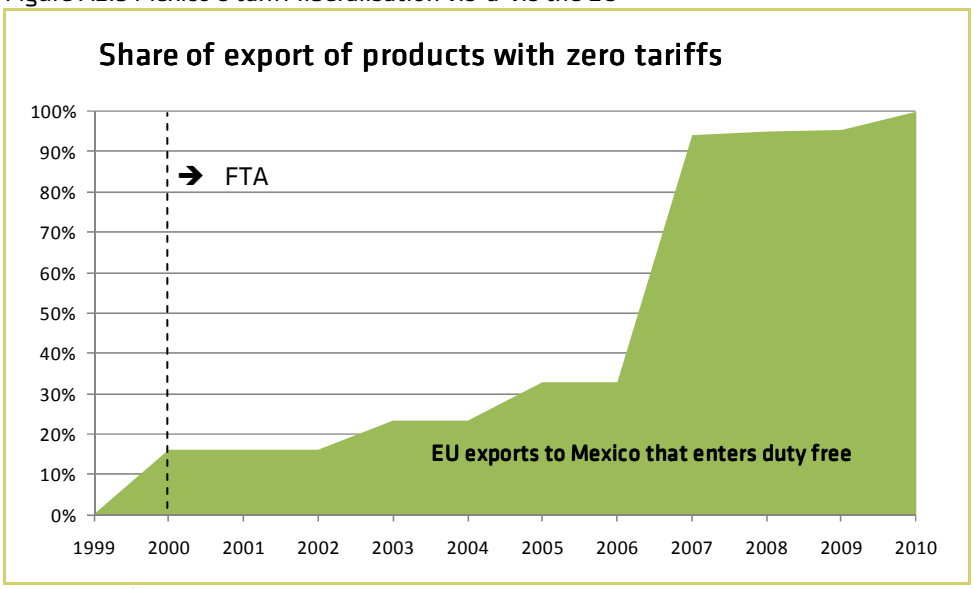
The EU-Mexico Free Trade Agreement (2000)

The trade-related articles of the EU-Mexico Agreement were provisionally applied since June 2000. The Agreement fully entered into force on 1st January, 2000 after ratification by all signatory parties.

Exports of products originating in the EU

Before the entry into force of the FTA in 1999, the EU could not export duty free to Mexico. The share of EU exports to Mexico that enters duty free in the first year of the Agreement increases to 16 percent and remains at this level until it increases to 23 percent in 2003 and 33 percent in 2005, cf. Figure A2.5. The share goes up to 94 percents in 2007 and remains at this level until 2009 where the Mexican tariff liberalisation schedule is fully phased-in.

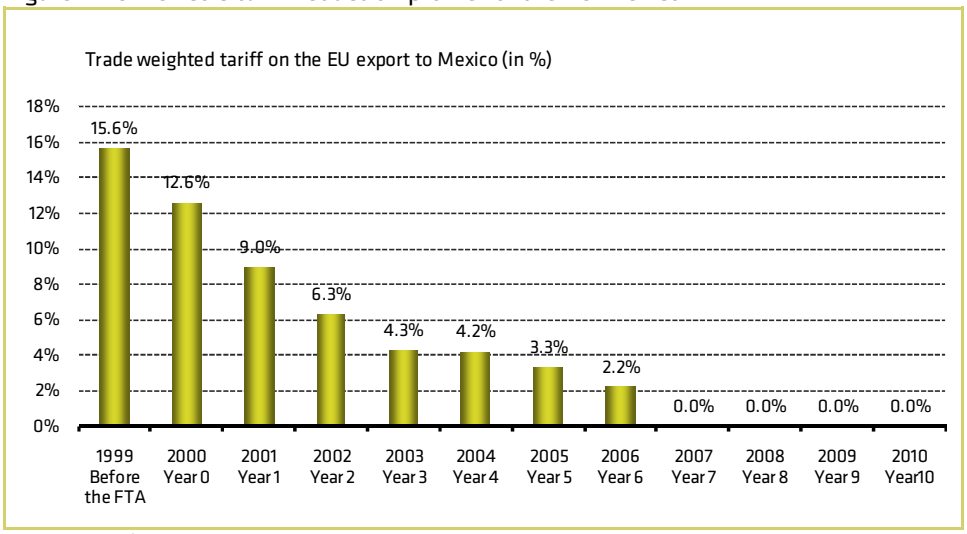
Figure A2.5 Mexico's tariff liberalisation vis-à-vis the EU



Source: Copenhagen Economics.

We find that the average trade weighted tariff on EU's exports to Mexico is 15.6 percent before the FTA was enforced and that this tariff rate is reduced to 12.6 percent in the first year of the Agreement to be slowly approaching zero in 2007, cf. Figure A2.6.

Figure A2.6 Mexico's tariff reduction profile for the EU-Mexico FTA



Source: Copenhagen Economics.

Looking at the share of trade within each of the agreed categories, it is clear that there is a substantial amount of trade in the categories with high initial tariffs and long phasing-in. More than half of the EU exports to Mexico (56 percent) are in category "C" being phased-in over eight years and 9 percent of exports being liberalised over six years. The EU has 1.5

percent of its exports to Mexico in the most restrictive tariff category (Category 1) with 20.5 percent tariff and 0.3 and 2.7 percents of its exports to Mexico in Category 4a and 4 which have a ten year phasing schedule. All in all, the initial tariffs are high, and phasing in is slow.

Table A2.5 The weighted tariff in each category of EU's exports to Mexico

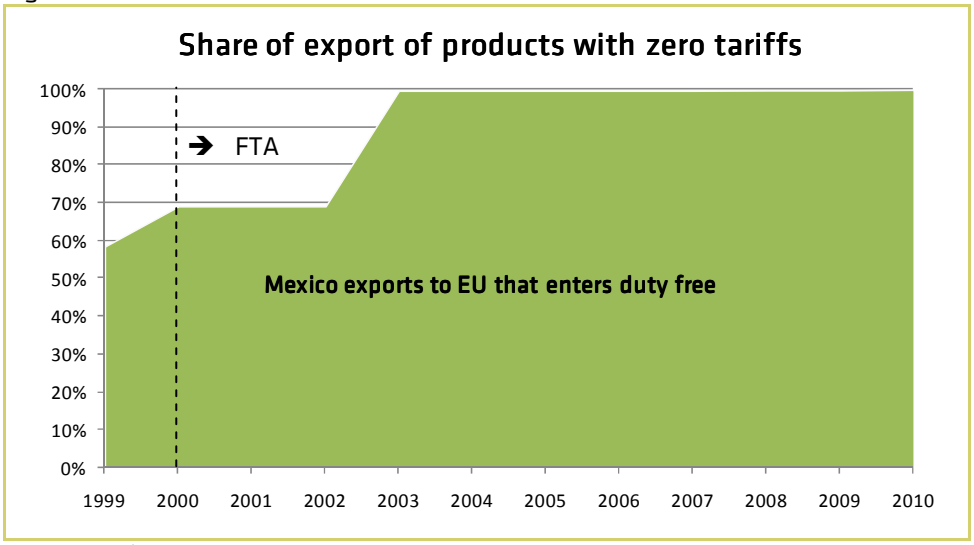
Category	Description	Share 1999	1999	2002	2005	2008	2010
"1"	Tariffs reduced to zero in year 0 for 529 agriculture products	1.5%	20.5%	0.0%	0.0%	0.0%	0.0%
"2"	Tariffs phased out over 3 years for 216 agriculture products	0.6%	15.7%	3.9%	0.0%	0.0%	0.0%
"3"	Tariffs phased out over 8 years for 136 agriculture products	0.8%	18.9%	12.7%	6.4%	0.0%	0.0%
"4"	Tariffs phased out over 10 years for 57 agriculture products	2.7%	20.0%	20.0%	12.4%	5.0%	0.0%
"4a"	Tariffs phased out over 9 years for 39 agriculture products	0.3%	16.4%	11.5%	6.6%	1.6%	0.0%
"A"	Tariffs reduced to zero in year 0 for 4380 industrial products	20.0%	13.2%	0.0%	0.0%	0.0%	0.0%
"B"	Tariffs phased out over 3 years for 560 industrial products	8.5%	14.8%	3.7%	0.0%	0.0%	0.0%
"B+"	Tariffs phased out over 6 years for 1016 industrial products	9.4%	18.1%	7.5%	0.0%	0.0%	0.0%
"C"	Tariffs phased out over 8 years for 4079 industrial products	56.2%	15.6%	7.0%	3.9%	0.0%	0.0%
Total		100%					
Average tariff across all products			**15.6**	**6.29**	**3.29**	**0.00**	**0.00**

Note: The table only shows data for every third year.
Source: Copenhagen Economics.

Exports to the EU of products originating in Mexico

Before the Agreement signed in 1999 the share of Mexico's exports to the EU that entered duty free was around 54 percent, and the share increased to 69 percent in 2000. The share of exports remained at this level three consecutive years and then increased to 99.7 percent in 2003, the year by which the Mexican tariff liberalisation schedule was almost fully phased-in, cf. Figure A2.7.

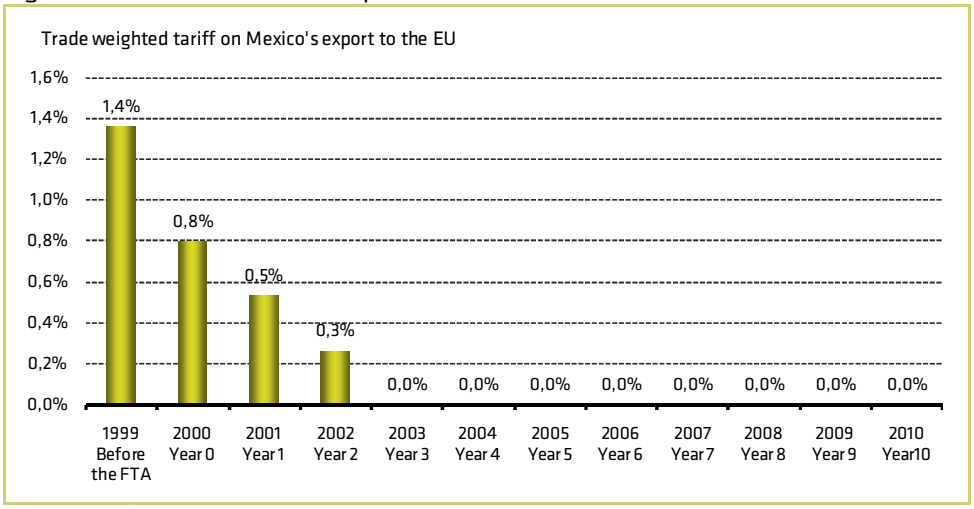
Figure A2.7 EU's tariff liberalisation vis-à-vis Mexico



Source: Copenhagen Economics.

The average trade weighted tariff levied on Mexico's exports to EU was around 1.4 percent before the Agreement and dropped to 0.8 percent in the first year after the Agreement (2000). The Mexican tariffs were gradually eliminated towards 2003.

Figure A2.8 EU's tariff reduction profile for the EU-Mexico FTA



Source: Copenhagen Economics.

Focusing on the share of trade within each of the agreed categories, we find that there is little trade in the categories with high initial tariffs and long phasing-in. Mexico only has 0.1 percent of its exports to the EU in the most restrictive tariff category (Category 4) with a ten year long phasing period and an initial tariff of 21.5 percent.

However, for industrial goods, Mexico is facing a three year gradual reduction for exports corresponding to 37 percent of Mexico's exports to the EU, on which there is a trade weighted average tariff of 4.4 percent. All in all, EU's tariffs on Mexico were low and the reduction was generally fast.

Table A2.6 The weighted tariff in each category of Mexico's exports to the EU

Category	Description	Share 1999	1999	2002	2005	2008	2010
"1"	Tariffs reduced to zero in year 0 for 586 agriculture products	1.7%	0.1%	0.0%	0.0%	0.0%	0.0%
"2"	Tariffs phased in over 3 year for 437 agriculture products	1.0%	9.1%	2.3%	0.0%	0.0%	0.0%
"3"	Tariffs phased in over 8 year for 145 agriculture products	0.4%	17.3%	11.6%	5.9%	0.0%	0.0%
"4"	Tariffs phased in over 10 year for 331 agriculture products	0.1%	21.5%	21.5%	13.3%	5.37	0.0%
"4a"	Tariffs phased in over 9 year for 103 agriculture products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
"A"	Tariffs reduced to zero in year 0 for 5444 industrial products	59.8%	0.2%	0.0%	0.0%	0.0%	0.0%
"B"	Tariffs phased in over 3 year for 2602 industrial products	37.1%	4.4%	1.1%	0.0%	0.0%	0.0%
Total		100%					
Average tariff across all products			**1.36**	**0.27**	**0.00**	**0.00**	**0.00**

Note: The table only shows data for every third year.
Source: Copenhagen Economics.

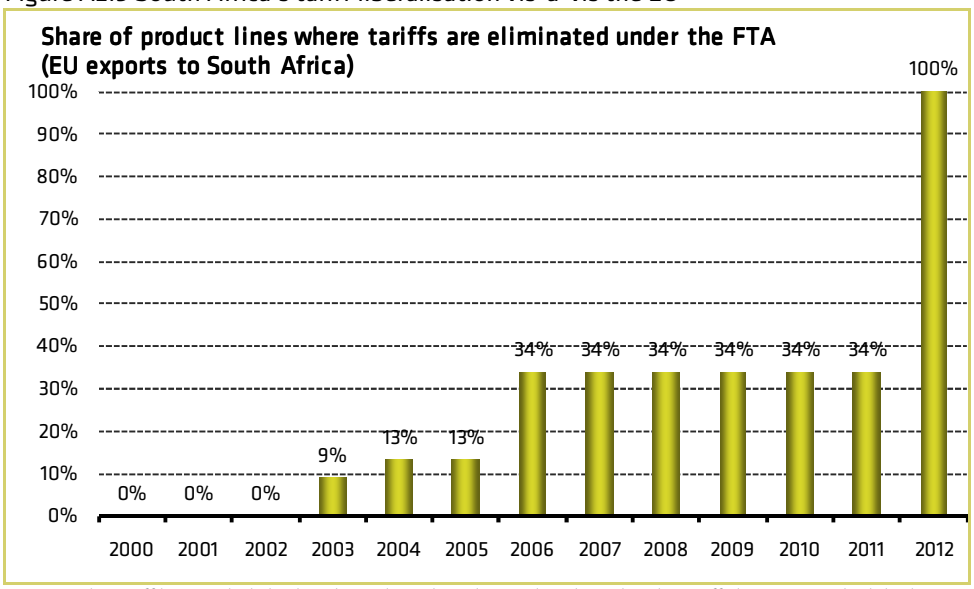
The EU-South Africa Trade, Development and Cooperation Agreement

The trade-related articles of the EU-South Africa Agreement (EU-South Africa Agreement of Trade, Development and Cooperation (1999/753/EC)) have provisionally been applied since January 2000. The Agreement fully entered into force on 1 May 2004 after ratification by the signatory parties.

For *EU export of industrial products to South Africa (*other than the industrial goods listed in Annex III of the Agreement and the agricultural goods listed in Annex VI and VII), tariffs were abolished on the entry into force of the Agreement. For the goods listed in those annexes, tariffs were eliminated over a period of 12 years, cf. Figure A2.9 South Africa's tariff liberalisation vis-à-vis the EU

Besides the tariffs that were eliminated immediately, no tariffs were eliminated during the first three years of the Agreement. In the fourth year, nine percent of the tariffs had been abolished. After that, tariffs were only very slowly abolished until 2011 after which tariffs were fully eliminated in 2012.

Figure A2.9 South Africa's tariff liberalisation vis-à-vis the EU

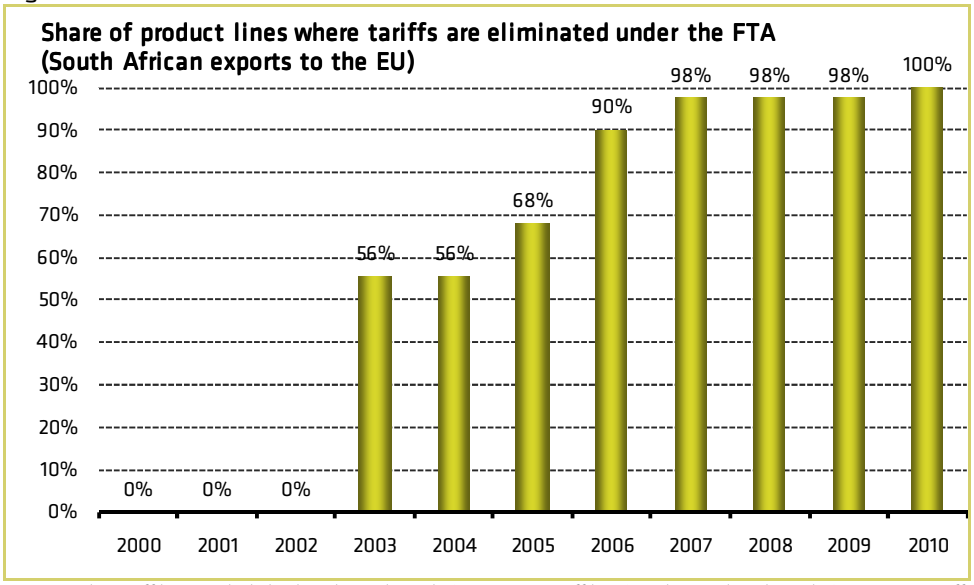


Note: The tariff lines include both industrial goods and agricultural goods. The tariff elimination schedule shown in the figure only covers those tariffs lines that are eliminated in the FDT. This means that product lines where tariffs were already zero before the FTA or that are exempted from the FTA are not included.

Source: Copenhagen Economics.

For *EU imports of products originating in South Africa (*other than those listed in Annex II of the Agreement for industrial goods and Annex IV and V for agricultural goods), tariffs were abolished on the entry into force of the Agreement. For the goods listed in those annexes, tariffs were eliminated over a period of 10 years, cf. Figure A2.10. Besides the tariffs that were eliminated immediately, no tariffs were eliminated during the first three years of the Agreement. In the fourth year, 55 percent of the tariffs had been abolished. After that, tariffs were gradually abolished and were fully eliminated in 2010.

Figure A2.10 EU's tariff liberalisation vis-à-vis South Africa



Note: The tariff lines include both industrial goods (app. 2800 tariff lines) and agricultural goods (app. 1250 tariff lines). The tariff elimination schedule shown in the figure only covers those tariffs lines that are eliminated in the FDT. This means that product lines where tariffs were already zero before the FTA or that are exempted from the FTA are not included.

Source: Copenhagen Economics.

The EU Association Agreement with Tunisia, Morocco and Jordan

The three association agreements between the EU and Tunisia, Morocco and Jordan are very similar in nature and content. *First*, the EU tariff elimination schedules are similar whereas there are slight differences in the product coverage and the phasing-in of the tariff reductions on the side of the partner. *Second*, tariff on EU exports of agricultural products to Tunisia, Morocco and Jordan are either exempted or only reduced during our period of investigation:

- In **Tunisia**, tariffs on certain agricultural and foods products (listed in Annex 2 of the Agreement) are being halved over a 12 year period. For other agricultural and food products (listed in Annex 6 of the Agreement), the arrangements to be applied to such products shall be re-examined by the Association Council four years after the Agreement's entry into force. For the remaining products (not listed in Annex 1 to 6), tariffs were abolished upon the entry into force of the Agreement.

- In **Morocco**, agricultural and foods products (listed in Annex 1) are exempt from duty removal. Agriculture negotiations were concluded in 2005. A DSM protocol was further initialled in December 2009. Next are services and establishment negotiations in regional mode.

- In **Jordan**, tariffs on certain agricultural and foods products (listed in Annex 2 of the Agreement) are being halved over a 12 year period. As regards the products listed in Annex IV, the arrangements to be applied shall be re-examined by the As-

sociation Council four years after the date of entry into force of Agreement. At the time of that re-examination, the Association Council shall establish a tariff dismantling schedule for the products appearing in Annex 4, cf. Article 11(5). Tariffs on products not listed in Annex 2, 3 or 4, were abolished upon the entry into force.

Furthermore, the agreements give Tunisia, Morocco and Jordan the possibility to increase or reintroduce custom duties on all kinds of products, due to infant industries, or certain sectors undergoing restructuring or facing serious difficulties, particularly where these difficulties produce major social problems.

We therefore describe the EU tariff elimination schedule only once and summarise the tariff elimination schedules for Tunisia, Morocco and Jordan individually below. Tariffs on certain agriculture and food products are very different. While some tariffs are eliminated at the entry into force of the agreements, other tariffs on such goods are only being reduced during the investigation period. We therefore focus on industrial goods in the partner's tariff eliminating schedule on imports from the EU.

The EU tariff elimination schedule on imports from Tunisia, Morocco and Jordan

For EU imports of products originating in Tunisia, Morocco and Jordan, most products are free of custom duties from the year of entry into force of the Agreement. Exempt from this are some agricultural and food products. These are referred to in Annex 1 and 2 of the agreements. Furthermore, it is the case for all countries that the Agreement shall not preclude the retention by the Community of an agricultural component on imports of the goods originating in Tunisia, Morocco and Jordan.

Tunisia's tariff elimination schedule on imports from the EU

The EU-Tunisia Agreement (EU-Tunisia Association Agreement (98/238/EC, ECSC) entered into force in 1998. An overview of the phasing-in of tariff reductions between EU and Tunisia can be found in Table A2.7.

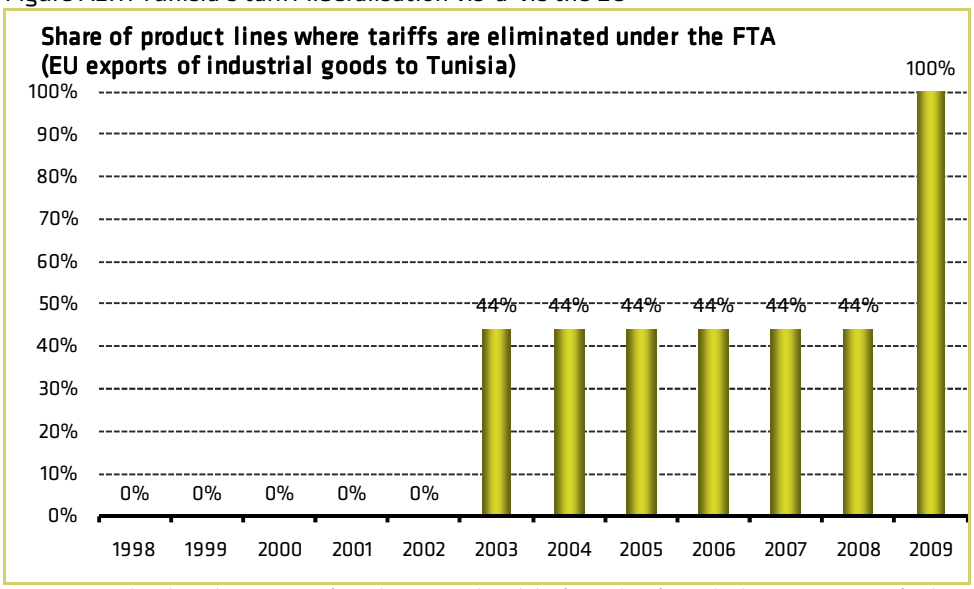
Table A2.7 Overview of phasing-in of tariff reductions between EU and Tunisia

EU imports from Tunisia	EU exports to Tunisia
Entry into force (1 March 1998): All industrial products except products listed in Annex 1 and 2.	Entry into force (1 March 1998): All industrial products except products listed in Annex 1 to 6 cf, article 7, 10(1) and 11(1). Phased in over 5 years: Products listed in Annex 3, cf. article 11(2). App. 1900 tariff lines. Custom duties are reduced to 85 % of basic duty at entry into force, 70% after one year, 55% after two years, 40% after three years, 25% after four years and fully five years after entry into force. Phased in over 12 year, starting upon entry into force: Agricultural products listed in Annex 4, cf. Article 11(3) are phased in over 12 years, starting upon entry into force with a 8% reduction of basic duty until 11 years after entry into force, and then removing the last 4% of the basic duty 12 years after entry into force, fully abolishing the products for duties. Phased in over 12 years, starting 4 years after the date of entry into force: Products listed in Annex 5, cf. article 11(3). App. 2400 tariff lines. The reduction of custom duties starts four years after entry into force, starting with a 12 % point reduction of the basic duty, which is followed by a 11% reduction each of the following years until 12 years after entry into force, where remaining duties are fully abolished.

Source: EU-Tunisia Association Agreement (98/238/EC, ECSC).

Besides the tariffs on industrial goods that were eliminated at the entry into force of the Agreement, the remaining tariffs were eliminated in two steps over the period 2002-2009, cf. Figure A2.11.In 2003 44 percent of the EU exports of industrial goods to Tunisia entered free of duty, and tariffs on these types of goods were completely eliminated in 2009.

Figure A2.11 Tunisia's tariff liberalisation vis-à-vis the EU



Note: Agricultural goods are exempt from duty removal, and the figure therefore only shows EU exports of industrial goods to Tunisia. The tariff elimination schedule shown in the figure only covers those tariffs lines that are eliminated in the FDT. This means that productlines where tariffs were already zero before the FTA or that are exempted from the FTA are not included.

Source: Copenhagen Economics.

Morocco's tariff elimination schedule on imports from the EU

The EU-Morocco Agreement (EU-Morocco Association Agreement (2000/204/EC, ECSC)) entered into force in 2000. An overview of the phasing-in of tariff reductions between EU and Tunisia can be found in Table A2.8.

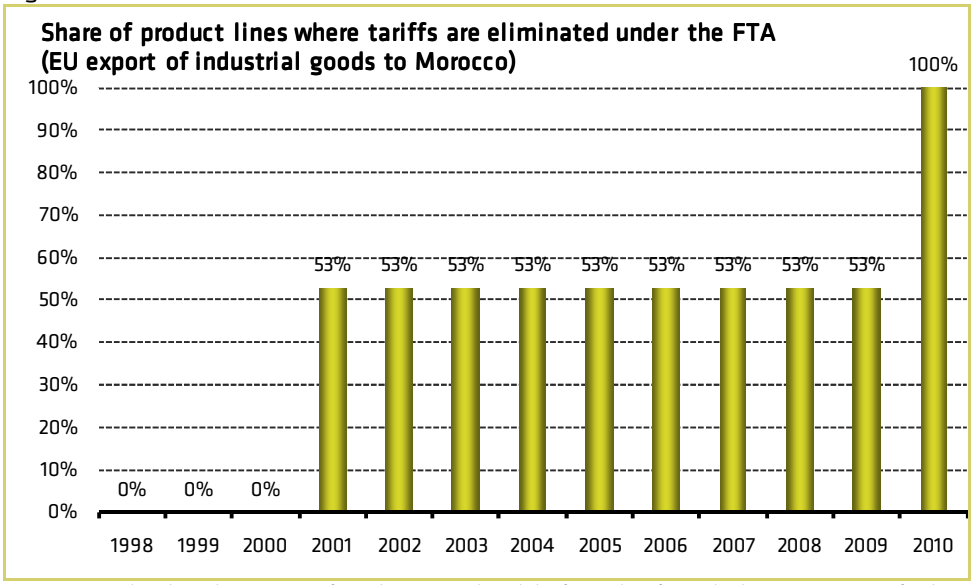
Table A2.8 Overview of phasing-in of tariff reductions between the EU and Morocco

EU imports from Morocco	EU exports to Morocco
Entry into force (1 march 2000): All industrial products except products listed in Annex 1 and 2.	Entry into force (1 march 2000): All industrial products except products listed in Annex 1, 2, 3, 4, 5 and 6, cf. article 11(1). Phased in over 3 years: App. 900 products listed in Annex 3, cf. article 11(2) Custom duties are reduced to 75% of basic duty at entry into force, 50 % after one year, 25% after two years and fully three years after entry into force. Phased in over 3 years: App. 350 products listed in Annex 5, cf. article 12(1) Eliminate the reference prices applied on 1 July 1995 to the products at the latest three years after the Agreement enters into force. Phased in over 12 years: App. 800 products listed in Annex 4, cf. article 11(3) The reduction of custom duties starts three years after entry into force, with a 10 % point reduction of the basic duty each year until 12 years after entry into force, where remaining duties are fully abolished. Unclear: App. 50 products listed in Annex 6, cf. Article 12(2).

Source: EU-Morocco Association Agreement (2000/204/EC, ECSC).

Besides the tariffs on industrial goods that were eliminated at the entry into force of the Agreement, the remaining tariffs were eliminated in two steps over the period 2001-2010, cf. Figure A2.12. In 2001 53 percent of the EU exports of industrial goods to Morocco entered free of duty, and tariffs on these types of goods were completely eliminated in 2010.

Figure A2.12 Morocco's tariff liberalisation vis-à-vis the EU



Note: Agricultural goods are exempt from duty removal, and the figure therefore only shows EU exports of industrial goods to Morocco. The tariff elimination schedule shown in the figure only covers those tariffs lines that are eliminated in the FDT. This means that product lines where tariffs were already zero before the FTA or that are exempted from the FTA are not included.

Source: Copenhagen Economics.

Jordan's tariff elimination schedule on imports originating in the EU

The EU-Jordan Agreement (EU-Jordan Association Agreement (2002/357/EC, ECSC)) entered into force on 1 May 2002. An overview of the phasing-in of tariff reductions between EU and Tunisia can be found in Table A2.9.

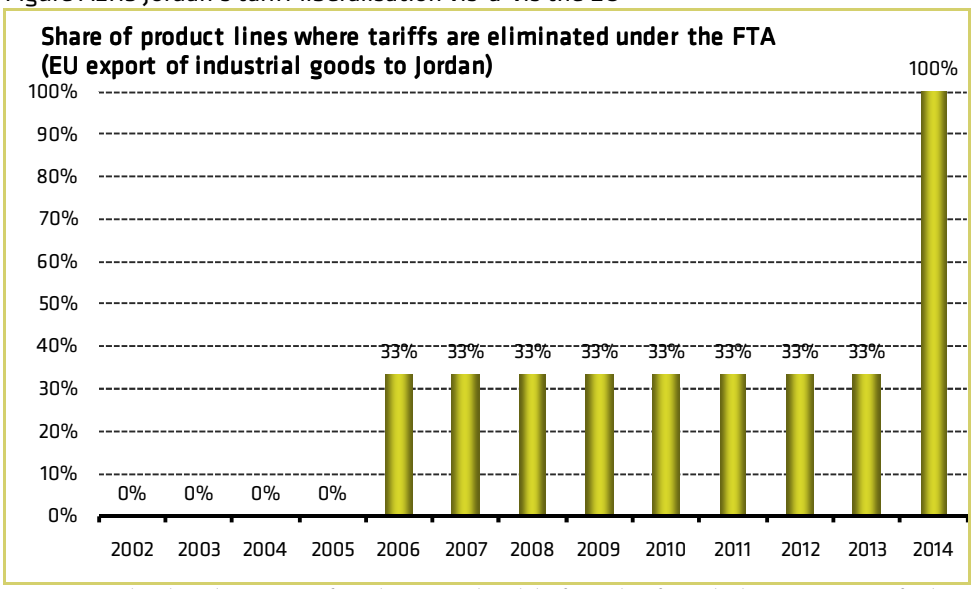
Table A2.9 Overview of phasing-in of tariff reductions between EU and Jordan

EU imports from Jordan	EU exports to Jordan
Entry into force (1 may 2002): All industrial products except products listed in Annex 1 and 2.	Entry into force (1 may 2002): All industrial products except products listed in Annex 1, 2, 3 or 4, cf. article 11(1). Phased in over 4 years: App. 1550 products listed in list A of Annex 3, cf. article 11(3) Custom duties are reduced to 80 % of basic duty at entry into force, 60 % after one year, 40% after two years, 20% after three years and fully four years after entry into force. Phased in over 8 years: Agricultural products listed in Annex 2, cf. Article 11(2) are phased in over eight years, starting four years after entry into force with a 10% reduction of basic duty until year eight, ending on with a custom duty of 50% of the basic duty eight years after the date of entry into force. Phased in over 12 years: App. 3100 products listed in list B of Annex 3, cf. article 11(4) The reduction of custom duties starts four years after entry into force, with a 10 % point reduction of the basic duty each year until 12 years after entry into force, where remaining duties are fully abolished (Which means the last 20% of the custom duty is removed in the last year of the schedule).

Source: EU-Jordan Association Agreement (2002/357/EC, ECSC).

Besides the tariffs on industrial goods that were eliminated at the entry into force of the Agreement, the remaining tariffs were eliminated in two steps over the period 2002-2014, cf. Figure A2.13. In 2001 33 percent of the EU exports of industrial goods to Jordan entered free of duty, and tariffs on these types of goods were completely eliminated in 2014.

Figure A2.13 Jordan's tariff liberalisation vis-à-vis the EU



Note: Agricultural goods are exempt from duty removal, and the figure therefore only shows EU exports of industrial goods to Morocco. The tariff elimination schedule shown in the figure only covers those tariffs lines that are eliminated in the FDT. This means that tariff lines where tariffs were already zero before the FTA or that are exempted from the FTA are not included.

Source: Copenhagen Economics.

Details on tariff reductions

The EU-Chile Free Trade Agreement (2003)

For *Chile's imports of industrial products originating in the EU*, the phasing-in schedule for products listed in Annex II of the Agreement is set out in Table A2.10. For almost 450 product lines, tariffs are abolished over a longer period of five or even seven years for few products.

Table A2.10 Chile's phasing-in schedule for industrial products originating in the EU

Article	Category (annex)	Number of products (6 digit)	Custom duty reduction schedule	% of basic duty in the years following enforcement:							
				0	1	2	3	4	5	6	7
66 (1)	Year 0 (Annex II)	7201	Zero-tariffs after year of enforcement								
66(1)	Year 5 (Annex II)	274*	Phasing-in over first 5 years	0.83	0.67	0.50	0.33	0.17	0		
6 6(1)	Year 7 (Annex II)	171	Phasing-in over first 7 years	0.88	0.75	0.62	0.50	0.38	0.25	0.13	0

*Note: *The available data does not allow us to distinguish between industrial goods and agricultural products that are phased-in over five years. The number of products includes therefore both types of goods.*

Source: Official Journal of the European Communities 30.12.2002.

For *Chile's imports of agricultural and processed agricultural products originating in the EU*, the phasing-in schedule for products listed in Annex II of the Agreement is set out in cf.

Table A2.11. For almost 1100 tariff lines, tariffs are abolished over a longer period of five or ten years.

Table A2.11 Chile's phasing-in schedule for agricultural products originating in the EU

Article	Category (annex)	Number of products (6 digit)	Custom duty reduction schedule	% of basic duty in the years following enforcement:										
				0	1	2	3	4	5	6	7	8	9	10
72 (1)	Year 0 (Annex II)	7201	Zero-tariffs after year of enforcement	0	0	0	0	0	0	0	0	0	0	0
72(1)	Year 5 (Annex II)	274*	Phasing-in over first 5 years	83	67	50	33	17	0	0	0	0	0	0
72 (1)	Year 10 (Annex II)	80	Phasing-in over first 10 years	91	82	73	64	55	46	37	28	19	10	0

*Note: *The available data does not allow us to distinguish between industrial goods and agricultural products that are phased-in over five years. The number of products includes therefore both types of goods.*

Source: *Official Journal of the European Communities 30.12.2002.*

For *EU imports of industrial products originating in Chile*, the phasing-in schedule for products listed in Annex I of the Agreement is listed in Table A2.12. For most products, tariffs are abolished right after the enforcement of the Agreement. For close to 950 tariff lines, tariffs are phased-in over three years.

Table A2.12 EU's phasing-in schedule for industrial products originating in Chile

Article	Category (annex)	Number of products (6 digits)	Custom duty reduction schedule	% of basic duty in the years following enforcement:			
				0	1	2	3
65 (1)	Year 0 (Annex I)	7619	Zero-tariffs after year of enforcement	0	0	0	0
65(1)	Year 3 (Annex I)	941	Phasing-in over first 3 years	80	50	30	0

Source: Official Journal of the European Communities 30.12.2002.

For *EU imports of agricultural and processed agricultural products originating in Chile*, the phasing-in schedule for products listed in Annex I of the Agreement is given in Table A2.13. For almost 850 tariff lines, tariffs are abolished over a period of four, seven or even ten years.

Table A2.13 EU's phasing-in schedule for agricultural products originating in Chile

Article	Category (annex)	Number of products (6 digits)	Custom duty reduction schedule	% of basic duty in the years following enforcement:										
				0	1	2	3	4	5	6	7	8	9	10
71 (1)	Year 0 Annex I)	7619	Zero-tariffs after year of enforcement	0	0	0	0	0	0	0	0	0	0	0
71(1)	Year 4 (Annex I)	392	Phasing-in over first 4 years	80	60	40	20	0	0	0	0	0	0	0
71(1)	Year 7 (Annex I)	207	Phasing-in over first 7 years	88	75	63	50	38	25	13	0	=	0	0
71(1)	Year 10 (Annex I)	237	Phasing-in over first 10 years	91	82	73	64	55	46	37	28	19	10	0

Source: Official Journal of the European Communities 30.12.2002.

The EU-Mexico Free Trade Agreement (2000)

The trade-related articles of the EU-Mexico agreement were provisionally applied since June 2000. The Agreement fully entered into force on 1 January, 2000 after ratification by all signatory parties.

For *Mexico imports of industrial products originating in the EU*, the phasing-in schedule for these products listed in Annex II of the Agreement is set out in Table A2.14. For more than 5500 tariff lines, tariffs are abolished over a period of three, five or even seven years.

Table A2.14 Mexico's phasing-in schedule for industrial products originating in the EU

Article	Category (annex)	Number of products (8 digit)	Custom duty reduction schedule	% of basic duty in the years following enforcement:							
				0	1	2	3	4	5	6	7
6 (1)	"A" Annex II)	App.4380	Zero-tariffs after year of enforcement	0	0	0	0	0	0	0	0
6 (2)	"B" (Annex II)	App.598	Phasing-in over first 4 years	75	50	25	0	0	0	0	0
6 (3)	"B+" (Annex II)	App.1016	Tariffs phased-in gradually over five years according to scheduled reductions specific to each tariff rate								
6 (4)	"C" (Annex II)	App.4080	Tariffs phased-in gradually over seven years according to scheduled reductions specific to each tariff rate								

Source: Official Journal of the European Communities L157 30.06.2000.

For *Mexico imports of agricultural and processed agricultural products originating in the EU*, the phasing-in schedule for the products listed in Annex II of the Agreement can be found in Table A2.15. For more than 1000 tariff lines, tariffs are abolished over a longer period of five or ten years for few products.

Table A2.15 Mexico's phasing-in schedule for agriculture and fish products originating in the EU

Article	Category (annex)	Number of products (8 digit)	Custom duty reduction schedule	% of basic duty in the years following enforcement:										
				0	1	2	3	4	5	6	7	8	9	10
8 (1)	"1" (Annex II)	App.529	Zero-tariffs after year of enforcement	0	0	0	0	0	0	0	0	0	0	0
8 (2)	"2" (Annex II)	App.216	Phasing-in over first 4 years	75	50	25	0	0	0	0	0	0	0	0
8 (3)	"3" (Annex II)	App.136	Phasing-in over first 8 years	89	78	67	56	45	34	23	12	0	0	0
8 (4)	"4" (Annex II)	App.57	Phasing-in over 7 years – no phasing-in the first 3 years	100	100	100	87	75	62	50	37	25	12	0
8 (5)	"4a" (Annex II)	App.39	Phasing-in over first 9 years	90	80	70	60	50	40	30	20	10	0	0
8 (6-11)	"5-7" (Annex II)	App.327	Special rules with limited or delayed reductions											

Source: Official Journal of the European Communities L157 30.06.2000.

For *EU imports of industrial products originating in Mexico*, the phasing-in schedule for products listed in Annex II of the Agreement can be found in Table A2.16. For more than 8000 tariff lines, tariffs are abolished over a longer period of three years for few products.

Table A2.16 EU's phasing-in schedule for industrial products originating in Mexico

Article	Category (annex)	Number of products (8 digit)	Custom duty reduction schedule	% of basic duty in the years following enforcement:			
				0	1	2	3
5 (1)	"A" (Annex I)	App.5,444	Zero-tariffs after year of enforcement	Zero-tariffs in year of entry	0	0	0
5 (2)	"B" (Annex I)	App.2,602	Phasing-in over first 4 years	% of basic duty:	75	50	25

Source: Official Journal of the European Communities L157 30.06.2000.

For EU imports of agricultural and processed agricultural products originating in Mexico, the phasing-in schedule for these products listed in Annex II of the Agreement is set out in Table A2.17. For more than 1000 tariff lines, tariffs are abolished over a longer period of five or ten years for few products.

Table A2.17 EU's phasing-in schedule for agriculture and fish products originating in Mexico

Article	Category (annex)	Number of products (8 digit)	Custom duty reduction schedule	% of basic duty in the years following enforcement:										
				0	1	2	3	4	5	6	7	8	9	10
9 (1)	"1" (Annex I)	App. 586	Zero-tariffs after year of enforcement	0	0	0	0	0	0	0	0	0	0	0
9 (2)	"2" (Annex I)	App.216	Phasing-in over first 4 years	75	50	25	0	0	0	0	0	0	0	0
9 (3)	"3" (Annex I)	App.136	Phasing-in over first 8 years	89	78	67	56	45	34	23	12	0	0	0
9 (4)	"4" (Annex I)	App.57	Phasing-in over 7 years – no phasing-in the first 3 years	100	100	100	87	75	62	50	37	25	12	0
9 (5)	"4a" (Annex I)	App.39	Phasing-in over first 9 years	90	80	70	60	50	40	30	20	10	0	0
9 (6-11)	"5-7" (Annex I)	App.327	Special rules with limited or delayed reductions											

Source: Official Journal of the European Communities L157 30.06.2000.

The EU-South Africa Trade, Development and Cooperation Agreement

For *EU imports of industrial products originating in South Africa*, other than those listed in Annex II of the Agreement, tariffs shall be abolished on the entry into force of the Agreement, cf. Article 11(1). For more than 2800 tariff lines, tariffs are abolished over a longer period of three, six or even 10 years for a few products, cf. Table A2.18. For the industrial products listed in Annex II, the following tariff elimination schedule is agreed upon:

Table A2.18 Reduction of tariffs on EU imports of industrial products from South Africa

Article	Annex and list	Number of products (8 digit)	% of basic duty in the years following enforcement:						
			0	1	2	3	4	5	6
11(2)	Annex II, list 1	App. 1900	75	50	25	0			
11(3)	Annex II, list 2	App. 500	86	72	57	43	28	14	0
11(4)	Annex II, list 3	App. 400				75	50	25	0
11(5)	Annex II, list 4	App. 50	Customs duties shall be abolished within a maximum of 10 years after the date of entry into force of the Agreement. For motor-car components indicated in this list, the applied tariff will be reduced by 50% as from the entry into force of the Agreement.						
11(6)	Annex II, list 5	6	Shall be reviewed in the fifth year of the Agreement in view of a possible elimination of tariffs.						

Source: Article 11 of the Agreement.

For *EU imports of agricultural and fishery products originating in South Africa*, other than those listed in Annex IV and V of the Agreement, tariffs shall be abolished on the entry into force of the Agreement, cf. Article 14(1), cf. Table A2.19. For more than 1800 tariff lines, tariffs reductions are phased in over either three or ten years.

Table A2.19 Reduction of tariffs EU imports of agricultural products from South Africa

Article	Annex and list	Number of products (8 digit)	Custom duty reduction schedule (% of basic duty)										
			0	1	2	3	4	5	6	7	8	9	10
14(2)	Annex IV, list 1	App. 350	75	50	25	0							
14(3)	Annex IV, list 2	App. 100	91	82	73	64	55	45	36	27	18	9	0
14(4)	Annex IV, list 3	App.300				87	75	62	50	37	25	12	0
14(5)	Annex IV, list 4	App.500						83	67	50	33	17	0
14(6)	Annex IV, list 5	App.150	Shall be applied in accordance with the conditions mentioned therein.										
14(7)	Annex IV, list 6	App.50	Shall be applied as from entry into force of this Agreement and in accordance with the conditions mentioned in this Annex.										
14(8)	Annex IV, list 7	App.300	Shall be reviewed periodically in the course of the operation of the Agreement on the basis of future developments in the common agricultural policy										
14(9)	Annex IV, list 8	App.100	Tariff concessions on products listed in Annex IV, list 8 are not applicable as these products are covered by protected EU denominations.										
14(10)	Annex V	App.300	Tariff concessions applicable on imports into the Community of products originating in South Africa listed in Annex V shall be applied in accordance with the conditions mentioned therein.										

Source: Article 14 of the Agreement.

For *EU exports of industrial products to South Africa*, other than those listed in Annex III, tariffs shall be abolished on the entry into force of the Agreement, cf. Article 12(1). For more than 4700 tariff lines, South Africa's imports duties are phased in over three, six or twelve years according to the scheduled listed in Annex III of the Agreement. The tariff schedule is summarised in Table A2.20.

Table A2.20 Reduction of custom duties for industrial products exported from the EU to South Africa

Article	Annex and list	Number of products (8 digit)	Custom duty reduction schedule (% of basic duty)												
			0	1	2	3	4	5	6	7	8	9	10	11	12
13(2)	Annex III, list 1	App. 75	75	50	25	0									
13(3)	Annex III, list 2	App. 750	86	72	57	43	28	14	0						
13(4)	Annex III, list 3	App. 150				90	80	70	60	50	40	30	20	10	0
13(5)	Annex III, list 4	App. 1900						88	75	63	50	38	25	13	0
13(6)	Annex III, list 5	App. 1700	Customs duties applicable on imports into South Africa of products originating in the Community listed in Annex III, list 5 shall be progressively reduced according to the schedule included in that Annex.												
13(7)	Annex III, list 6	App. 150	Customs duties applicable on imports into South Africa of products originating in the Community listed in Annex III, list 6 shall be periodically reviewed in the course of the operation of the Agreement in view of the further liberalisation of trade. South Africa will inform the Community about the outcome of the South African motor industry development programme review. It will present proposals for a further liberalisation of South African imports of automotive products from the Community mentioned in Annex III, lists 5 and 6. The Parties will jointly examine these proposals in the second six months of the year 2000.												

Source: Article 13 of the Agreement.

For *EU exports of agricultural and fishery products to South Africa*, other than those listed in Annex VI and VII, tariffs shall be abolished on the entry into force of the Agreement, cf. Article 15(1). For approximately 1000 products listed in Annex IV and V of the Agreement, the tariff schedule in Table A2.21 is set for reducing South Africa's agriculture tariffs vis-à-vis the EU over three, five or twelve years.

Table A2.21 Reduction of custom duties for agricultural products exported from the EU to South Africa

Article	Annex and list	Number of products (8 digit)	Custom duty reduction schedule (% of basic duty)											
			0	1	2	3	4	5	6	7	8	9	10	11	12
15(2)	Annex VI, list 1	App. 250	75	50	25	0									
15(3)	Annex VI, list 2	App. 150				67	33	0							
15(4)	Annex VI, list 3	App. 350						88	75	63	50	38	25	13	0
15(5)	Annex VI, list 4	App. 150	Customs duties applicable on imports into South Africa of products originating in the Community listed in Annex VI, list 4 shall be reviewed periodically in the course of the operation of the Agreement.												
15(6)	Annex VII	App. 150	Customs duties applicable on imports into South Africa of fisheries products originating in the Community listed in Annex VII shall be progressively abolished in parallel with the elimination of customs duties of the corresponding tariff positions by the Community.												

Source: Article 15 of the Agreement.

The EU Association Agreement with Tunisia

The EU-Tunisia agreement (EU-Tunisia Association Agreement (98/238/EC, ECSC)) entered into force on 1 March 1998.

For *EU imports of products originating in Tunisia*, most products are free of custom duties from the year of entry into force of the agreement (1 March 1998) according to article 9 of the agreement. Exempt from this is some agricultural and food products. These are referred to in Annex 2, cf. article 7 and article 10(1) states that the agreement shall not preclude the retention by the Community of an agricultural component on imports of the goods originating in Tunisia listed in Annex 1 of the Agreement.

For *Tunisia's imports of products originating in the EU*, many products are phased-in over longer periods. For app. 1900 tariff lines (8 digits) from a wide range of industry goods sectors Tunisia's tariff removal is phased-in over a period of 5 years, cf. article 11(2). The HS codes are listed in Annex 3 of the Agreement. For further app. 2400 tariff lines (8 digit) from a wide range of industrial goods sectors, Tunisia's tariff removal is phased-in over a period of 12 years, after two different schedules, one starting upon entry into force and one starting four years later. These product codes are listed in Annex 4 and 5 of the Agreement.

Agricultural and foods products listed in Annex 2 of the Agreement shall be reduced to 50 percent of the basic duty over a period of eight years, starting in year four after entry into force, cf. article 11(2). As regards the products listed in Annex 6, the arrangements to be applied to such products shall be re-examined by the Association Council four years after the

Agreement's entry into force, cf. Article 12. Custom duties on products not listed in Annex 1 to 6, are to be abolished upon the entry into force, cf. Article 7, 10(1) and 11(1).

Article 14 of the agreement, gives Tunisia the possibility to increase or reintroduce custom duties on all kinds of products, due to infant industries, or certain sectors undergoing re-structuring or facing serious difficulties, particularly where these difficulties produce major social problems. Limits on rate and time of these custom duties are described further in article 14.

Recent developments and next steps[11]
Agreement on DSM was signed in December 2009. Next steps are bilateral negotiations on agriculture and on the liberalisation of trade in services and establishment which are under way.

Table A2.22 Overview of phasing-in of tariff reductions between EU and Tunisia

EU imports from Tunisia	EU exports to Tunisia
Entry into force (1 March 1998): All industrial products except products listed in Annex 1 and 2.	Entry into force (1 March 1998): All industrial products except products listed in Annex 1 to 6 cf, article 7, 10(1) and 11(1) Phased in over 5 years: Products listed in Annex 3, cf. article 11(2) Custom duties are reduced to 85% of basic duty at entry into force, 70% after one year, 55% after two years, 40% after three years, 25% after four years and fully five years after entry into force Phased in over 12 year, starting upon entry into force: Agricultural products listed in Annex 4, cf. Article 11(3) are phased in over 12 years, starting upon entry into force with a 8% reduction of basic duty until 11 years after entry into force, and then removing the last 4% of the basic duty 12 years after entry into force, fully abolishing the products for duties. Phased in over 12 years, starting 4 years after the date of entry into force: Products listed in Annex 5, cf. article 11(3) The reduction of custom duties starts four years after entry into force, starting with a 12% point reduction of the basic duty, which is followed by a 11% reduction each of the following years until 12 years after entry into force, where remaining duties are fully abolished.

Source: EU-Tunisia Association Agreement (98/238/EC, ECSC).

The EU Association Agreement with Morocco (2000)
The EU-Morocco agreement (EU-Morocco Association Agreement (2000/204/EC, ECSC)) entered into force on 1 March 2000.

For *EU imports of products originating in Morocco*, most products are free of custom duties from the agreement's entry into force (1 may 2002) according to article 9 of the agreement. Exempt from this is some agricultural and food products. These are referred to in Annex 2 of the Agreement, cf. article 7 and article 10(1) states that the agreement shall not preclude the

[11] From "Overview of FTAs and other trade negotiations" 22 June 2010 http://trade.ec.europa.eu/doclib/docs/2006/december/tradoc_118238.pdf.

retention by the Community of an agricultural component on imports of the goods originating in Jordan listed in Annex 1.

For *Morocco's imports of products originating in the EU*, many products are phased-in over longer periods. For app. 900 tariff lines (ranging from 4 to 8 digit) from a wide range of industry goods sectors Morocco's tariff removal is phased-in over a period of 3 years, cf. article 11(2). The HS codes are found in Annex 3 of the Agreement. For further app. 800 tariff lines (4- to 8-digit) from a wide range of industrial goods sectors, Morocco's tariff removal is phased-in over a period of 12 years, starting from year three after entry into force.

Agricultural and foods products listed in Annex 1 are exempt from duty removal, cf. article 7. Furthermore, article 14 of the agreement, gives Morocco the possibility to increase or re-introduce custom duties on all kinds of products, due to infant industries, or certain sectors undergoing restructuring or facing serious difficulties, particularly where these difficulties produce major social problems. Limits on rate and time of these custom duties are described further in article 14.

For app. 350 tariff lines (ranging from 4 to 10 digits, of which the most are textiles) listed in Annex 5 of the Agreement Morocco undertakes to eliminate the reference prices applied on 1 July 1995 to the products at the latest three years after this Agreement enters into force, cf. Article 12(1).

According to Article 12(2), the provisions of Article 11 shall not apply to the products appearing in Annex 6 of the Agreement, Lists 1 and 2, without prejudice to the following:

(a) In the case of the products on List 1, the provisions of Article 19(2) shall apply only after the transitional period has elapsed. However, they may be made to apply sooner by a decision of the Association Council;
(b) The arrangements applying to the products on Lists 1 and 2 shall be re-examined by the Association Council three years after this Agreement's entry into force. At the time of that re-examination, the Association Council shall establish a tariff-dismantling timetable for the products appearing in Annex 6, apart from those of subheading 6309 00. Annex 6 contains app. 50 products.

For agricultural and fishery, products listed in Annex 2 cf. article 15, article 16 states that *"The EU and Morocco shall gradually implement greater liberalisation of their reciprocal trade in agricultural and fishery products."*

Recent developments and next steps[12]

Agriculture negotiations were concluded in December 2009 and the Agreement on DSM was initialled in December 2009. Next steps are the bilateral negotiations on the liberalisation of trade in services and establishment, which is expected to continue with the aim of concluding them in 2010. Further negotiations to deepen the current Association Agreement on Agreements in trade-related regulatory areas will be launched as soon as there is substantial progress in the above negotiations.

Table A2.23 Overview of phasing-in of tariff reductions between EU and Morocco

EU imports from Morocco	EU exports to Morocco
Entry into force (1 march 2000): All industrial products except products listed in Annex 1 and 2.	Entry into force (1 march 2000): All industrial products except products listed in Annex 1, 2, 3, 4, 5 and 6, cf. article 11(1). Phased in over 3 years: App. 900 products listed in Annex 3, cf. article 11(2) Custom duties are reduced to 75% of basic duty at entry into force, 50% after one year, 25% after two years and fully three years after entry into force. Phased in over 3 years: App. 350 products listed in Annex 5, cf. article 12(1) Eliminate the reference prices applied on 1 July 1995 to the products at the latest three years after the Agreement enters into force. Phased in over 12 years: App. 800 products listed in Annex 4, cf. article 11(3) The reduction of custom duties starts three years after entry into force, with a 10 % point reduction of the basic duty each year until 12 years after entry into force, where remaining duties are fully abolished. Unclear: App. 50 products listed in Annex 6, cf. Article 12(2).

Source: EU-Morocco Association Agreement (2000/204/EC, ECSC).

The EU Association Agreement with Jordan (2002)

The EU-Jordan Agreement (EU-Jordan Association Agreement (2002/357/EC, ECSC))) entered into force on 1 May 2002.

For *EU imports of products originating in Jordan*, most products are free of custom duties from the Agreement's entry into force (1 may 2002) according to article 9 of the Agreement. Exempt from this is some agricultural and food products. These are referred to in Annex 2, cf. article 7 and article 10(1) states that the Agreement shall not preclude the retention by the Community of an agricultural component on imports of the goods originating in Jordan listed in Annex 1.

For *Jordan's imports of products originating in the EU*, many products are phased-in over longer periods. For app. 1550 tariff lines (8 digits) from a wide range of industry goods sectors, Jordan's tariff removal is phased-in over a period of 4 years, cf. article 11(3). The HS codes are to be found in list A of Annex 3 in the Agreement. For further app. 3100 tariff lines (8 digit) from a wide range of industrial goods sectors, Jordan's tariff removal is phased-

[12] From "Overview of FTAs and other trade negotiations" 22 June 2010 http://trade.ec.europa.eu/doclib/docs/2006/december/tradoc_118238.pdf.

in over a period of 12 years, starting from year four after entry into force. These product codes are listed in list B of Annex 3.

Agricultural and foods products listed in Annex 2 shall be reduced to 50 percent of the basic duty over a period of eight years, starting in year four after entry into force, cf. article 11(2). As regards the products listed in Annex IV, the arrangements to be applied shall be re-examined by the Association Council four years after the date of entry into force of Agreement. At the time of that re-examination, the Association Council shall establish a tariff dismantling schedule for the products appearing in Annex 4, cf. Article 11(5).

Custom duties on products not listed in Annex 2, 3 or 4, are to be abolished upon the entry into force. Article 13 of the Agreement, gives Jordan the possibility to increase or reintroduce custom duties on all kinds of products, due to infant industries, or certain sectors undergoing restructuring or facing serious difficulties, particularly where these difficulties produce major social problems. Limits on rate and time of these custom duties are described further in article 13.

Recent developments and next steps[13]
Agriculture negotiations were concluded in 2005. A DSM protocol was further initiated in December 2009. Next are services and establishment negotiations in regional mode.

Table A2.24 Overview of phasing-in of tariff reductions between EU and Jordan

EU imports from Jordan	EU exports to Jordan
Entry into force (1 may 2002): All industrial products except products listed in Annex 1 and 2.	Entry into force (1 may 2002): All industrial products except products listed in Annex 1, 2, 3 or 4, cf. article 11(1). Phased in over 4 years: App. 1550 products listed in list A of Annex 3, cf. article 11(3) Custom duties are reduced to 80% of basic duty at entry into force, 60 % after one year, 40% after two years, 20% after three years and fully four years after entry into force. Phased in over 8 years: Agricultural products listed in Annex 2, cf. Article 11(2) are phased in over eight years, starting four years after entry into force with a 10% reduction of basic duty until year eight, ending on with a custom duty of 50% of the basic duty eight years after the date of entry into force. Phased in over 12 years: App. 3100 products listed in list B of Annex 3, cf. article 11(4) The reduction of custom duties starts four years after entry into force, with a 10% point reduction of the basic duty each year until 12 years after entry into force, where remaining duties are fully abolished (Which means the last 20% of the custom duty is removed in the last year of the schedule).

Source: EU-Jordan Association Agreement (2002/357/EC, ECSC).

[13] From "Overview of FTAs and other trade negotiations" 22 June 2010. http://trade.ec.europa.eu/doclib/docs/2006/december/tradoc_118238.pdf.

ANNEX 3 ESTIMATION METHODS AND RESULTS

Report

by Jefferey Bergstrand and Scott Baier

Introduction

The European Union's member nations' economic welfare is very dependent on international trade and consequently the members of the European Union (EU) benefit from an economic policy that encourages open and predictable market access to economies around the world. Hence, free trade agreements (FTAs) and "Associate Agreements" (AAs) between EU and non-EU countries are important elements of EU trade policy, especially since there has been a proliferation of bilateral and regional FTAs around the world since the late 1980s among countries with which the EU competes economically.

Currently, the EU has FTAs and AAs with several countries, although the very first AA went into force as recently as 1998 (EU-Tunisia) and the first FTA as recently as 2000 (EU-Mexico). This particular report is aimed at evaluating the *ex post* direct (or partial) effects on bilateral trade (between all EU countries and each of six countries) of six particular agreements that the EU has with these six non-EU countries. By "direct" (or "partial") effects, we refer to only the bilateral trade effects due to changed bilateral relative prices, holding constant (or precluding) all other relative price effects (i.e., no "general equilibrium" feedback effects). However, we will also discuss why potentially offsetting general equilibrium effects may for some estimates be economically trivial. Moreover, "*ex post*" refers to an evaluation of the direct impacts after they occurred, in contrast to standard "*ex ante*" analyses, which are typically done quantitatively using computable general equilibrium models before such agreements are formed.

Specifically, this report evaluates:

(1) The 2003 EU-Chile Free Trade Agreement. The EU-Chile FTA meets the norms of an FTA. The scope of goods and services covered under the agreement, the degree to which trade was liberalised for goods and services, and the elimination of duties from the year of entry into force makes this a comprehensive FTA. Our prior is that both EU countries' imports from Chile and Chile's imports from EU countries increased due to rapid and extensive liberalisation under the FTA. For instance, Chile reduced tariffs to zero in 92 percent of tariff lines in the year of date of entry (2003). The average phase-in of Chile's liberalisations was 0.49 of one year (or 6 months).

(2) The 2000 EU-Mexican Free Trade Agreement. The EU-Mexico FTA was the first FTA of the EU with a Western Hemisphere country. Also comprehensive in scope like the EU-Chile agreement, this agreement had a slower implementation, as only 43 percent of Mexican imports tariff lines on EU products were eliminated upon entry into force in 2000. No less than 41 percent of industrial goods tariff lines

were negotiated to be removed 8 years later (by 2008). Our prior is that Mexico's imports from EU countries would increase much less than EU imports from Chile, with the former possibly not increasing substantively at all.

(3) The 1999 EU-South Africa Trade, Development, and Cooperation Agreement (TDCA). According to the Europa website, this agreement – concluded in 2004 – stipulates the phasing in of a free trade area over 10 years time for 95 percent of EU imports from South Africa and over 12 years time for 86 percent of South African imports from the EU. We will consider this an AA similar to those concluded with the Mediterranean countries. Our expectation based upon the long phase in of liberalisation is that there will not be a significant increase in these bilateral trade flows due to this AA.

(4) The 1998 EU-Tunisia Association Agreement. This Euro-Mediterranean AA liberalised immediately (1998) trade barriers on EU imports from Tunisia, but liberalised over 0-15 years Tunisia imports from the EU. The EU already had in place very low import barriers from Tunisia attributable to the Generalised System of Preferences (GSP) arrangement. Hence, we do not expect a significant change in EU imports from Tunisia. However, the effect on EU exports to Tunisia will depend upon the speed of phasing in of Tunisia's liberalisation on EU exports into Tunisia.

(5) The 2000 EU-Morocco Association Agreement. This AA liberalised immediately (in 2000) trade barriers on EU imports from Morocco. Due to an existing EU GSP agreement with Morocco, there is the expectation that this AA would not have any significant effect on EU imports from Morocco. However, the extent of increase in EU exports to Morocco will have depended upon the speed of phase in of liberalisations.

(6) The 2002 EU-Jordan Association Agreement. This AA liberalised immediately (2002) trade barriers on EU imports from Jordan, and is intended to establish a free trade area over 12 years. As with Tunisia and Morocco, the EU GSP agreement with Jordan had already virtually eliminated barriers on EU imports from Jordan, so that this AA would likely not have increased significantly EU imports from Jordan. The extent of increase in EU exports to Jordan will have depended upon the speed of phase in of Jordan's liberalisations on EU exports.

I. Methodological background

Economists have long employed numerical (or computable) general equilibrium models of world trade, production, and consumption to analyse *ex ante* the potential effects of economic integration agreements, such as free trade agreements (FTAs), on international trade flows, national outputs, and economic welfare (i.e., per capita incomes). However, methods for measuring consistently and with precision *ex post* the impact of FTAs on bilateral trade

flows (and other important variables) have been lacking, until recently. However, three factors have contributed to the potential for now measuring *ex post* consistently – and with more precision – the quantitative effects of FTAs' formations and enlargements on international trade flows (and potentially on outputs and economic welfare). First, the proliferation of FTAs over the past half century has generated an abundance of cases of "treatments" between country pairs; that is, a very large number of country-pairs in the world for many years without FTAs but also now a large number of country-pairs with FTAs for several years. Second, economists now have computing power for and access to large bilateral international trade data sets with hundreds of thousands of observations with cross-sectional and time-series variation. Third, economists now share more advanced theoretical and econometric knowledge of the modelling of bilateral international trade flows, with and without the presence of FTAs. This study takes advantage of all of these innovations to estimate more consistent and precise estimates of the effects of free trade agreements (and association agreements) on bilateral trade flows.

The methodologies for evaluating *ex post* the effects of FTAs on bilateral trade flows can be organised into two (exhaustive) categories: *parametric* methods and *non-parametric* methods. We discuss parametric methods first. The main tool for evaluating *ex post* the effects of various (policy-based or non-policy-based) trade costs – such as FTAs – on bilateral trade flows is the "gravity equation," which relates country-pairs' bilateral trade flows to economically influential country-specific and pair-specific variables, cf., Anderson and van Wincoop (2004) and Bergstrand and Egger (forthcoming). Theoretical foundations for the gravity equation are now well-founded, with notable advancements such as accounting for the influences of all relevant prices and exchange rates in the world and the potentially trade-diverting effects of other FTAs (cf., Anderson and van Wincoop, 2003) and for the endogeneity bias introduced by country pairs self-selecting into FTAs (cf., Baier and Bergstrand, 2007) now accepted. The gravity equation can be applied using alternative regression estimation techniques, ranging from ordinary least squares to Poisson pseudo-maximum-likelihood estimators. This study will incorporate appropriate recent advances in the modelling of international trade flows to measure consistently and with precision the effect of the six EU agreements on trade flows using cross-sectional, time-series parametric econometric techniques described more fully in Baier and Bergstrand (2007, 2009a), Baier, Bergstrand and Vidal (2007), and Baier, Bergstrand, Egger, and McLaughlin (2008). The six EU bilateral agreements (with the year of entry into force in parentheses) are: Tunisia (1998), South Africa (1999), Mexico (2000), Morocco (2000), Jordan (2002) and Chile (2003).

The other methodology for evaluating *ex post* the effects of FTAs on trade flows uses "non-parametric" methods. Three recent studies have explored the impact of FTAs on trade flows using a "matching" estimator, cf., Egger, Egger, and Greenaway (2008) and Baier and Bergstrand (2009b, 2010). In all three cases, country-pairs are "matched" in terms of all relevant characteristics except whether or not they have an FTA (similar to medical studies evaluating "treatment" of a drug). The effect of "treatment" in this case is the difference in changes over time in trade flows between the "matched pairs." The key consideration for op-

erationalising this technique is reliable criteria for matching pairs without FTAs that serve as "controls." However, once again theoretical foundations for and empirical reliability of gravity equations for explaining trade flows comes into play. Since gravity equations explain trade flows with robust statistical power, the factors that explain such trade flows become the relevant economic characteristics upon which to match pairs. This study will incorporate appropriate recent advances in the non-parametric modelling of international trade flows to try to measure consistently and with precision the effects on trade flows of the six EU bilateral FTAs mentioned previously using matching econometric methods described more fully in Baier and Bergstrand (2009b, 2010).

II. *Parametric* (gravity-equation) specification issues, data description, and empirical results

A. Specification Issues

The "gravity equation" in international trade has been used for nearly 50 years to examine the effects on bilateral trade flows of various economic and/or political factors. In most instances, bilateral trade flows in a particular year are explained by relevant exporting country variables and importing country variables – such as exporter's and importer's gross domestic product (GDP) and indexes of prices inclusive of exchange rates (cf., Anderson and van Wincoop (2003) and Baier and Bergstrand (2009a)) that vary over time – and by time-invariant bilaterally fixed factors influencing trade costs – such as bilateral distance and "dummy" variables for shared languages or borders. These equations have considerable "explanatory power," in the sense that they can predict in-sample very accurately the large number of bilateral trade flows of country-pairs in the world, both across pairs and over time. We show a typical gravity equation below in equation (1), the only equation in this report, where some variables specified below are in logarithms. We use this to address some questions that surfaced during presentations by Bergstrand at the European Commission on 19 April 2010 and 29 September 2010:

(1) $Trade_{ijt} = f(GDP_{it}, GDP_{jt}, ExpP_{it}, ImpP_{jt}, NaturalTC_{ij}, PolicyTC_{ijt}, Other_{it}, Other_{jt}, Other_{ij}, \ _{ijt})$

where $Trade_{ijt}$ denotes the "real" bilateral trade flow from (country) i to (country) j in (year) t where real denotes the nominal flow was divided by the exporter's export price index, GDP_{it} is the real gross domestic product of i in year t, GDP_{jt} is real GDP of j in t, $ExpP_{it}$ is a "theoretically-grounded" (GDP-share-weighted) index of all relevant prices (including exchange rates) for all other trade flows/goods affecting i's export behavior in t (including those of all other bilateral flows out of i as well as those of third-country-pairs), $ImpP_{jt}$ is a "theoretically-grounded" (GDP-share-weighted) index of all relevant prices (including exchange rates) for all other trade flows/goods affecting j's import behavior in t (including those of all other bilateral flows into j as well as those of third-country-pairs, $NaturalTC_{ij}$ denotes any time-invariant factor that naturally enhances or diminishes trade from i to j (such as their bi-

lateral distance, a common land border, a common language), $PolicyTC_{ijt}$ denotes any time-varying policy-based bilateral trade cost influencing trade from *i* to *j* including an index of an FTA or AA, $Other_{it}$ denotes any other (unobserved) factors that might influence $Trade_{ijt}$ that occurred in *i* in year *t*, $Other_{jt}$ denotes the same for *j* in year *t*, $Other_{ij}$ denotes any other unobserved time-invariant bilateral factor between *i* and *j* that might influence $Trade_{ijt}$, and $_{ijt}$ denotes any unobserved random factor influencing the trade flow. It is important to note that our estimation is bilateral country-pair specific and the trade flows are (one-way) gross trade flows. Hence, we derive an estimate of the average effect of the EU FTA (or AA) using information from the average change in member pairs' trade flows since date of entry into the agreement.

For the study at hand, we were asked to estimate the average "partial" (or "direct") effect of the particular EU FTA (or AA) on that pair of countries' trade flows, since the date of entry into the agreement. To understand the source of this estimate, the key is that previous regression estimates of equation (1) above "explain" around 90 percent of the variation in all the trade flows. Since the model explains bilateral trade well, it is the case that holding constant all the factors on the right-hand-side of the equation that influence trade that vary in the "*it*" dimension (such as GDP_{it}) *cannot* be the source of the change in the trade flow over time. For instance, if Chile's GDP grew exceptionally fast from 2003 to 2008, this exceptional growth will be accounted for in the change in trade between Chile and EU countries from 2003-2008 through dummy variables that account for all GDP changes, and hence the estimated FTA effect will not be contaminated by this. Similarly for any variable that varies in the "*jt*" dimension and in the "*ij"* dimension. We manage this (in the *it* dimension) by including a separate "dummy" variable for every exporting country for every year, (in the *jt* dimension) for every importing country for every year, and (in the *ij* dimension) for every pair of countries. Note, from equation (1), that every variable on the right-hand-side is accounted for ("held constant") except for $PolicyTC_{ijt}$. For example, once *it* dummies are included to capture all of the unobserved $Other_{it}$ variables, this will eliminate any need to additionally include either GDP_{it} or $ExpP_{it}$. Thus, except for random error ($_{ijt}$), any change in the trade flow for, say, Germany to Chile, can be attributed to the change in $PolicyTC_{ijt}$. If the only substantive *bilateral* policy change for Germany and Chile during the period 2003-2008 was the formation of the EU-Chile FTA, the change in the trade flow is attributed to that policy change. The single estimated symmetric EU-Chile "average treatment effect" is an average over (potentially) all 54 trade flows (i.e., 27 EU countries and 2 bilateral flows for each with Chile). A single estimated asymmetric EU-exports-to-Chile "average treatment effect" is an average over (potentially) all 27 EU country exports to Chile.

We cannot, of course, list in this report *all* the economic factors that are accounted for in estimating our treatment effect. However, we note two important factors (raised in seminar questions). First, all exchange rate changes are accounted for and removed from the estimated FTA effect. We account both for nominal exchange rate effects and for real exchange rate effects. For instance, between 2003 and 2008, the euro appreciated against Chile's peso. Regarding the nominal exchange rate, the left-hand-side trade flow variable is constructed as

a US$ nominal flow divided by the exporter's export price index. For example, for German (country *i*) exports to Chile (country *j*), $Trade_{ijt}$, = $(\$/)_{it}(p)_{it}(x)_{ijt}$, where $(\$/)_{it}$ is the US$/euro exchange rate needed for cross-section measurement of flows but varies only in the *it* dimension, $(p)_{it}$ is the euro price of German exports (assumed the same across destination markets, as is common), and $(x)_{ijt}$ is the bilateral volume of goods from Germany to Chile; hence, in the nominal dimension, the trade flow is insensitive to the peso value of the euro. However, the volume of exports from Germany to Chile is affected by the *real* exchange rate. However, the reduced-form gravity equation (1) is actually derived from a theoretical foundation where the two countries' real bilateral exchange rate – $(peso/)_{ijt}(p)_{it}/(P^{peso})_{jt}$ – can be shown to be embedded fully in the two price terms $ExpP_{it}$ and $ImpP_{it}$, cf., Anderson and van Wincoop (2003) or Baier and Bergstrand (2009a). Consequently, in the model's context, any bilateral trade flows changes due to real exchange rate movements are fully accounted for using the dummy variables in the *it* and *jt* dimensions. Furthermore, one may be concerned that "cross-exchange-rate" changes could influence the Germany-Chile bilateral trade flow; again, however, all cross-exchange-rate changes are accounted for by the full set of *it*, *jt*, and *ij* dummies.

Similar logic applies toward possible contamination of FTA effects owing to FTAs *other* than the agreement being investigated. For instance, are the FTA effects of the EU-Mexico FTA compromised by not including a specific dummy variable for NAFTA? Consider for instance Mexican imports from the Germany. In the context of this model, the effect of NAFTA is captured in equation (1) in the importer's price term, $ImpP_{it}$. This term accounts for Mexico's prices for all goods it imports, even those from the United States and Canada. Hence, the effect of NAFTA or any other agreement that Mexico had is removed by the *jt* dummy variables. Analogously, any effect of the EU's other agreements – such as with Chile, Tunisia, etc. – on German exports to Mexico are removed by the *it* dummies.

In the first set of results, the dummy variable for, say, the EU-Chile FTA will assume in any year the value 1 when one member of the country pair is Chile and the other member is a country in the EU and the agreement is in force. In later results, we will introduce separate dummy variables for whether the EU country is the exporting or importing country, that is, we allow for "asymmetric" FTA effects.

However, since both bilateral trade flows and indexes of the presence or absence of an FTA vary both over time as well as across country pairs, the effect of FTAs on the bilateral trade of a country pair can be measured *ex post* as long as all the exporter-time, importer-time, and bilateral fixed effects are accounted for (using an appropriate structure of dummy variables). Moreover, since bilateral trade flows vary with much higher frequency than the formation of an FTA, then selection bias (for coefficient estimates) of country-pairs into such agreements will be minimised. That is, we take advantage of the fact that changes in trade flows can adjust faster than changes in FTA agreements, so that we can treat the FTA changes as "exogenous" to the trade flow changes. Details behind this estimation procedure are discussed in Baier and Bergstrand (2007). To date, Baier and Bergstrand (2007) suggest

that the only way to inhibit self-selection bias in estimating the trade effects of an FTA in (parametric) gravity equations is to estimate the model using cross-section and time-series variation. Because all of the agreements were instituted within the last 10 years of the sample, this implies that one can only generate one coefficient estimate for the period since the agreement's year of entry into force. Moreover, the nature of the methodology is that one cannot account explicitly for the phasing-in of agreements; such phase-ins are implicit in the measured effect. However, we can allow the six different agreements to have independent trade-effect estimates. In the first set of results, we will assume that the liberalisations are *symmetric*; this will constrain the effect to be the same for EU exports to and imports from a partner country. In later results, we will relax this assumption and allow *asymmetric* liberalisations.

One of the benefits of this *ex post* approach is that – unlike *ex ante* computable general equilibrium (CGE) approaches – we do not need to specify actual measurement of the degree of trade liberalisation. This allows for variation across country-pairs in the degree of liberalisation and scope among agreements; in the context of the underlying theoretical framework, more in-depth and more quickly phased-in trade agreement liberalisations will create larger trade-flow impacts. This is a critical part of this methodology. Every single treaty differs; all six FTAs examined are unique agreements. What our methodology does is to isolate the change in the trade flows of a pair of countries from the inception year of the agreement to 2008, after accounting for all other possible factors that could have affected those flows, as suggested by equation (1), which we know works well historically to explain trade flows. Consequently, we can interpret *ex post* the quantitative effects of an FTA only if we have full *qualitative and quantitative* knowledge of the liberalisations' scope, economic significance, and timing of liberalisations; hence, a comparable understanding of what each treaty provided is essential to interpret these *quantitative* treatment effects. Future work may address quantifying explicitly these treaties to generate continuous variables to measure the treatment, rather than binary variables.

B. Data Issues

The data needs for this analysis are then limited to constructing two variables along with a large structure of dummy variables. One variable is bilateral trade flows among a large number of country-pairs over time (annual observations). This data is available for every three-year period from 1966 to 2008 for 176 countries from the International Monetary Fund's *Direction of Trade Statistics*. Since the reported bilateral trade flows are in nominal U.S. dollars, we deflate the series using exporter price indexes to derive "real" bilateral trade flows. Since much of this data is reported with a lag for many developing countries, 2008 was the most recent year available for a large number of countries. The second variable is a measure of the presence or absence of an FTA between a pair of countries in every year. We use the data set constructed by Scott Baier and Jeffrey Bergstrand at the website (www.nd.edu/jbergstr~), which provides an index of the presence or absence of an eco-

nomic integration agreement for every country pair (among 195 countries) for every year from 1960-2005. This website's data was extended to 2008 for the purposes of this analysis.

C. Results: *Symmetric Effects*

Before reporting the results, we note two issues. First, to eliminate the effects of time-varying country specific variables on trade flows, we use country-time dummies (that is, a separate dummy variable for each country for each year); we replace these later with separate effects depending upon whether countries were exporters or importers. However, this method assumes (as in the context of, say, Anderson and van Wincoop, 2003) considerable symmetry. As typically done and to limit the number of dummies, this method implies that the underlying effects of, say, the exporter's GDP or its other (unobservable) "multilateral resistance" factors influence a bilateral flow symmetrically to importer's GDP or importer's multilateral resistance. Such a symmetric approach is implied in Anderson and van Wincoop (2003). In this regard the effect of an agreement on trade is symmetric for the EU (and the partner country) as exporter and importer. Second, to ensure that the approach is implemented in a manner consistent with earlier analyses, we include in Table A3.1 first the estimated effect of common membership (and hence the partial effect) in the EU.

Table A3.1 provides our first set of results. The first column lists the particular agreement and the second column reports the percentage change (in percentage points) in bilateral trade from the year of "entry into force" until 2008 due to the agreement. The numbers in parentheses are t-statistics. First of all, we note that common EU membership increased bilateral trade by 166 percent for the typical pair from its date of entry until 2008. This value is very close to what was found in earlier studies, such as Baier, Bergstrand, Egger and McLaughlin (2008). This sensitivity analysis suggests the procedure is being implemented correctly.

Our estimation indicates that only one of the six agreements had an economically and statistically significant impact on bilateral trade. Our results indicate that the EU-Chile FTA increased bilateral trade between the pair by 62 percent since the data of entry into force (2003) until 2008. This large increase over 5 years of existence is consistent with the strong degree of liberalisation in the agreement and that liberalisation was not phased in over a long period. The agreement eliminates barriers to trade and establishes clear, stable and transparent rules for exporters and importers. It creates a free trade area in goods, services and government procurement, and strengthens intellectual property rights. Moreover, the FTA enhanced trade liberalisation from the initial AA between the EU and Chile in 2000. This estimated impact was also statistically significant at the 1 percent significance level.

The second strongest impact measured was that associated with the EU-Tunisia AA. This agreement increased trade by 42 percent since the AA's inception. It should be noted that the degree of liberalisation is limited under this agreement. However, it is also important to note that this is the oldest of the four AAs being examined, with a date of entry into force of

1998; hence, the trade impact captures 10 years of implementation. This estimate was not statistically significant (at the 1 percent significance level).

The third strongest impact was the EU-Mexican FTA. While there was an estimated impact of 32 percent from its date of entry into force of 2000, the estimate was not statistically significant. The economically significant impact suggests that the EU-Mexican FTA has promise. However, the degree of liberalisation has been much slower than in the EU agreement with Chile, and full liberalisation of tariffs will not be completed until 2010.

The three remaining agreements – all AAs – did not have economically nor statistically significant effects. The AAs of the EU with Morocco and with Jordan had trivially positive effects (6 percent and 11 percent, respectively) and the measured impacts were not statistically significant (at the 1 percent significance level). That neither of these agreements had much impact may reflect partly that EU imports from these two countries were already hardly restricted owing to existing preferential trade agreements associated with the Generalised System of Preferences (GSP), and that there is a phasing-in of tariff reductions for Moroccan and Jordanian imports from EU countries. The remaining agreement – the EU-South Africa Trade, Development and Cooperation Agreements (TDCA) – had a small negative, but statistically insignificant, effect on trade. It is important to note that the TDCA simply established preferential trade, with only a "progressive introduction" of an FTA. With a year of entry into force of 1999, liberalisation in both directions for trade were phased in for a period of 10-12 years, which may account partly for its statistically insignificant impact.

We also evaluated the robustness of the results using some alternative methods. We considered three approaches. First, we examined the *ex post* direct effect of economic integration *among* EU members, as discussed above. Second, we examined the *ex post* direct effect of FTAs among countries that did *not* include EU members. Third, we evaluated the direct impacts using an alternative data sample of every 5 years from 1960-2005.

One method for evaluating the feasibility and robustness of these results is to ensure that the "treatment effect" for trade of common membership *within* the EU accords with other studies, as mentioned above. The estimate indicated that common membership in the EU increased trade for the representative pair of EU countries by 166 percent. Such a result is quite feasible given that the EU is the most in-depth and oldest economic integration agreement in post-war history. The trade effects of EU membership should dwarf those of other integration agreements, supporting our findings.

A second method for evaluating the feasibility and robustness of these results is to ensure that the treatment effect for trade of common membership in an agreement among country-pairs *excluding* EU countries and the six developing countries specific to this study. We included a dummy variable to represent *all other FTAs*. The estimate indicated that (other) FTAs increased trade between a representative country pair by 54 percent. This estimate is very close to that estimated in Baier and Bergstrand (2007). Moreover, this estimate is con-

sistent with other FTAs have less trade-creating effects than common EU membership, discussed above.

Third, we evaluated the robustness of the results to an alternative data set of every five years from 1960-2005, which was the data set used in Baier and Bergstrand (2007). What we expect to find is no statistically different impacts. We expected that the intra-EU and the "other FTA" effects should not be economically nor statistically different from the (every three years) 1966-2008 data set. We found that the intra-EU and other FTA effects were neither economically nor statistically significantly different. The new intra-EU effect was 156 percent (as opposed to 166 percent). The new other FTA effect was 52 percent (as opposed to 54 percent). For the only statistically significant effect (EU-Chile), we found a comparable estimate of 80 percent. The EU-Chile effect was slightly larger (80 percent compared to 62 percent). While not statistically significantly different from zero, the EU-Tunisia effect was also slightly larger (48 percent compared to 42 percent). However, neither of these estimates was statistically different from the earlier (respective) estimate. As before, none of the other estimates was statistically different from zero.

However, one limitation of the approach is that the trade effects of FTAs/AAs were constrained to be the same for countries' exports and imports. In reality, liberalisations were quite asymmetric, as described earlier. Later, we relax the assumption of bilaterally symmetric effects, report these, and interpret the results.

III. *Non-parametric* specifications, data description, and empirical results

A. Specification Issues

An alternative approach for estimating the long-run direct (or partial) effects of FTAs on trade flows using cross-sectional data is to use "non-parametric" techniques. Non-parametric techniques are common to the medical literature. For instance, take two individuals who are virtually identical in every characteristic except "treatment" (say, taking a new drug), provide one with treatment, and monitor both of their outcomes. The difference in the outcomes is a measure of the "treatment effect." The same method can be applied to pairs of countries. If one could identify, say, two pairs of countries that are virtually identical in all economic characteristics (that essentially matter for determining trade flows) but only one pair has an FTA and the other no FTA (a "No-FTA" pair), then in theory the difference in changes over time in their trade flows should estimate the "effect" of an FTA. This is the principle behind the approach in this section.

While the concept of measuring an FTA "treatment effect" appears simple, as one saying goes, "the devil is in the details." Two major issues have precluded the actual implementation of non-parametric estimation of FTA effects. First, while the literature on "matching econometrics" (one non-parametric approach) is well established, the large-sample properties of matching estimators were not established until just recently, cf., Abadie and Imbens

(2006). However, Abadie and Imbens (2006) advanced our understanding of the large-sample properties of such estimators. Second, the determination of pairs of countries with "virtually identical" economic characteristics (that essentially matter for determining trade flows) except for treatment requires theoretical guidance. However, advances in the theoretical general equilibrium economic foundations for the gravity equation (mentioned earlier) for explaining bilateral international trade flows provide guidance for identifying pairs of countries that "match" (or "matched pairs"), cf., Baier and Bergstrand (2009a, 2009b). Essentially, one can largely identify the economic determinants of bilateral trade flows between country-pairs using the product of their GDPs, bilateral distance, a dummy variable for a common land border, and (simple- or GDP-weighted-) averages of each country's distance, adjacency, and language with respect to the rest-of-world (*ROW*), cf., Baier and Bergstrand (2009a, 2009b) for a detailed economic and statistical discussion.

The basic intuition for the approach is the following. Country-pairs' trade flows are essentially determined by the variables in gravity equation (1). Hence, we can "sort" country-pairs into "bins" were country-pairs are identical in terms of these gravity variables (ignoring their bilateral trade flows) for a particular year (we choose 2008). Then take each bin and separate it into country-pairs with FTAs and those without FTAs. The latter serve as controls; the average value of their trade flows is the control trade flows. Comparing changes over time in that control trade flow against changes over time in the actual trade flows of, say, Chile, with countries that are in the EU provides an estimate of "treatment," or the effect of the FTA on trade. The econometric details are in Baier and Bergstrand (2009b).

B. Data Issues

We now discuss the data requirements and sources. The data used for bilateral trade flows is the same International Monetary Fund *Direction of Trade Statistics* as discussed earlier, using annual data for every three years from 1966-2008. GDP data was from *World Development Indicators* and bilateral distances and dummy variables for common border and common language were calculated using the CIA's *World Factbook.*

As discussed in Baier and Bergstrand (2007), it takes about 10-15 years for an FTA's impact on trade to fully surface. This is due to phase-ins of tariff and non-tariff barrier reductions as well as lagged effects of terms-of-trade changes on trade flows. As for the parametric analysis earlier, we use bilateral trade flows deflated by exporter price indexes to derive "real" bilateral trade flows. Moreover, in a sensitivity analysis later, we also divide (or "scale") the real bilateral trade flows by the product of the country-pair's real GDPs. We refer to these adjusted flows below as the "real trade shares."

C. Results

Before providing a discussion of the empirical results for the six FTAs/AAs which are the subject of this report, we report first on the matching results for common membership in the

EU (as we did in the previous section). The third column in Table A3.1 provides the results. Recall from earlier, our parametric (gravity-equation-based) results using cross-section, time-series data in a robustness analysis revealed a long-run effect of common membership *within* the EU of 166 percent. By contrast, for the common EU membership estimate the matching technique is applied to cross-section data *only* for a particular year (2008), since the EC/EU has existed since 1958. For the year 2008, our matching estimation showed that common membership within the EU increased trade for the representative pair by 157 percent, which is remarkably close to the estimate using the gravity equation. This provides strong evidence – using parametric and non-parametric techniques – that the estimates are quite robust. Moreover, both estimates are statistically significant at the one percent significance level. For the cross-section, time-series gravity treatment effect, the standard error (t-statistic) was 0.05 (18.71). For the cross-section matching treatment effect, the standard error (t-statistic) was 0.12 (8.03).[14]

We now review the matching treatment effects for changes in trade flows from the year before FTA/AA date-of-entry (termed *t-1*) to the year 2008 for all six FTAs/AAs addressed earlier.

First, we can find no estimate that is *statistically* significantly different from zero at the 1 percent significance level. Second, except for the EU-Jordan agreement, all of the five agreements had small positive impacts, ranging from 2-14 percent, over their respective periods. These are economically feasible magnitudes. However, given the low number of observations driving these results, in comparison to the gravity equation estimates, we cannot conclude that these had economically and statistically significant effects.

However, as in the case of the parametric estimates, the assumption of symmetric effects of the FTAs and AAs may be very restrictive. So, as for the parametric analysis, in the next section we will also evaluate the matching results allowing asymmetric effects.

IV. Asymmetric Effects of Agreements

We pursued an important sensitivity analysis for both the parametric and non-parametric approaches. In reality, the EU had much lower tariff (and perhaps non-tariff) barriers to trade in the period examined compared to the six non-EU countries. This implies that the agreements had *asymmetric* effects on trade, which should be accounted for. We pursue that here.

A. Parametric Results

This issue has only been addressed recently in Baier and Bergstrand (2009) and Bergstrand, Egger and Larch (2010). For the gravity equation specifications, we modify our earlier analysis to include separate dummy variables for whether the trade flow is for the EU as exporter

[14] For completeness, the (non-exponentiated) coefficient estimate for the gravity equation was 0.977 and the (non-exponentiated) estimate for the matching technique was 0.942.

or importer (with respect to the partner country). However, a subtler issue is that the effects of country specific variables may be asymmetric, depending upon whether a country is exporter or importer. For instance, in typical gravity equations, one often finds that the exporter GDP coefficient estimate differs significantly from the importer's GDP coefficient estimate. Moreover, recently Anderson and Yotov (2010) have found that the effects of "inward" and "outward" resistance may be considerably different. To allow for these asymmetries in both the partial FTA/AA effects *as well as* whether the country is the exporter and importer, we introduced a much larger number of dummy variables; effectively we doubled the bilateral dummy for the partial effect and we doubled the number of country-time dummies.

Table A3.2 provides the results using a format similar to that for Table A3.1. The second column provides the estimates for the parametric gravity equations, where for simplicity we assume the coefficient estimate for common EU membership is symmetric. First, we note that common EU membership increased trade by 166 percent, as it did in Table A3.1. This is a check on the robustness of the methodology.

Second, one of the notable aspects of column 2's results is that there is considerable asymmetry in the effects of the agreements depending upon whether the EU was exporter or importer. We draw attention first to the four AAs. With the exception of Jordan (which has less than 1 billion euros worth of either imports or exports with the EU), the AA agreements had economically and in some cases statistically significant effects on EU exports to South Africa, Tunisia, and Morocco while EU imports did not change materially from the AAs. The likely explanation is that, under existing GSP agreements as well as low EU tariffs, the additional agreements did not have any economically significant effect on EU imports from these countries. However, South Africa, Tunisia, and Morocco all introduced significant liberalisations followed by substantive imports from the EU. In particular, EU exports to Tunisia increased by an economically and statistically significant 81 percent. EU exports to Morocco increased by an economically and statistically significant 79 percent. Even EU exports to South Africa increased by an economically significant 63 percent, though this estimate was statistically not different from zero. By contrast, none of the estimates of the AAs for EU imports was statistically significantly different from zero.

Third, the results indicated that EU exports to Chile increased dramatically, a 148 percent increase that was statistically significant. However, we suspect that number is too large, in light of the smaller actual change in EU exports to Chile. Recall though that these are "partial" estimates, and so the general equilibrium effects of the FTA would yield smaller impacts that perhaps are in line with the actual changes. By contrast, EU imports from Chile rose much less, 46 percent, though that value was not statistically significantly different from zero.

Fourth, the results indicated that EU imports from Mexico increased dramatically, a 92 percent increase that was statistically significant. Moreover, this effect was well in line with the

very large actual increase in EU imports from Mexico. However, we register virtually no effect of the FTA on Mexican imports from the EU. This is consistent with the much slower speed of liberalisation of Mexican imports relative to, say, Chile's liberalisation; see earlier discussion. Almost half of Mexican tariff lines were not removed until 2008.

B. Non-Parametric Results

Finally, for completeness we report some very tentative results for trying to estimate FTA/AA effects asymmetrically using the matching procedure. We used the same "matching" process as used under the assumption of symmetry and as used in Baier and Bergstrand (2009b). That is, we matched "pairs" according to the *pairs'* sum of GDPs, similarity of GDPs, and "multilateral indicators" for distance and adjacency imposing symmetric effects of country-specific multilateral resistance factors, to limit the number of characteristics to match on (to avoid the "curse of dimensionality"). Similar to before, for year 2008, we chose "matched pairs" (three nearest neighbours in characteristics) for each trade flow, separate for each direction of the flow. We then compared the change over time in the actual trade flow for country-pairs with an agreement (such as German exports to Chile) from the year prior to the agreement (*t-1*) to 2008 to the change over time in the actual trade flow for the controls over the same period. These are reported in column (3) of Table A3.2.

We note the following key results. First, we note a similar asymmetry between treatment effects depending upon whether the EU was an exporter or importer. We draw attention first to the four AAs. Again with the exception of EU-Jordan, the Association Agreements had economically larger effects on EU exports relative to EU imports, as expected, given the low degree of protection of EU imports from these countries. While none of the matching estimates was statistically significant, EU exports to South Africa, Tunisia, and Morocco rose by 64, 23, and 59 percent, respectively. We note that the estimated effects for EU exports to South Africa and to Morocco were approximately the same using either the gravity estimates or the matching estimates and are plausible in light of actual trade flow changes.

Second, the matching results for EU-Chile did not accord with the results using the gravity equation. Whereas the gravity model suggested a large and statistically significant effect of the EU-Chile FTA on EU exports to the region, the matching estimate yielded an insignificant negative effect that was trivially different from zero. Similarly, there was an absence of consistency of the matching estimate for EU imports from Chile with that using the gravity equation.

Third, the matching results for the EU-Mexico agreement indicated modest increases in both EU exports and EU imports. However, both estimates were statistically insignificantly different from zero.

It is very important to note, however, that the matching procedure will likely generate much less precise (and hence statistically insignificant) estimates than gravity. The reason is that for

a given agreement – say, EU-Mexico and for EU exports to Mexico – the matching procedure compares 27 actual trade flow changes over time to an average of the changes of three matched pairs. There is considerable room for imprecision. By contrast, the gravity equation estimates use a much larger number of observations and has a much higher number of degrees of freedom for estimation, despite the large number of dummy variables employed.

VI. Summary of the results

We can summarise the "success rate" of the empirical results here by comparing the effects estimated against the "priors" established in the introduction and Section I regarding qualitative/quantitative assessments of the degrees of liberalisation under each of the agreements.

1. EU Association Agreements with Jordan, Morocco, South Africa, and Tunisia

The EU already had in place virtually free trade on their imports from Tunisia, Morocco, South Africa and Jordan under the GSP. With this in place, there was little expectation that EU imports from these countries would change noticeably due to the AAs. However, with varying degrees of liberalisation discussed earlier in Section 1, each of these country's imports from the EU had significant liberalisation, in varying degrees of phase-ins. We found evidence in three of the four cases – Morocco, South Africa, and Tunisia – that EU exports were positively impacted by the AAs, and there was no statistically significant evidence that EU imports increased, in line with the already low degree of import barriers of EU countries on goods from these three countries. However, there was little empirical support that the EU-Jordan AA increased bilateral trade in either direction.

2. EU-Chile FTA

Our prior was that the scope of liberalisation along with the speed of phase-ins suggested anticipating significant trade-creating effects. The gravity equation results suggested a strong and statistically significant effect of the agreement on EU exports and an economically (but not statistically) significant effect on EU imports. However, the matching estimates did not confirm these results.

3. EU-Mexico FTA

The notable aspect of this agreement is that – while Mexico liberalised about 40 percent of its industrial tariff lines in the year of entry – another 40 percent of industrial tariff lines would not be liberalised until at least 2008. Consequently, we did not expect much impact of the agreement on EU exports to Mexico. That expectation was confirmed. Since Mexico already had preferential treatment on its exports to the EU under the GSP, we would have not expected much change in EU imports from Mexico. However, we found evidence of increases in EU imports from Mexico.

VII. Caveats and recommendations for future research

1. General equilibrium effects

There has been considerable attention given in recent years, following work by Anderson and van Wincoop (2003), on re-emphasising the *general equilibrium* impacts. The key notion here is that, say, an FTA between two countries, say, Belgium and Chile will increase bilateral trade directly (this is the partial effect). But the reduction in prices in each of the two countries lowers each country's overall "multilateral resistance," which then diverts trade away from Germany with Chile, consequently dampening the overall (or general equilibrium) effect. Thus, the general equilibrium, or "net," effect on bilateral trade will likely be smaller. This provides one explanation for why the partial effects can indeed exceed actual bilateral trade flow increases. Actual flows account for the net effects, and comparison of those to estimate "partial" effects can be misleading.

However, it is important also to emphasise that the comparative statics in Anderson and van Wincoop (2003) dealt with the case of a *multilateral* reduction in trade costs, not a *bilateral one* as here. In Anderson and van Wincoop (2003), the elimination of the Canadian-U.S. border affected an extensive number of bilateral trade costs of various trading pairs, e.g., Alberta with California, British Columbia with California, and so on. While demonstrated to be quite important in the application in Anderson and van Wincoop (2003) to the Canadian-U.S. border puzzle, it is likely that such general equilibrium dampening effects are likely to be quite small for the cases here, for the following reason. For instance, for the case of Belgium and Chile, each is a relatively small share of world GDP. Hence, when the EU-Chile FTA reduces bilateral trade costs, these particular costs are a very small share of the "multilateral price level" of Belgium, and consequently the change in Belgium's multilateral resistance level is likely to be trivial. The same holds for most countries in the EU. However, offsetting this is that Chile's multilateral price level is more likely to change substantively since an FTA with the 27 members of the EU could have an economically significant effect on its multilateral price level, offsetting the direct impact. Consequently, the partial effects we provide should be viewed as estimates of upper bounds. Several of these issues have been raised more formally in a recent working paper by Behar and Nelson (2009). However, providing quantitative evidence of these general equilibrium impacts is beyond the scope of this particular study but would be very useful for future research.

2. Trade diversion effects

It is important to note two further caveats. It is possible that during the course of this analysis other FTAs arose both between the countries examined with other countries or FTAs among other countries. In reality, such FTAs should cause some trade diversion, and it is an empirical issue of how much that trade diversion is. However, tow points are worth noting.

First, as discussed earlier, the *it* and *jt* dummies will capture changes in exporter and importer prices with respect to the rest of the world. Since the other FTAs will affect these "multilateral price terms,' and such terms are accounted for with dummy variables, these ef-

fects will have been eliminated in principle from influencing the bilateral trade. Second, it may be possible in the future to actually measure this trade diversion *ex post*. In fact, some gravity equation analyses have attempted to do this already. However, there remain econometric problems with regard to previous estimates, and methodologies to properly estimate the amount of trade diversion are still in the development stage.

3. Composition of trade; disaggregate results by sectors or by end-use categories

There is considerable variation by sector in terms of the likely impacts of these agreements on trade flows. A full disaggregation of the trade flows and a thorough investigation by sector and by country pair of the impact of FTAs and AAs on trade flows is warranted, but was intentionally outside the scope of this particular study. However, further study of particular agreements in this depth is suggested. Also, for example, much of Mexican trade is composed of intermediate goods. Decomposition of the effects by end-use category – consumer goods, capital goods, intermediate goods – is warranted.

4. Small and medium-sized firms

Much recent international trade research has begun to look extensively at firm- and plant-level data sets of international trade flows. There is considerable heterogeneity among firms in terms of their trade behaviour, and research has been aimed at better understanding which types of firms select into trade, foreign direct investment, or no international activity. Research on the effect of FTAs and AAs potentially can be expanded to accommodate the differences among firms. However, theory does not yet lend clear guidance as to the effect of these agreements on firms by size.

5. Foreign direct investment

There is evidence that foreign direct investment (FDI) flows are impacted by FTAs and AAs. There are two issues at stake. Earlier FTAs did not carry provisions for FDI, and there is evidence that FTAs can reduce FDI flows, due to changing the relative economic benefits of trade versus investment activity. However, more recent FTAs include many provisions for liberalising investment flows, and thus would spur FDI activity. Consequently, future research into the effects of FTAs on trade and FDI flows need to be treaty specific to analyse these potential effects.

Table A3.1 Symmetric Bilateral Trade Effects of Agreement Membership (a)

(1)	(2)	(3)
	Parametric Percentage Change (in pct points)	Non-Parametric Percentage Change (in pct points)
Common EU Membership	**166*** **(18.71)**	**157*** **(8.03)**
EU-Chile FTA (2003)	**62*** **(2.77)**	7 (0.25)
EU-Mexico FTA (2000)	32 (1.72)	13 (0.56)
EU-South Africa AA (1999)	-25 (-1.55)	14 (0.56)
EU-Tunisia AA (1998)	42 (2.40)	9 (0.28)
EU-Morocco AA (2000)	6 (0.39)	2 (0.07)
EU-Jordan AA (2002)	11 (0.66)	-44 (-1.73)

*Note: (a) These are the effects for the respective memberships, where the effect is constrained to be the same whether the EU is the importer or exporter. Effects are reported as percentage changes. t-statistics (z-statistics) in parentheses in column 2 (3). * (and boldface) denotes statistically significant effect in two-tailed test at the 1 percent significance level. t-critical = z-critical = 2.576.*

Source: Jefferey Bergstrand and Scott Baier.

Table A3.2 Asymmetric Bilateral Trade Effects of Agreement Membership (a)

(1)	(2) Parametric Percentage Change (in pct points)	(3) Non-Parametric Percentage Change (in pct points)	(4) Actual Percentage Change in Trade Flow since t-1 (in pct points)
Common EU Membership	**166*** (19.11)	**183*** (11.18)	na
EU Exports to Chile (2003)	**148*** **(3.64)**	-7 (-0.24)	60
EU Imports from Chile (2003)	46 (1.60)	-13 (-0.45)	130
EU Exports to Mexico (2000)	-15 (-0.68)	25 (0.98)	107
EU Imports from Mexico (2000)	**92*** **(3.10)**	15 (0.48)	177
EU Exports to South Africa (1999)	63 (1.08)	64 (1.53)	94
EU Imports from South Africa (1999)	-24 (-1.40)	17 (0.47)	114
EU Exports to Tunisia (1998)	**81*** **(2.90)**	23 (0.58)	74
EU Imports from Tunisia (1998)	5 (0.26)	-10 (-0.35)	105
EU Exports to Morocco (2000)	**79*** **(2.70)**	59 (1.33)	114
EU Imports from Morocco (2000)	-35 (-2.06)	-37 (-1.36)	48
EU Exports to Jordan (2002)	-17 (-0.86)	-42 (-1.25)	56
EU Imports from Jordan (2002)	72 (2.42)	4 (0.09)	81

*Note: (a) These are the effects for the respective memberships, where the effect is allowed to differ whether the EU is the importer or exporter, with the exception of the Common EU membership effect. Also, the common EU membership effect reflects members' effects since 1966, whereas the other estimates reflect trade effects since membership years denoted in parentheses. Effects are reported as percentage changes. t-statistics (z-statistics) in parentheses in column 2 (3). * (and boldface) denotes statistically significant effect in two-tailed test at the 1 percent significance level. t-critical = z-critical = 2.576. In column (4), t-1 denotes the year before the agreement's Date of Entry. na denotes not applicable.*

Source: Jefferey Bergstrand and Scott Baier.

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