Tariff Liberalization and Trade Integration of Emerging Countries

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Abstract
This paper investigates the trade impact of tariff liberalization. We focus on emerging countries and examine whether the tariff reductions granted by main importers helped their integration in the world economy.
We use a newly available version of the Market Access Map (MAcMap) database, which provides a bilateral measure of market access at a highly disaggregated level (6 digit level of the harmonized system – HS – classification) between 1996 and 2006.
We first merge with trade data at the 6-digit level of the HS. We then estimate econometrically the impact of protection on bilateral exports of emerging countries. Our estimations consider the impact on both the extensive and intensive margins of trade. Reductions in tariffs faced by emerging countries have weakly contributed to the growth of their exports, which mainly falls onto the upward shift of their comparative advantage and the improvement in their infrastructures.

JEL Codes: F13, F15
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1. Introduction

To what extent tariff dismantling contributed to the observed growth of international trade is an open issue. Other determinants may have played a big role: the economic growth of importers and exporters (as measured by the size of their economies), the upward shift in comparative advantage of exporters (resp. the growth in their GDP per capita), the development of global value chains (Yi, 2003) and the concurrent double counting of trade flows, and finally the drastic reduction in transport costs associated with the containerisation. Using aggregated data, Baier and Bergstrand (2001) find that two-thirds in the observed growth in trade over the period 1958-60 to 1986-88 falls on the growth in GDP and only one-quarter on tariff reduction.

This increase in the value of world trade is partly due to new flows. Fontagné et al. (2010) show that only 4.5% of the potential trade flows at the Harmonized System (thereafter HS) 6-digit level were observed in 1994 and 5.9% in 2007. The understanding of how zero flows become positive flows – the extensive margin of trade – is central when it comes to properly model the dynamics of world trade. The matching of usual trade elasticities, missing such mechanism, with the observed growth in international trade, is rather challenging as exemplified by the dynamic properties of Computable General Equilibrium models. Using HS6 export flows from 126 exporting countries to 59 importing countries in 1995, Hummels and Klenow (2005) find that the extensive margin of trade accounts for more than 60% of the greater exports of larger economies. This variety effect is important because more traded varieties lower the price index (Feenstra, 1994; Broda and Weinstein, 2006) and because product diversification mirrors the economic development of exporters (Funke and Ruhwedel, 2001). These new flows correspond to new products shipped by incumbent exporting countries on a given destination market or by countries exporting for the first time to a given

market. The link between export development and new flows is however not systematic, as stressed by Amiti and Freund (2010) in the Chinese case.

What is the contribution of tariff reductions and multilateral trade discipline to the growth of world trade – in particular the growth of emerging countries exports – can be examined on the importing side by looking at three dimensions. Firstly, an importer may or may not belong to the World trade Organisation (WTO) and accordingly embrace the set of rules attached to such membership. Rose (2004) argued that WTO membership has no effect on trade, but did not take into account the extensive margin of trade. Taking into account this margin and using aggregated flows, Felbermayr and Kohler (2007) find that belonging to the WTO makes a difference for countries that otherwise would not have traded bilaterally at all.

Secondly, importers belonging to the WTO bind their tariffs to a certain extent, thus providing market access security to potential exporters and affecting individual firms' market entry decisions. Such reduction of uncertainty is expected to have a positive impact on the extensive margin of trade (Francois and Martin, 2004). Sala et al. (2010) find clear theoretical evidence of such mechanism in a heterogeneous firm framework and provide numerical simulation illustrating how market access is responding to cuts in bound rates even in presence of binding overhang.

Thirdly, members of the WTO that have bound their tariffs can actually apply tariffs below such upper limit. This is observed in case of Preferential Trade Agreements (PTA) signed with a certain number of trading partners and in case of unilateral preferential market access conceded by developed countries to developing ones. More generally, importers may apply a Most Favoured Nation (MFN) tariff below the bound tariff on a multilateral basis. When the importer cuts its applied tariff, it may induce a diversification of exports of countries benefiting from such tariff reductions.

The mechanism linking liberalization and trade we are interested in is this one: from *applied* tariffs to both extensive and intensive margins of trade. Kehoe and Ruhl (2009) provide evidence of such mechanism by considering bilateral trade at the 4-digit level of the Standard International Trade Classification (SITC) of products for country pairs engaged in episodes of trade liberalization (NAFTA, CAFTA). According to their results, the extensive margin of trade looks hardly impacted by the business cycle. As there are only 789 codes in the classification used, more detail on the variety of products traded is however necessary to have a clearer view of the impact of trade liberalization on the extensive margin of trade. Using bilateral trade data for 90 countries and 137 partners in 2005 from the Comtrade database and tariffs from the TRAINS database, Flam and Nordstrom (2008) compute gravity equations explaining the extensive margin (the number of traded products) and the intensive margin (using the predicted number of products). Relying on a 7-digit product classification, Feenstra and Kee (2007) find a positive impact of United States (US) tariff reductions associated with the NAFTA on the diversification of Mexican exports. They find a 20% increase in exported variety due to the NAFTA. But what is specific to tariff cuts and what is associated to indirect effects of economic integration (e.g. transfer of technology, foreign direct investments) remains unclear. Hence, a larger set of experiences of trade liberalization is necessary.

To the best of our knowledge, Debaere and Mostashari (2010) is the paper addressing this issue at the most disaggregated level of the product classification. They rely on the US HS-10 digit classification comprising some 22,000 different product categories (though only half of the product categories were traded continuously throughout the period considered) and US HS-8 tariff data. They examine to what extent US tariff reductions have led to increased diversity of imports over the period 1989 to 2000. Their result is more cautious than the rest of the literature: there is a positive effect, but very limited in the US case.

The missing empirical evidence is accordingly a systematic investigation of the effect of tariffs cuts on the margins of trade using panel data at the disaggregated level for a large set of exporters and importers. A specific focus on developing countries is also needed, as these exporters have the less diversified export structure and hence are more prompt to benefit of trade liberalization at the extensive margin. Our paper builds on this literature and tries to fill this gap. It combines two improvements: a large set of importers and exporters, and a highly disaggregated set of traded products. We consider applied tariffs and focus on emerging economies exports, the most dynamic part of world trade.

We find that tariff cuts granted between 1996 and 2006 to emerging countries' exporters by their main trading partners have had a limited impact on their integration in world trade flows. The result holds especially for the extensive margin of trade and to a lesser extent for the intensive margin. The analysis also suggests strong differences between goods, reference priced goods and to a minor degree differentiated ones having benefited from tariff cuts, while a non significant effect is observed for organized exchange goods. Our estimations finally show that the growth in emerging countries' GDP per capita between 1996 and 2006 had a strong influence on their integration in the world economy. The growth in the current GDP per capita is a good proxy of the shift of comparative advantage, as it is highly correlated with productivity. Instead of current GDP per capita, we can use GDP per capita based on purchasing power parity as a proxy of changes in infrastructures. Therefore, our results can be interpreted in terms of an upward shift in the comparative advantage and infrastructures' improvement in emerging countries having led to a broadening of the scope and intensity of their exports. While our results minimise the contribution of tariff-cuts to the development of emerging countries' exports, it does not mean that WTO action has been worthless as it provided with a stable regulatory framework.

The rest of the paper is organized as follows. Section 2 presents the data and some descriptive statistics. The econometric specification is explained in Section 3. Results are discussed in Section 4. The last section concludes.

2. Data and descriptive statistics

2.1 Sources and sample

Our value added is to address the above mentioned issues by relying on a large sample of countries, and at the most detailed level of the product classification affordable. This comes at a price: to do so, we must use a product classification that is common to the whole sample of countries, which cannot be the country specific tariff line level. The most disaggregated level common to all countries is currently the HS6 classification, which limits the time span of our sample. In order to limit the loss of information on tariffs, ad valorem equivalents used at the HS6 level were computed at the tariff line level before aggregation (see methodology below).

We combine two data sets: trade (from BACI) and tariffs at the HS6 level. Tariffs are documented with the background data of the on-line version of MAcMap.[1] This data set on which the World Trade profile published jointly by ITC, the WTO and the UNCTAD is based, differs slightly from the HS6 version of MAcMap extensively used so far in the literature. It relies on tariff line information to compute tariff equivalents, instead of HS6 information, when available.[2] But the main difference is indeed that years prior to 2001 are available (the beta version of MAcMap was published in 2001).[3] This large time coverage is important for our purpose.

[1] See http://www.cepii.fr/anglaisgraph/bdd/baci.htm for BACI. MAcMap is disseminated on-line on the International Trade Center (ITC) website (www.intracen.org). The HS6 version generally used in the literature is documented in Bouët et al. (2008) and available on the CEPII website. It also fits the GTAP database after aggregation.
[2] We are deeply indebted to Xavier Pichot for managing to extract and construct our raw dataset of tariffs.
[3] See Bouët et al. (2001) for a description of the beta version of MAcMap.

We now detail what are the main assumptions to construct these databases. Regarding tariffs, the MAcMap database relies on national tariff schedules at the tariff line level. Tariffs at the HS6 level are computed as a simple average of tariffs at the tariff line for every country, in order to neutralise the impact of differences in the structure of schedules beyond the 6-digits. The richness of the tariff line is on the contrary exploited for the computation of ad-valorem equivalents (AVE) of non-ad valorem tariffs and for the treatment of tariff quotas. Non-ad valorem tariffs comprise specific duties, compound duties, mixed duties and technical duties, all defined at the tariff line level. There are imposed by 68 out of the 151 countries covered in MAcMap, hence the need to precisely address this issue. Interestingly, the products protected by such means are often very sensitive products with high levels of protection, and potentially associated with many bilateral zero flows accordingly. In total, 28,000 tariffs in MAcMap are of this type, out of which 15,000 were treated at the tariff line level. For the remainder, the HS6 information had to be used. In principle, median unit values are computed for each importer and product. When the distribution of unit values does not authorise such approach a tiered-approach is adopted, by doing a partition of the distribution and averaging the centre unit values of each tier. When too few observations are available (less than ten for an importer and a tariff line) the algorithm cannot be used and the HS6 unit value is taken into account instead. It is computed as the one of the reference group the country belongs to. Reference groups are constructed using a Principal Component Analysis.

Regarding trade flows, BACI provides reconciled trade flows at the HS6 level since 1994 on an exhaustive country basis. Export values are in FOB terms and equal to the corresponding import values. The method of reconciliation is detailed in Gaulier and Zignago (2010).

Our empirical analysis focuses on the bilateral exports of emerging countries to the main importers. There is yet no consensus on the definition of “emerging economies” and list

of countries to be included in that group. We therefore rely on the classifications provided by six different institutions (IMF, UNCTAD, CEPII, MSCI, FTSE and G20) and consider a country as emerging if this country is classified as an emerging one by at least three of these six institutions. The Boao Forum for Asia provides in its 2009 annual report the list of countries defined as "emerging" by each above-mentioned institution (Boao Forum for Asia, 2010). Our sample of emerging countries includes 18 countries: Argentina, Brazil, Chile, China, Colombia, Egypt, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, the Philippines, Russia, South Africa, South Korea, Thailand, and Turkey.

The main developed countries considered here are: Australia, Argentina, Brazil, Canada, Chile, China, EU15, India, Indonesia, Israel, Japan, Malaysia, Mauritius, Mexico, Philippines, Singapore, South Africa, South Korea, Sri Lanka, Turkey, the US, Venezuela, and Vietnam. With this sample of 25 importing countries, we cover 75% of world exports of emerging countries in 2006.

To successfully combine tariff and trade data, we had to make few choices/assumptions. First, depending on the year and importing countries, tariff data were not expressed in the same version of the HS classification. Using conversion tables, we converted all series into HS 1992. Our final sample includes 4870 HS products present both in 1996 and 2006. If following the conversion into HS 1992, more than one tariff is available for a given year, HS6 product, importing and exporting countries, we took the average.

2.2 Descriptive statistics

Figure 1 provides the value of exports and the number of product-destination categories exported by each emerging country to the set of importers and for products included in our sample. The comparison between 1996 and 2006 observations indicates a net increase in both dimensions (flows and values) for each emerging exporter.

Insert Figure 1 here

Tables 1-6 provide some descriptive statistics on tariffs and trade flows for the years 1996 and 2006 (first and last years available in our sample). Table 1 reports the simple average tariff[4] applied by each importer on its imports from emerging countries in 1996 and 2006. For all importers (except Japan where it increases slightly), we observe a significant decrease in the average tariff between 1996 and 2006. As expected, the average tariffs applied by new advanced and new industrialized importers (14.67% in 1996 and 8.46% in 2006) are higher than the average tariffs applied by advanced countries (4.87% in 1996 and 3.22% in 2006). However, the decrease noticed between 1996 and 2006 in these averages is higher for new advanced countries and NICs than for advanced countries. For advanced importers, the average tariff was low in 1996 and the percentage changes in protection correspond to trivial absolute changes of the mean. Table 1 also reports the standard deviation. Significant differences in terms of tariff dispersion can be noticed between importers. In 2006, South Korea, Malaysia, Norway and Turkey have the highest dispersion rates.

Insert Table 1 here

We then turn to trade flows and investigate the variation in exports from emerging countries between 1996 and 2006. We examine both the extensive and intensive margins of trade. For the extensive margin of trade, Table 2 provides aggregated results, while Tables 3 and 4 decompose the results on the product-destination dimension by exporters and importers respectively. Results show an increase in trade at the extensive margin.

According to Table 2, the average number of HS products exported by emerging countries between 1996 and 2006 has increased by 10.4% for the exports to advanced countries and 12.8% for the exports to new advanced and NICs. The growth is even stronger if we focus on the product-destination dimension. While the number of positive flows still

[4] Computed over the 4,870 HS products included in our sample.

represents less than 24% of the total number of potential flows, its share has significantly increased by 39.6% between 1996 and 2006. The increase is even larger if only exports to new advanced and NICs are scrutinized (i.e. 51.1%).

Table 3 suggests that all emerging exporters have experienced a rise in their number of positive export flows, i.e. in the number of product-destination categories served. The highest increases are observed for Turkey (+89.3%) and Pakistan (+126.1%). For all emerging exporters, the contribution of new advanced and new industrialized markets to this growth is larger than the contribution of advanced markets. The relative importance of new advanced and new industrialized markets in non-zero trade flows' growth is particularly high for Asian countries.

Table 4 switches on the importer side and examines the variation in positive import flows from emerging countries by importer. For all importing countries, we observe an expansion of import flows coming from emerging countries between 1996 and 2006. For four countries (Turkey, India, Israel, and Vietnam), the growth rate exceeds 100%. Interestingly, these countries are not necessarily the ones for which the highest decrease in tariffs was highlighted in Table 1.

Insert Tables 2, 3 and 4 here

Tables 5 and 6 provide some statistics for the intensive margin of trade. Results underline a strong increase in trade at the intensive margin. Table 5 highlights that world exports of emerging countries have been multiplied by more than 3 between 1996 and 2006. If the share exported to advanced countries has slightly decreased (from 56.9% to 53.3%), the share exported to new advanced and NICs has risen (from 19.0% to 21.8%). On the importer side (Table 6), statistics show that both groups of importing countries (advanced and new advanced and NICs) have intensified their imports from emerging countries between 1996 and 2006.

Insert Tables 5 and 6 here

To summarize, descriptive statistics highlight a reduction of the average tariff affecting exports of emerging countries towards their main partners and at the same time an expansion of such exports (at both margins). However, these parallel evolutions do not prove that exports development has been induced by tariff reductions. Our contribution in this paper is therefore to investigate whether the observed trade expansion results from the observed tariff reduction or whether other factors were at play.

3. Econometric specification

Our aim is to estimate the impact of tariff cuts granted to emerging countries by their main trading partners between 1996 and 2006 on the world trade integration of emerging countries. We decompose the effect for each margin of trade. We investigate whether tariff cuts contribute to the scope of products exported by emerging countries to their main trading partners in 2006 (extensive margin) and to the changes in the value of the export flows between 1996 and 2006 (intensive margin). Such investigation imposes to use bilateral applied tariffs.

As illustrated with the descriptive statistics, the main trading partners of emerging countries is a heterogeneous group (advanced countries vs. new advanced and new industrialized countries). Accordingly, we split our sample into two sub-samples and run our estimations separately for each group of partners.[5]

3.1 Extensive margin of trade

We follow the specification of Debaere and Mostashari (2010), who estimate the impact of tariff reduction between 1989 and 1999 on the range of goods exported to the US in 1999.

[5] In addition, a Chow test suggests that estimated coefficients differ significantly for the two groups of importers and confirms this divide.

The dependent variable, y_{ijk}, is the probability that good *k* is exported by the emerging country *i* to the partner *j* in 2006. y_{ijk} is a binary variable equal to one if the good is exported and 0 otherwise defined as follows:

$$y_{ijk} = 1\ [y^*_{ijk} > 0] \quad (1)$$

Where y^*_{ijk} is a latent variable. Its value determines whether or not a strictly positive trade flows is observed between *i* and *j* on good *k* in 2006. The latent variable's value is itself influenced by different variables. We consider the following explanatory variables:

$\Delta \ln(1+\tau_{ijk})$ = the variation in the logarithm of bilateral tariffs applied by country *j* on imports of good *k* from country *i* between 1996 and 2006;

$Status96_{ijk}$ = 1 if good *k* was already exported from *i* to *j* in 1996 (0 otherwise);

$\boldsymbol{X}_i$ = a vector of exporter-specific explanatory variables;

$\boldsymbol{X}_j$ = a vector of importer-specific explanatory variables;

$\boldsymbol{X}_{ij}$ = a vector of country-pair specific explanatory variables.

The changes in the scope exports from emerging countries are very much related to the shift in comparative advantage of these countries. Increased productivity made it possible to broaden the scope of exported products. The scope of exported products by the North and the South increasingly overlap, though the unit value and market positioning remained different from Northern competitors (Schott, 2004). Productivity changes are mirrored in GDP per capita changes, a proxy that we will use here. We accordingly consider the variation in the logarithm of the current GDP per capita between 1996 and 2006 as exporter- and importer-specific explanatory variables.

The changes in the scope of exported products by emerging countries may also come from an improvement in their infrastructures. In such case, the GDP per capita based on PPP will be a better proxy than the current GDP per capita. We therefore also run estimations

including the variation in the logarithm of the GDP per capita based on purchasing power parity (PPP, expressed in 2005 USD) between 1996 and 2006 as exporter- and importer-specific explanatory variables.

A third potential explanation of the increasing scope of exports by emerging countries is just in terms of variety. In a Krugman-like world, emerging countries export more products just because they become bigger. Interestingly, the common perception of a threat from an expanding developing world is based on this assumption. The variable capturing the impact of changes in size both trading partners will be their current population.[6]

The country-pair specific characteristics capture bilateral trade resistance. We control for bilateral distance – a proxy of variable transport costs and common language. Our data come from the CEPII database.[7]

Finally, we include sector-specific fixed effects to account for sector specificities. These sector fixed effects are defined at the HS 2-digit level and capture sector characteristics that are constant over time and not observed.

Having defined all variables, we could rewrite our estimated equation as follows:

$$\begin{aligned} y_{ijk} &= 1\,[y^{*}_{ijk} > 0] \\ y^{*}_{ijk} &= \beta_0 + \beta_1 \Delta \ln(1+\tau_{ijk}) + \beta_2 status96_{ijk} + \mathbf{X}'_i \lambda + \mathbf{X}'_j \mu + \mathbf{X}'_{ij} \varsigma + FE_{HS2} + \varepsilon_{ijk} \end{aligned} \qquad (2)$$

Country-pair specific variables (distance and common language) are crude proxies for the bilateral trade resistance. Country-pair fixed effects are a better alternative to properly capture all observable and unobservable characteristics of the bilateral trade relation. Since we have a cross-section data set, exporter and importer-specific variables are in that case dropped from the estimation (because of colinearity) and our estimated equation becomes:

[6] GDP and GDP per capita were taken from the World Development Indicators.
[7] http://www.cepii.fr/anglaisgraph/bdd/distances.htm

$$
\begin{aligned}
y_{ijk} &= 1\,[y^{*}_{ijk} > 0] \\
y^{*}_{ijk} &= \beta_0 + \beta_1 \Delta \ln(1+\tau_{ijk}) + \beta_2 status96_{ijk} + FE_{HS2} + FE_{ij} + \varepsilon_{ijk}
\end{aligned}
\tag{3}
$$

We estimate the equation using a linear probability model. One potential drawback of this approach is that predicted probabilities may be outside the unit interval. However, as highlighted by Wooldridge (2002), if the set of explanatory variables contains dummies for mutually exclusive and exhaustive categories (which is the case in our specification), the linear probability model is completely general and fitted probabilities outside the unit interval are not a problem. Furthermore, our conclusions remain unchanged if we use a probit model. In all regressions, the correlation of errors for a same country-pair is taken into account by appropriate clustering at the country-pair level.

3.2 Intensive margin of trade

To investigate the effects of tariff cuts on the intensive margin of trade, we use a very similar approach. The main change concerns the dependent variable. Following Bayoumi and Eichengreen (1997) and Baier and Bergstrand (2001), our dependent variable is now:

$\Delta \ln(1+M_{ijk})$ = the changes in the logarithm of the value of bilateral exports of good *k* from country *i* to country *j* between 1996 and 2006.

The explanatory variables are the same as the ones used in equation (2). The estimated equation could therefore be written as follows:

$$
\Delta \ln(1+M_{ijk}) = \gamma_0 + \gamma_1 \Delta \ln(1+\tau_{ijk}) + \gamma_2 status96_{ijk} + \mathbf{X}'_i \xi + \mathbf{X}'_j \psi + \mathbf{X}'_{ij} \phi + FE_{HS2} + \eta_{ijk} \tag{4}
$$

If we introduce country-pair fixed effects, equation (4) becomes:

$$
\Delta \ln(1+M_{ijk}) = \gamma_0 + \gamma_1 \Delta \ln(1+\tau_{ijk}) + \gamma_2 status96_{ijk} + FE_{HS2} + FE_{ij} + \eta_{ijk} \tag{5}
$$

Equations (4) and (5) are estimated using OLS and error terms are clustered at the country-pair level.

4. Results

4.1 Extensive margin of trade

Tables 7-10 report the estimation results for the extensive margin of emerging countries' exports. In all estimations, the dependent variable is the probability that good *k* is exported from *i* to *j* in 2006 and two sets of importers are considered: advanced countries on one hand and new advanced and NICs on the other hand (see the appendix for the list of countries included in each group).

Table 7 presents an overview of the results. Column (1) only includes the variation in tariffs as an explanatory variable and sector (HS2) fixed effects. In columns (2) and (3), we include controls for the existence of past trade flows, as well as importer, exporter, and country-pair specific variables. The justification is the path dependency of countries' specialisation. Column (2) includes the GDP per capita in current dollars of the two trading countries, while the GDP per capita based on purchasing power parity is used in column (3). In column (4), we go one step further and include country-pair fixed effects in addition to sector ones. Columns (5)-(8) reproduce the same estimations but for exports to new advanced and new industrialized countries.

The following results could be highlighted:

- Overall, the variation in the tariffs between 1996 and 2006 has no effect on the export probability of good *k* from an emerging country to one of its main trading partners in 2006. Recall that we are measuring tariff at the product level, that we are using applied tariffs, and that we are measuring tariffs at the bilateral level.
- Results also suggest a strong hysteresis effect in trade. The estimated coefficient on the dummy '$Status_{96}$' is indeed positive and highly significant.

- Regarding exporter specific variables, we observe that population has almost no influence, while the two measures of GDP per capita have a positive and significant effect. Furthermore, the GDP per capita in PPP terms has a stronger impact, suggesting that an improvement in the infrastructures of the emerging countries influence more their export probability of good *k* in 2006 than a shift in their comparative advantage.
- Some differences can be noticed across groups of importers. For advanced importers, population and current GDP per capita are not significant, while the coefficient on GDP per capita in PPP terms is negative ($p<0.05$). By contrast, GDP per capita in current USD and in PPP terms of new advanced and NICs have a positive and significant impact on the export probability of good *k* from emerging countries to them.
- As expected, bilateral distance has a negative and significant impact on the export probability. Its effect is stronger for exports from emerging countries to new advanced and NICs. Common language has no effect.

These results suggest a first series of interpretation. Overall, other things being equal, there is no evidence of tariff reduction conducing to a broader scope of exports by emerging countries in 2006. Economic growth of emerging countries was either not conducive to increased export scope, contrary to the common perception of a "threat" in advanced economies. What ultimately played a role is the increase in income per capita in exporting countries and in a lesser extent in importing countries when the latter are new advanced or new industrialized countries. Productivity gains and thus the shift of the comparative advantage towards new activities certainly play a role. Whether inward Foreign Direct Investment fuelled this evolution is beyond the scope of this paper. However, the

infrastructures' improvement appears to have a stronger impact on the development of the set of products exported by emerging countries.

Table 8 reproduces our preferred estimation (with sector and country-pair fixed effects) for selected samples. We distinguish between two groups of products according to their export status in 1996 and investigate whether the export probability in 2006 of goods included in the each group is similarly influenced by the tariff variation between 1996 and 2006. Note that if a good is exported in 2006 but was not exported in 1996, what we measure is the probability of switch. By contrast, if a good was exported in 1996 and remain exported in 2006, we measure the probability of continuous exports. Results vary according to the destination of the export flows. A significant impact of tariff changes ($p<0.1$) is found for products exported from emerging countries to advanced countries only if the flow did not already exist in 1996. Opposite results are found for export flows from emerging countries to new advanced countries and NICs.

In Table 9, we compare the results on emerging exporters with the results obtained for other groups of exporters. We consider an extended group of advanced countries which includes Czech Republic, Estonia, Hungary, Iceland, Israel, New Zealand, Poland, Slovakia and Slovenia in addition to Australia, Canada, EU15, Japan, Norway, Switzerland and the US. The second group consists in developing countries (which are not emerging) and least developed ones. If we first focus on imports by advanced countries, results suggest that tariff cuts granted by Australia, Canada, EU15, Japan, Norway, Switzerland and the US have primarily benefited – for the extensive margin – to their mutual trade and to their bilateral imports from Czech Republic, Estonia, Hungary, Iceland, Israel, New Zealand, Poland, Slovakia and Slovenia. For other exporters (emerging, developing and least developed countries) the probability that they export good *k* to advanced countries in 2006 is not related to the tariff cuts that they have been granted by these countries between 1996 and 2006. How

tariff reductions provided by advanced countries to emerging, developing and least developed countries missed their target may have several explanations. Non-tariff measures may have been a substitute to tariff protection. A more positive argument is related to uncertainty: what matters is the binding coverage, and tariffs applied by advanced countries were mostly bound already in 1996. Regarding imports by new advanced and new industrialized countries, none of the estimated coefficients on tariff changes is significant. Again the substitution of tariffs by non-tariff measures may explain this result.

Lastly, Table 10 investigates the tariff cuts' impact on the extensive margin of trade for different groups of products. We refer to the classification established by Rauch (1999) and distinguish between organized exchange, reference priced and differentiated goods. Some products do not appear in Rauch's classification which explains the slightly lower number of observations in this table. Furthermore, Rauch (1999) provides two classifications: a conservative and a liberal one.[8] The upper part of Table 10 reports the results obtained using the conservative classification, while results based on the liberal one are presented in the bottom part of the table. Results are very similar for both classifications. The coefficients estimated on tariff cuts for organized exchange and differentiated goods are almost never significant. A significant effect of these cuts on the export probability of good k in 2006 is only observed for reference priced goods, and the effect seems to be more pronounced for exports to advanced markets than to new advanced/new industrialized ones.

4.2 Intensive margin of trade

We now turn to the analysis of the results on the intensive margin of trade. Our dependent variable is the variation in the logarithm of the value of bilateral imports between 1996 and

[8] The conservative classification minimizes the number of products classified as either organized exchange or reference priced; the liberal one maximizes those numbers (Rauch, 1999).

2006 and the OLS estimator is used. Results are reported in Tables 11-14 and their presentation is similar to the one used previously for the extensive margin of trade.

Table 11 reports basic regressions. Results are very close to the ones obtained on the extensive margin of trade. The main following outcomes are observed:

- 1996 trade flows significantly affect 2006 ones. Path dependency is observed: the existence of a strictly positive flow in 1996 negatively affects the variations in the value of exports between 1996 and 2006. The path dependency is also observed if past trade is measured using the value of bilateral exports in 1996 (results not reported available upon request). This sounds like a catching up process whereby saturation appears at a certain point in export development.
- Changes in exporter's current GDP per capita and PPP GDP per capita influence the intensive margin of trade similarly to the extensive margin. A positive and significant effect also shows up for changes in importer's current and PPP GDPs per capita if the importer is a new advanced or a new industrialized country.
- Bilateral distance affects negatively and significantly the intensive margin of trade flows between emerging and new advanced/new industrialized countries. The effect is not significant on exports from emerging to advanced countries.
- Regarding tariff cuts, they have no effect on the changes in the value exported from emerging countries to new advanced and new industrialized ones between 1996 and 2006 whatever the specification. For exports from emerging to advanced countries, a significant effect ($p<0.01$) is observed when the specification includes sector and country-pair fixed effects, suggesting that tariff reductions granted by advanced countries to emerging ones tend to promote bilateral exchanges.

According to our hypothesis linking income per capita and productivity, how can one explain the development of exports from emerging countries at the intensive margin? Here the

explanation is not in terms of comparative advantage but refer to firm heterogeneity. As emerging countries become more productive, more firms can export a given product, what translates into the intensive margin of exports measure at the product level but with no firm dimension, as in our data. Similarly incumbent firms can increase their sales as overall productivity increases.

Table 12 provides estimation results at the intensive margin of trade for different samples of products: the ones that were already exported bilaterally by emerging countries in 1996 vs. the ones that were not exported at that date. This approach is similar to the one used in table 8. Results show that the expansion at the intensive margin coming from the tariff reductions clearly falls on products that were already traded bilaterally in 1996. The results hold for the emerging countries' exports towards advanced markets as well as towards new advanced and new industrialized ones.

Table 13 compares emerging exporters to other groups of exporters. As previously observed for the extensive margin, we see that advanced exporters (extended group) are the main beneficiaries of the tariff reductions granted by advanced importers. However, they also have – and this is new – benefited from tariff cuts offered by new advanced and NICs, which is not the case for emerging, developing and LDCs exporters. On the other hand, part of the increase in the exports from emerging, developing and least developed countries to advanced countries between 1996 and 2006 comes from the reductions in tariffs provided by these latter countries. The magnitude of the effect is however smaller than the one observed for the extended group of advanced exporters.

Finally, Table 14 studies the effects of tariff cuts on the intensive margin of trade for different types of products as classified by Rauch (1999). A significant effect of these cuts between 1996 and 2006 on the changes in export values during the same period is observed for reference priced and differentiated goods, but mainly if goods were already exported in

1996. Furthermore, the magnitude and level of significance of estimated coefficients are much bigger than the ones obtained for the extensive trade margin.

5. Conclusion

This article analyzes the impact of tariff reductions granted to emerging countries by their main trading partners between 1996 and 2006 on bilateral trade flows in 2006. We investigate the effects on both trade margins.

Our results first suggest that these tariff cuts had very limited impact, especially on the extensive margin. Some effect is observed at the intensive margin, but only for products that were already exported in 1996.

The sector analysis, based on Rauch (1999)'s classification, highlights a positive impact of tariff cuts on the export probability of reference priced goods by the emerging countries. At the intensive margin of trade, a positive effect is also observed for both reference priced and differentiated goods but again mostly if they were already exported in 1996.

Our results also show that the changes in emerging countries' current GDP per capita and PPP GDP per capita influence significantly their integration in the world economy, the effect of the variations in the PPP GDP per capita being slightly more important.

The small impact of tariff cuts on exports of emerging countries may be explained (among others) by the substitution of tariffs by non-tariff measures. With recurrent tariff cuts and generalized binding, the positive extensive margin of trade associated with trade liberalization will indeed increasingly fall on agreements addressing non-tariff measures. Shepherd (2007) provides partial evidence of this by relying on standards harmonization and using a database of EU product standards in the textiles, garments, and footwear industries.

This avenue of research is however beyond the scope of this paper and beyond reach as long as reliable and exhaustive databases on NTMs are missing.

References

Amiti M., Freund C. (2010), "The Anatomy of China's Export Growth," in Robert C. Feenstra and Shang-Jin Wei (Eds), *China's Growing Role in World Trade*, NBER: University of Chicago Press, pp.35-56.

Baier S., Bergstrand J. (2001), "The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity," *Journal of International Economics* 53(1): 1-28.

Bayoumi T., Eichengreen B. (1997), "Is Regionalism Simply a Diversion? Evidence from the Evolution of the EC and EFTA," in Takatoshi Ito and Anne O. Krueger (Eds), *Regionalism versus Multilateral Trade Arrangements*, NBER: University of Chicago Press, pp. 141-168.

Boao Forum for Asia (2010), "The Development of Emerging Economies – Annual Report 2009," University of International Business and Economics Press, Beijing, China.

Bouët A., Fontagné L., Mimouni M., Pichot X. (2001), "Market Access Maps: A Bilateral and Disaggregated Measure of Market Access," Document de travail CEPII, 2001-18.

Bouët A., Decreux Y., Fontagné L., Jean S., Laborde D. (2008), "Assessing Applied Protection Across the World," *Review of International Economics* 16(5): 850-863.

Broda C., Weinstein D. (2006), "Globalization and the Gains from Variety," *Quarterly Journal of Economics* 121(2): 541-585.

Debaere P., Mostashari S. (2010), "Do tariffs matter for the extensive margin of international trade? An empirical analysis," *Journal of International Economics* 81(2): 163-169.

Feenstra, R.C. (1994), "New Product Varieties and the Measurement of International Prices," *American Economic Review* 84(1): 157-77.

Feenstra, R.C., Kee, H.L. (2007), "Trade Liberalisation and Export Variety: A Comparison of Mexico and China," *World Economy* 30 (1): 1-21.

Felbermayr G., Kohler W. (2007), "Does WTO Membership Make a Difference at the Extensive Margin of World Trade?," CESifo Working Paper #1898.

Fontagné L., Gaulier G., Zignago S. (2008), Specialization Across Varieties and North–South Competition, Economic Policy, 23 (53): 51-91.

Francois, J.F., Martin, W. (2004), "Commercial Policy Variability, Bindings, and Market Access," *European Economic Review* 48(3): 665-679.

Funke M., Ruhwedel R. (2001), "Product Variety and Economic Growth: Empirical Evidence from the OECD Countries," *IMF Staff Papers* 48(2): 225-242.

Gaulier, G., Zignago, S. (2010), "BACI: International trade Database at the Product-level. The 1994-2007 Version," CEPII Working Paper #2010-23.

Hummels D., Klenow P.J. (2005), "The Variety and Quality of a Nation's Exports," *American Economic Review* 95(3): 704-723.

Kehoe T.J., Ruhl K.J. (2009), "How Important Is the New Goods Margin in International Trade?," Federal Reserve Bank of Minneapolis Research Department Staff Report #324.

Rauch, J.E. (1999), "Networks versus markets in international trade," *Journal of International Economics* 48:7-35.

Rose, A.K. (2004), "Do We Really Know that the WTO Increases Trade?," *American Economic review* 94(1): 98-114.

Sala, D., Schröder P.J.H, Yalcin E. (2010), "Market Access through Bound Tariffs," *Scottish Journal of Political Economy* 57(3): 272-289.

Schott, P.K. (2004). "Across-Product versus Within-Product Specialization in International Trade", Quarterly Journal of Economics, 119(2), May, 647–678.

Shepherd, B. (2007), "Product Standards, Harmonization, and Trade: Evidence from the Extensive Margin," World Bank Policy Research Working Paper Series #4390.

Wooldridge, J.M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

Yi, K.M. (2003), "Can Vertical Specialization Explain the Growth of World Trade," *Journal of Political Economy* 111(1): 52-102.

Table 1. Average tariffs on imports from emerging countries (%)

Importing countries	1996		2006	
	Mean	s.d	Mean	s.d.
All importing countries	**11.85**	**(22.54)**	**6.95**	**(16.84)**
Advanced	**4.87**	**(14.76)**	**3.22**	**(13.34)**
Australia	5.47	(9.15)	3.26	(4.67)
Canada	5.75	(12.37)	3.21	(10.56)
EU15	4.33	(9.57)	2.61	(9.01)
Japan	2.91	(9.93)	3.34	(12.83)
Norway	9.13	(29.24)	4.85	(25.00)
Switzerland	3.51	(13.45)	3.19	(14.54)
United States	3.00	(5.87)	2.05	(5.03)
New advanced and NICs	**14.67**	**(24.44)**	**8.46**	**(17.85)**
Argentina	12.08	(5.75)	11.56	(14.07)
Brazil	12.41	(5.73)	10.00	(6.93)
Chile	10.97	(0.53)	4.10	(2.68)
China	17.48	(12.34)	9.51	(8.99)
India	38.67	(18.40)	14.21	(13.42)
Indonesia	12.43	(14.32)	6.10	(9.68)
Israel	9.51	(49.49)	5.57	(12.97)
Malaysia	10.24	(32.93)	7.43	(25.22)
Mauritius	28.90	(25.87)	3.41	(9.53)
Mexico	14.69	(13.70)	11.80	(9.81)
Philippines	14.40	(11.03)	5.46	(6.06)
Singapore	0.02	(1.36)	0.02	(1.16)
South Africa	8.92	(18.64)	8.07	(12.20)
South Korea	13.46	(47.63)	12.38	(48.33)
Sri Lanka	20.30	(27.67)	11.51	(20.24)
Turkey	10.76	(21.62)	7.50	(24.57)
Venezuela	12.46	(6.09)	10.31	(8.16)
Vietnam	16.36	(18.81)	13.67	(17.85)

Source: MAcMap, authors' calculation

Table 2. Extensive margin of trade

	Potential number	Effective number		
		1996	2006	Variation (%)
Product dimension				
Total number of HS6 products exported by emerging countries to:				
Advanced countries	4,870	4,859	4,863	0.08
New advanced and NICs	4,870	4,858	4,864	0.12
Average number of HS6 products exported by emerging countries to:				
Advanced countries	4,870	3,054.9	3,372.4	10.4
New advanced and NICs	4,870	2,872.4	3,240.3	12.8
Product-destination dimension				
Total number of product-destination categories exported by emerging countries (non-zero trade):				
Total	2,133,060	366,501	511,774	39.6
Advanced countries	613,620	159,134	198,368	24.7
New advanced and NICs	1,519,440	207,367	313,406	51.1

Table 3. Extensive margin of trade detailed by exporting country

	Number of positive export flows (product-destination)			Contribution of each group of importers to 1996-2006 variation (percentage points)	
	1996	2006	Variation (%)	Advanced countries	New advanced and NICs
Argentina[#]	12,553	16,900	34.6	14.1	20.6
Brazil[#]	23,194	31,276	34.8	11.8	23.0
Chile[#]	8,266	10,580	28.0	13.8	14.2
China[#]	55,431	84,010	51.6	10.4	41.1
Colombia	7,176	9,943	38.6	18.5	20.1
Egypt	4,698	7,583	61.4	24.4	37.1
India[#]	35,723	53,791	50.6	12.3	38.3
Indonesia[#]	23,678	34,617	46.2	10.8	35.4
Malaysia[#]	28,427	38,012	33.7	4.9	28.8
Mexico[#]	20,624	24,661	19.6	6.0	13.6
Pakistan	5,579	12,616	126.1	51.4	74.8
Peru	5,051	8,435	67.0	27.5	39.5
Philippines[#]	13,955	19,210	37.7	9.3	28.3
Russia	13,064	15,672	20.0	5.7	14.2
South Africa	19,361	23,154	19.6	6.9	12.7
South Korea	43,655	50,553	15.8	4.0	11.8
Thailand	32,688	45,440	39.0	8.2	30.8
Turkey	13,378	25,321	89.3	27.2	62.0
Total	366,501	511,774	39.6	10.7	28.9

Note: total number of potential flows (product-destination) by exporting country and year: For emerging countries that are both exporter and importer in our sample (indicated with #): 4,870*24 = 116,880. For emerging countries that are only exporter 4,870*25 = 121,750.

Table 4. Extensive margin of trade detailed by importing country

	1996	2006	Variation (%)
All importing countries	**366,501**	**511,774**	**39.6**
Advanced	**159,134**	**198,368**	**24.7**
Australia	18,366	24,528	33.6
Canada	18,186	26,394	45.1
EU15	44,733	51,148	14.3
Japan	23,144	26,363	13.9
Norway	8,284	12,836	54.9
Switzerland	11,453	14,670	28.1
United States	34,968	42,429	21.3
New advanced and NICs	**207,367**	**313,406**	**51.1**
Argentina#	12,985	14,578	12.3
Brazil#	13,091	15,827	20.9
Chile#	13,813	17,470	26.5
China#	15,127	23,250	53.7
India#	9,561	19,930	108.5
Indonesia#	12,705	17,768	39.9
Israel	6,706	14,105	110.3
Malaysia#	16,324	20,966	28.4
Mauritius	7,468	10,665	42.8
Mexico#	12,178	20,693	69.9
Philippines#	11,503	16,219	41.0
Singapore	22,634	26,780	18.3
South Africa#	11,042	18,523	67.8
South Korea#	12,546	18,397	46.6
Sri Lanka	6,081	9,727	60.0
Turkey#	7,371	15,253	106.9
Venezuela	8,649	14,961	73.0
Vietnam	7,583	18,294	141.3

Note: total number of potential flows (product-origin) by importing country and year:
For emerging countries that are both exporter and importer in our sample (indicated with #): 4,870*17 = 82,790. For all other importing countries included in our sample: 4,870*18 = 87,660.

Table 5. Intensive margin of trade (exporter side)

	World exports of emerging countries[#] (Million USD)	Share exported to advanced countries (%)	Share exported to new advanced and NICs (%)
1996	972,667	56.9	19.0
2006	3,168,386	53.3	21.8

Note: [#]: For the 4,870 products included in our sample. See text and previous tables for the list of advanced countries, new advanced countries and NICs.

Table 6. Intensive margin of trade (importer side)

Year	Importing countries	World imports (Million USD)[#]	Share Emerging (%)
1996			
	Advanced	2,205,202	25.1
	New advanced and NICs	896,466	20.6
2006			
	Advanced	4,852,589	34.8
	New advanced and NICs	2,313,211	29.8

Note: [#]: For the 4,870 products included in our sample See text and previous tables for the list of advanced countries, new advanced countries and NICs.

Table 7. Extensive margin – basic regressions

Dependent variable	Probability that good *k* is exported from *i* to *j* in 2006							
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Importers		Advanced countries				New advanced and NICs		
Exporters				Emerging countries				
Δ ln(1+tariffs)	0.14	0.03	-0.02	-0.04	-0.03	0.05	0.04	0.01
	(0.12)	(0.03)	(0.03)	(0.04)	(0.07)	(0.04)	(0.04)	(0.02)
$Status_{96}$		0.60[a]	0.60[a]			0.54[a]	0.53[a]	
		(0.01)	(0.01)			(0.01)	(0.01)	
Δ ln($Population_{exporter}$)		-0.13	0.18			-0.21[c]	0.15	
		(0.20)	(0.22)			(0.12)	(0.14)	
Δ ln(GDP per $capita_{exporter}$) (current $)		0.07[b]				0.08[a]		
		(0.03)				(0.02)		
Δ ln(GDP per $capita_{exporter}$) (PPP)			0.21[a]				0.25[a]	
			(0.07)				(0.05)	
Δ ln($Population_{importer}$)		0.34	0.43			0.16	0.30[b]	
		(0.40)	(0.30)			(0.12)	(0.13)	
Δ ln(GDP per $capita_{importer}$) (current $)		-0.01				0.05[a]		
		(0.05)				(0.02)		
Δ ln(GDP per $capita_{importer}$) (PPP)			-0.14[b]				0.10[a]	
			(0.06)				(0.03)	
Ln distance		-0.04[b]	-0.03 [c]			-0.09[a]	-0.08[a]	
		(0.02)	(0.02)			(0.01)	(0.01)	
Common language		0.05	0.04			-0.02	-0.02	
		(0.03)	(0.03)			(0.02)	(0.02)	
Fixed effects	HS2	HS2	HS2	HS2 country pair	HS2	HS2	HS2	HS2 country pair
Observations	613,620	613,620	613,620	613,620	1,518,529	1,518,529	1,518,529	1,518,529
Adjusted R-squared	0.066	0.393	0.397	0.330	0.037	0.322	0.328	0.303

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. $Status_{96}$= 1 if good *k* was exported from *i* to *j* in 1996 (0 otherwise). [a] p<0.01, [b] p<0.05, [c] p<0.1

Table 8. Extensive margin – basic regressions (selected samples)

Dependent variable	Probability that good *k* is exported from *i* to *j* in 2006			
Model	(1)	(2)	(3)	(4)
Importers	Advanced countries		New advanced and NICs	
Exporters	Emerging countries			
Restriction	$Status_{96}=0$	$Status_{96}=1$	$Status_{96}=0$	$Status_{96}=1$
Δ ln(1+tariffs)	-0.03[c]	-0.05	0.01	-0.05[b]
	(0.02)	(0.05)	(0.02)	(0.02)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	454,486	159,134	1,311,263	207,266
Adjusted R-squared	0.153	0.137	0.180	0.172

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. $Status_{96}$= 1 if good *k* was exported from *i* to *j* in 1996 (0 otherwise). [a] p<0.01, [b] p<0.05, [c] p<0.1

Table 9. Extensive margin – Comparison across groups of exporters

Dependent variable	Probability that good *k* is exported from *i* to *j* in 2006					
Model	(1)	(2)	(3)	(4)	(5)	(6)
Importers	Advanced countries			New advanced and NICs		
Exporters	Emerging	Advanced (extended definition)	DCs & LDCs	Emerging	Advanced (extended definition)	DCs and LDCs
Δ ln(1+tariffs)	-0.04	-0.11[a]	-0.01	0.01	-0.02	0.001
	(0.04)	(0.02)	(0.01)	(0.02)	(0.02)	(0.002)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	613,620	861,990	4,636,240	1,518,529	2,448,540	11,978,413
Adjusted R-squared	0.330	0.370	0.216	0.302	0.342	0.238

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. [a] p<0.01, [b] p<0.05, [c] p<0.1. The extended group of advanced countries includes Czech Republic, Estonia, Hungary, Iceland, Israel, New Zealand, Poland, Slovakia and Slovenia in addition to Australia, Canada, EU15, Japan, Norway, Switzerland and the US.

Table 10. Extensive margin – Sector analysis

Dependent variable	Probability that good *k* is exported from *i* to *j* in 2006					
Model	(1)	(2)	(3)	(4)	(5)	(6)
Importers	Advanced countries			New advanced and NICs		
Exporters	Emerging countries					
Restriction		$Status_{96}=0$	$Status_{96}=1$		$Status_{96}=0$	$Status_{96}=1$
Conservative Classification						
Δ ln(1+tariffs) x organized exchange goods	0.02	0.01	0.10	0.04	0.02	-0.03
	(0.02)	(0.01)	(0.09)	(0.03)	(0.02)	(0.06)
Δ ln(1+tariffs) x reference priced goods	-0.06[b]	-0.03[c]	-0.10[c]	-0.03[c]	-0.02	-0.08[b]
	(0.03)	(0.02)	(0.06)	(0.02)	(0.01)	(0.04)
Δ ln(1+tariffs) x differentiated goods	-0.08	-0.08	-0.05	0.02	0.02	-0.04
	(0.10)	(0.06)	(0.08)	(0.03)	(0.02)	(0.03)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	585,144	434,273	150,871	1,448,085	1,251,054	197,031
Adjusted R-squared	0.331	0.154	0.138	0.303	0.180	0.172
Liberal classification						
Δ ln(1+tariffs) x organized exchange goods	0.02	0.02	0.12	0.03	0.02	-0.04
	(0.02)	(0.01)	(0.08)	(0.03)	(0.02)	(0.05)
Δ ln(1+tariffs) x reference priced goods	-0.06[b]	-0.04[b]	-0.13[b]	-0.02	-0.01	-0.07[c]
	(0.03)	(0.02)	(0.06)	(0.02)	(0.01)	(0.04)
Δ ln(1+tariffs) x differentiated goods	-0.08	-0.09	-0.05	0.02	0.02	-0.04[c]
	(0.10)	(0.06)	(0.08)	(0.03)	(0.02)	(0.03)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	585,144	434,273	150,871	1,448,085	1,251,054	197,031
Adjusted R-squared	0.331	0.154	0.138	0.303	0.180	0.172

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. [a] p<0.01, [b] p<0.05, [c] p<0.1
$Status_{96}$= 1 if good *k* was exported from *i* to *j* in 1996 (0 otherwise).

Table 11. Intensive margin – basic regressions

Dependent variable	Δ ln(1+imports) = ln(1+imports$_{06}$) – ln(1+imports$_{96}$)							
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Importers		Advanced countries				New advanced and NICs		
Exporters				Emerging countries				
Δ ln(1+tariffs)	-0.33[c]	-0.03	-0.26	-0.29[a]	-0.13	0.13	0.08	-0.09
	(0.20)	(0.17)	(0.16)	(0.10)	(0.20)	(0.19)	(0.18)	(0.06)
Status$_{96}$		-0.61[a]	-0.66[a]			-0.85[a]	-0.88[a]	
		(0.08)	(0.06)			(0.07)	(0.06)	
Δ ln(POP$_{exporter}$)		-0.44	1.74[c]			-0.91[c]	1.03[c]	
		(0.87)	(1.02)			(0.53)	(0.61)	
Δ ln(GDP per capita$_{exporter}$) (current $)		0.53[a]				0.44[a]		
		(0.17)				(0.10)		
Δ ln(GDP per capita$_{exporter}$) (PPP)			1.52[a]				1.32[a]	
			(0.39)				(0.25)	
Δ ln(POP$_{importer}$)		1.86	2.29[c]			0.68	1.36[b]	
		(1.90)	(1.37)			(0.55)	(1.37)	
Δ ln(GDP per capita$_{importer}$) (current $)		-0.001				0.31[a]		
		(0.21)				(0.08)		
Δ ln(GDP per capita$_{importer}$) (PPP)			-0.48[b]				0.54[a]	
			(0.24)				(0.15)	
Ln distance		-0.07	-0.02			-0.32[a]	-0.29[a]	
		(0.09)	(0.09)			(0.04)	(0.04)	
Common language		0.08	0.01			-0.13	-0.11	
		(0.14)	(0.13)			(0.08)	(0.07)	
Fixed effects	HS2	HS2	HS2	HS2 country pair	HS2	HS2	HS2	HS2 country pair
Observations	613,620	613,620	613,620	613,620	1,518,529	1,518,529	1,311,263	1,518,529
Adjusted R-squared	0.014	0.045	0.056	0.076	0.001	0.065	0.168	0.107

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. [a] p<0.01, [b] p<0.05, [c] p<0.1
Status$_{96}$= 1 if good *k* was exported from *i* to *j* in 1996 (0 otherwise). Same conclusions if we use ln(1+imports$_{96}$) instead of Status$_{96}$.

Table 12. Intensive margin – basic regressions (selected samples)

	Δ ln(1+imports) = ln(1+imports$_{06}$) – ln(1+imports$_{96}$)			
Model	(1)	(2)	(3)	(4)
	Status$_{96}$=0	Status$_{96}$=1	Status$_{96}$=0	Status$_{96}$=1
Δ ln(1+tariffs)	-0.13[c]	-0.92[a]	0.01	-0.77[a]
	(0.07)	(0.33)	(0.06)	(0.18)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	454,486	159,134	1,311,263	207,266
Adjusted R-squared	0.145	0.146	0.167	0.192

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. [a] p<0.01, [b] p<0.05, [c] p<0.1. Status$_{96}$= 1 if good *k* was exported from *i* to *j* in 1996 (0 otherwise). Same conclusions if we use ln(1+imports$_{96}$) instead of Status$_{96}$.

Table 13. Intensive margin – Comparison across groups of exporters

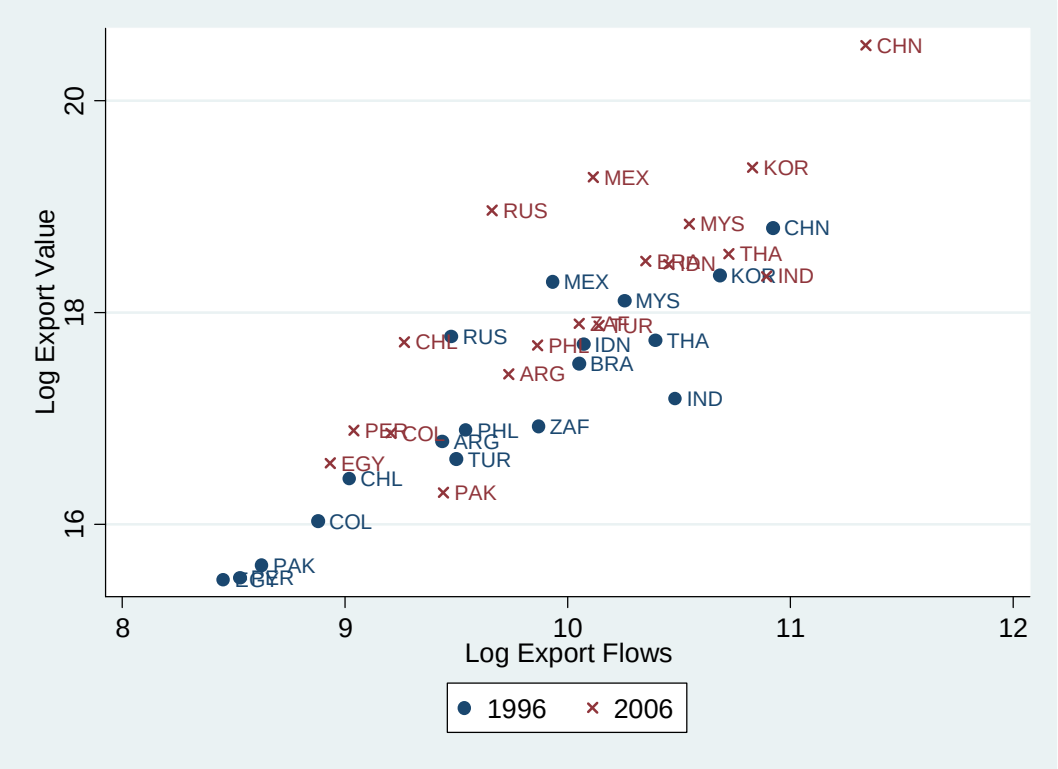
Dependent variable	Probability that good *k* is exported from *i* to *j* in 2006					
Model	(1)	(2)	(3)	(4)	(5)	(6)
Importers	Advanced countries			New advanced and NICs		
Exporters	Emerging	Advanced (extended definition)	DCs & LDCs	Emerging	Advanced (extended definition)	DCs and LDCs
Δ ln(1+tariffs)	-0.29[a]	-0.37[a]	-0.06[b]	-0.09	-0.17[a]	0.006
	(0.10)	(0.10)	(0.03)	(0.06)	(0.03)	(0.006)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	613,620	861,990	4,636,240	1,518,529	2,448,540	11,978,413
Adjusted R-squared	0.076	0.034	0.038	0.107	0.045	0.034

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported. [a] p<0.01, [b] p<0.05, [c] p<0.1. The extended group of advanced countries includes Czech Republic, Estonia, Hungary, Iceland, Israel, New Zealand, Poland, Slovakia and Slovenia in addition to Australia, Canada, EU15, Japan, Norway, Switzerland and the US.

Table 14. Intensive margin – sector analysis

Dependent variable	Δ ln(1+imports) = ln(1+imports$_{06}$) – ln(1+imports$_{96}$)					
Model	(1)	(2)	(3)	(4)	(5)	(6)
Importers	Advanced countries			New advanced and NICs		
Exporters	Emerging countries					
Restriction		Status$_{96}$=0	Status$_{96}$=1		Status$_{96}$=0	Status$_{96}$=1
Conservative Classification						
Δ ln(1+tariffs) x organized exchange goods	0.04	0.01	0.34	-0.13	-0.02	-0.65
	(0.07)	(0.06)	(0.61)	(0.08)	(0.08)	(0.41)
Δ ln(1+tariffs) x reference priced goods	-0.08	-0.13[c]	-0.22	-0.13[b]	-0.12[c]	-0.83[a]
	(0.09)	(0.08)	(0.45)	(0.06)	(0.06)	(0.23)
Δ ln(1+tariffs) x differentiated goods	-0.81[a]	-0.23	-1.68[a]	-0.05	0.09	-0.71[a]
	(0.25)	(0.18)	(0.53)	(0.08)	(0.08)	(0.21)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair	HS2 country pair
Observations	585,144	434,273	150,871	1,448,085	1,251,054	197,031
Adjusted R-squared	0.076	0.147	0.148	0.108	0.168	0.193
Liberal classification						
Δ ln(1+tariffs) x organized exchange goods	0.12[c]	0.06	0.66	-0.13	-0.05	-0.55
	(0.06)	(0.06)	(0.49)	(0.08)	(0.08)	(0.34)
Δ ln(1+tariffs) x reference priced goods	-0.20[c]	-0.22[b]	-0.55	-0.13[b]	-0.10	-0.77[a]
	(0.10)	(0.09)	(0.46)	(0.06)	(0.06)	(0.23)
Δ ln(1+tariffs) x differentiated goods	-0.82[a]	-0.21	-1.70[a]	-0.05	0.09	-0.75[a]
	(0.26)	(0.19)	(0.55)	(0.08)	(0.08)	(0.21)
Fixed effects	HS2 country pair	HS2 country pair	HS2 country pair	HS2 Country pair	HS2 country pair	HS2 country pair
Observations	585,144	434,273	150,871	1,448,085	1,251,054	197,031
Adjusted R-squared	0.076	0.147	0.148	0.108	0.168	0.193

Note: Robust standard errors clustered by country pair in parentheses. Constant & fixed effects not reported.
[a] p<0.01, [b] p<0.05, [c] p<0.1. Status$_{96}$= 1 if good *k* was exported from *i* to *j* in 1996 (0 otherwise).



Note: Each observation is an emerging exporting country. 'Export Flows' is the number of product-destination categories exported by an emerging country. (Max. number of products: 4870; Max. number of destinations: 24 or 25 depending whether an emerging country is included as exporter and importer in our sample). 'Export Value' is the value that an emerging country exports to the (24 or 25) importing countries included in our sample.

Figure 1. Export Value and Product-Destination Flows

Appendix: Countries included in the sample

Exporting emerging countries	Importing countries
Argentina	*Advanced:*
Brazil	Australia
Chile	Canada
China	EU15
Colombia	Japan
Egypt	Norway
India	Switzerland
Indonesia	United States
Malaysia	
Mexico	*New advanced and NICs:*
Pakistan	Argentina
Peru	Brazil
Philippines	Chile
Russia	China
South Africa	India
South Korea	Indonesia
Thailand	Israel
Turkey	Malaysia
	Mauritius
	Mexico
	Philippines
	Singapore
	South Africa
	South Korea
	Sri Lanka
	Turkey
	Venezuela
	Vietnam