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Abstract

Sectoral concentration of exports has been a longstanding matter of concern for policymakers in developing countries. According to the economic theory and recent empirical evidence, improved market access through trade arrangements is likely to favor export diversification. In this paper, we assess whether this has been the case of Colombian exports to the United States and whether an FTA with the United States would help Colombia to diversify their exports. We find that lower tariffs have indeed favored exports of new products from Colombia. Predictions suggest that the FTA is likely to induce further diversification, but up to a certain point.

Keywords: Trade Policy, Export Diversification, Colombia.
JEL-Classification: F10, F15, C23, C25.

1. Introduction

Sectoral concentration of exports has been a longstanding matter of concern for policymakers in developing countries. This has mirrored in the economic literature starting with the pioneering paper by Brainard and Cooper (1968). As they state, *"diversification" has become a commonplace goal of economic policy in less developed countries.* Colombia has not been the exception and this is hardly surprising. Exports of just one product, coffee, accounted on average for more than 60% of total exports between 1905 and 1986 (see Urrutia et al., 2000). Since the late 1950s with the inception of the Plan Vallejo, successive Colombian governments have put in place several policies to favor export diversification (see Urrutia et al., 2001). In the last decades, exports have witnessed a process of diversification, as measured by traditional indexes, such as the Herfindahl index, or newer indicators, such as that proposed by Hummels and Klenow (2005) (see Figure 1). Improved market access through trade agreements, mainly the Andean Community, and trade preference programs, such as those granted by the United States in the framework of ATPA and ATPDEA, is likely to have contributed to this process.[1] In this paper, we assess to what extent this has been the case and, based on that, whether the FTA with the United States would help Colombia to further diversify their exports.

Why should policymakers care about export concentration?[2] The economic literature, theoretical as well as empirical, suggests diverse reasons. Sectoral concentration of exports *per se* seems to be negatively associated with economic growth (see, e.g., Lederman and Maloney, 2003, and Herzer and Nowak-Lehnmann, 2006). Three main mechanisms can be identified for this effect. High export specialization implies high sensitivity to sector-specific shocks and thus to high volatility of export revenues and growth rates, which affects the import capability of the country and results in underinvestment when investors are risk averse (see, e.g., Dawe, 1996; and Bleaney and Greenaway, 2001). In general, countries with more volatile business cycles exhibit lower long term growth rates (see, e.g., Fatás, 2002). Estimates for Colombia suggest that economic fluctuations had a cost of 0.13-0.47 percentage points of GDP per capita annual growth rate in the long run (see Hernández et al., 2005). On the other hand, assuming that there

[1] ATPA is the acronym of Andean Trade Promotion Act, whereas ATPDEA is that for Andean Trade Promotion and Drug Erradication Act.

[2] The next paragraphs list several reasons why diversifying exports may be important. This is different from stating that governments should actively intervene to promote diversification. This would be appropriate only if there is a discrepancy between social and private costs due, for example, to uncertainty (see, e.g., Brainard and Cooper, 1968), and if the social net benefits of a program fostering diversification are larger than those associated with the *statu quo.*

is preference for variety, lower export diversification implies lower export levels (see Funke and Ruhwedel, 2001). Finally, high concentration limits productivity growth since it does not induce neither an increase in the efficiency with which inputs are used (see Feenstra and Kee, 2004a) nor learning by exporting (see Al-Marhubi, 2000; and Agosin, 2006).

More specifically, high dependence on exports of natural resources may be costly in terms of economic growth (see Sachs and Warner, 1999). First, it has been argued that specialization in primary products does not favor convergence due to the relatively low rate of technological progress in the primary sector and the secular declining trend of the relative prices of its products (see Prebisch, 1950; and Singer, 1950). Second, countries in which natural resources account for a large share of their exports are particularly likely to suffer from "Dutch disease", i.e., periodic booms in those products lead to a real appreciation that makes more difficult for other exporting or import-competing sectors, typically manufacturing, to retain or gain international competitiveness (see Corden, 1980; and Corden and Neary, 1982). If manufacturing induces a more complex division of labor and more, stronger linkages with the rest of the economy (see Hirschman, 1958), the consequence of this "pathology" is a lower level of development. Some symptoms of "Dutch disease" have been seen in Colombia in the past (see Davis, 1983; Kamas, 1986; Cuddington, 1989; Rocca, 1999; and Stijns, 2003). Large expansions in coffee revenues have provoked substantial increases in the relative price of non-traded output and a real appreciation of the Colombian exchange rate that resulted in traded output being slowed down. Lastly, high reliance on exports of primary products tends to be associated with high terms of trade volatility, which has negative repercussions on exports and investment and thereof on economic growth (see Gylfason, 2001).

This is especially true for countries with restrictions on access to international financial markets and, such as Colombia, where the deepness of domestic financial systems is still relatively low (see Caballero, 2000).[3]

The topic we deal with is relevant from an economic policy point of view, especially for the country under examination. Since the beginning of the negotiations of a FTA with the United

[3] The economic literature offers additional arguments for the link between dependence on exports of natural resources and growth. The prevalence of sectors intensive in these resources reduces the incentives to accumulate human capital because to the high level of non-wage income that they generate (see Gylfason, 2004). This may cause income inequality to persist over longer periods (see Leamer et al., 1999). Low levels of education and high levels of inequality tend, in turn, to harm growth (see, e.g., Persson and Tabellini, 1994; Benhabib and Rustichini, 1996; Alessina and Perotti,1996; and Aghion et al., 1999).

States, the discussion on its potential benefits and costs has been intense in Colombia and other countries pursuing similar initiatives. Most analyses on these issues, those based on simulations performed with computed general equilibrium models (CGE) and those using econometric tools as well, only examine the impacts of the FTA derived from changes in already existing sectoral trade flows, thus without considering how it would affect the possibility to export new goods.[4] The existing empirical literature suggests that this effect may be important. Hence, there is a missing dimension in the policy debate and we aim at explicitly incorporating it.

Further, the economic literature itself has a gap in this area that deserves being filled. When geographically focused, it is mainly concentrated on the case of NAFTA as such and hence does not report evidence either on other Latin American countries, in general, or on Colombia, in particular. Moreover, studies exploring the influence of trade policy on shaping countries export diversification patterns, although insightful, have some methodological and econometric weaknesses.

We aim at filling the aforementioned gaps by addressing four main questions: Are tariff and tariff preferences significant determinants of the total number of products exported by countries to the United States? Have these variables had an impact on Colombian ability to export particular products to the United States? How has the experience of other countries been in this regard? Can Colombia expect to export new goods after the FTA with the United States enters into force?

In addressing these questions, we use annual, highly disaggregated bilateral import and tariff data for the United States from the United States International Trade Commission (USITC) over the period 1989-2005. We first compute two export indicators: the total number of products exported, at the country level and at the chapter level for selected countries, and a binary variable taking the value of 1 if a country exports a particular product at the HS-10 digit level to the United States in a given year and 0 otherwise. We then investigate the impact of tariffs and tariff preferences in *ad valorem* equivalent terms on the number of products exported by Colombia and on the probability that this country exports a particular good to the United States performing dynamic random effects Poisson and dynamic random effects Probit estimations over the period 1996-2005, respectively. Based on the Poisson estimations, we predict how would Colombian

[4] See, e.g., DEE-DDE (2003), Light and Rutherford (2003), Cárdenas and García (2004), Gracia and Zuleta (2004), Monteagudo et al. (2004), Botero (2005) and Martín and Ramírez (2005).

export patterns would look like in a scenario with all tariff set to zero. Finally, we also look at the evidence provided by the two Latin American countries that already have an active free trade agreement with the United States, Mexico and Chile, by replicating the same econometric exercises for these two economies. Differently from the previous papers, they will not play a leading role but a supporting one, i.e., they will serve as benchmarks.

We find that lower tariffs have indeed favored exports of new products from Colombia. Predictions based on estimates for this country and the evidence on Mexico and Chile as well suggest that the FTA is likely to induce further diversification, but up to a certain point. Once tariffs reach a sufficiently low level and remain there, their effect eventually vanishes. This is far from being surprising. The fact that a country has secure and free access to the partner's market does not automatically imply that it will be able to export all goods. It just mean that the economy has the *possibility* to export more goods. One would expect that the first new exported goods would be those whose exports become profitable after the tariff reduction under the prevailing production and distribution conditions. Further increases in exported goods would not be possible without changes in these other conditions. More specifically, if, for example, the human capital required to produce a good is not available, a country will impossibly export this good, even when the tariff faced is zero. Hence, improvements in physical infrastructure, institutional infrastructure, logistics, and endowments of human capital may then become more relevant to maximize the gains from trade liberalization in terms of diversification.

The remaining of the paper is organized as follows: Section 2 reviews the existing literature. Section 3 describes the dataset and presents some stylized facts on tariffs and the number of exported products. Section 4 explains the empirical methodology. Section 5 reports our main empirical findings, and Section 6 concludes.

2. What Do We Know About the Impact of Trade Policy on Export Diversification?

There is an emerging consensus in the empirical international trade literature that trade policy affects the level of export diversification. Several recent papers have found that tariffs faced by countries significantly contribute to shape their export extensive margins, i.e., their ability to export new products. Most of them take as benchmark the Ricardian model, that precisely predicts that a reduction in trade barriers leads to an increased range of exported goods (see Dornbusch et al., 1977, and Venables, 2003).

Yi (2003) has explored one specific channel through which tariff reductions may induce increases in the extensive margin, namely, deepened vertical specialization. Trade liberalization favors fragmentation of production processes, so products that were entirely produced in one country become to be produced sequentially in different countries with the successive stages distributed according to countries' comparative advantage. As a result, there is a significant expansion of trade in intermediate goods, beyond that on final goods. Using a calibrated two-country dynamic Ricardian model, Yi (2003) shows that this could help to explain the strong reaction of trade to moderate tariff diminutions. Solving this elasticity puzzle has also motivated the work by Ruhl (2005). He develops and calibrates a model combining elements from the international business cycle literature and the applied general equilibrium models which are common in assessing the impact of trade policy changes. Ruhl (2005) provides evidence that permanent tariff reductions rise the expected future gain from exporting impulsing more firms to enter the export markets and are therefore associated with increased extensive margins of trade.

Kehoe and Ruhl (2004) analyze trade patterns for six countries -Spain, Greece, Portugal, but especially United States, Canada, and Mexico- during major trade liberalization episodes – the accession to the European Economic Community, the Canada-US Free Trade Agreement, and the North American Free Trade Agreement-.[5] Using bilateral trade data at the SITC-4 digit level, they characterize the behavior of the export extensive margin through the evolution of the share of the least exported goods at the beginning of the period in total exports.[6] Kehoe and Ruhl (2004) show that this measure substantially grows following the decrease in trade barriers. In particular, the set of least traded goods which account for only 10% of trade before trade liberalization can grow to account as much as 50% of trade following tariff cuts.[7] Furthermore, there is no similar evidence of rising extensive margin for those countries that did not experience comparable trade policy changes.

Moreover, Kehoe and Ruhl (2004) attempt to replicate these patterns in the data through simulations performed with a calibrated, slightly modified continuum-of-goods version of the

[5] Following Hummels and Klenow (2005, working paper version of 2002), Hillberry and McDaniel (2002) decompose the North American Trade Growth since NAFTA into changes in traded varieties and changes in products already traded, further divided into quantity and price changes. They find that the the extensive margin of United States imports from Mexico has significantly increased since 1993.

[6] They also calculate the measure proposed by Hummels and Klenow (2005) as a robustness check.

[7] Muskerji (2004) and Sandrey and van Seventer (2004) have used the methodology developed by Kehoe and Ruhl (2004) to investigate how the extensive margin has changed during India's trade liberalization over the 1990s and as a consequence of the deeper economic integration between Australia and New Zealand starting in 1988, respectively.

Ricardian model developed by Dornbusch et al. (1977). This last exercise, although highly interesting, has several drawbacks. For instance, the authors use a two-country model, which impedes to assess the role played by tariff preferences in the explanation of changes in trade patterns. Further, the authors work with relatively highly aggregated data for the kind of phenomenon being studied (789 products according to the 4-digit SITC, vs., for example, around 10,000 constant products according to the 10-digit HS).[8]

More generally, studies based on calibrated models have been widely criticized for having weak econometric foundations (see, e.g., Jorgenson, 1984; McKritick, 1998, and Hertel et al., 2004). Specifically, a key parameter of the model, namely, the elasticity of substitution between domestic goods and imports, is drawn from econometric results based on time series price variation. This approach has three problems (see Hertel et al., 2004). First, simulations are carried out taking the point estimates as "truth", which implies ignoring the precision of these estimates. Systematically increasing or lowering substitution parameters cannot be considered an effective robustness check because it does not take into account information about which parameters are known with some precision and which not. This is not a minor point as the inferences from the model depend critically on the size of the confidence intervals around parameter estimates. Second, elasticity of substitution is commonly identified using estimations of import demand functions that take import price variation as exogenous and disregard quality variation, which results in a downward bias in the magnitude of the point estimate.[9] Third, there is a mismatch between the data sample in terms of level of aggregation and the source of variation in the econometric exercise and the policy change examined with the models.

Feenstra and Kee (2005) compute measures of export product variety at the industry level for Mexico and China using highly disaggregated United States import data -HS 10-digit level- over the period 1990-2001 as described in Feenstra and Kee (2004b). These variety measures are defined as the share of United States total imports from products that are exported by the country in question. Feenstra and Kee (2005) present evidence that there has been an expansion of export varieties in those countries for the seven industries considered over the last decade and that trade

[8] There are also additional caveats. First, the need to keep the theoretical model tractable and to match it with the empirical analysis leads the authors to assume counterfactually that the same tariff rate applies on all goods in the base scenario (arbitrarily set at 15%). Second, the authors rank the goods according to the SITC and there is no theoretical justification for doing so. Third, simulation results show an overestimation (25%) of the increase in the extensive margin of trade and estimation errors seem to have systematic patterns by group, which may reflect a problem of omitted variables.

[9] Thus, when quality is high, both import demand and prices will be high, biasing elasticities toward zero.

liberalization has been an important factor driving this expansion.[10] More concretely, in their preferred specification, they run 3SLS estimations, regressing for each country the log of export variety of the industries on the log of own tariff, the log of US tariff, the interaction of the previous two terms, the index of export variety of the other country (China for Mexico and vice versa) to control for market competition effects, and industry fixed effects, and find all the tariff terms are negative and significant. Thus, bilateral tariff reductions of Mexico and the United States induce the industry export variety of Mexico to increase by 1.33% annually. The analysis on which these results are based is insightful and perfectly consistent with the economic theory, but the econometric approach used by Feenstra and Kee (2005) has two main disadvantages. Estimations are performed on highly aggregated indices, and so are the tariffs, and thus the rich cross-sectional variation is not fully exploited. Moreover, estimates may be biased due to the non-accounted presence of serial correlation.

Using the same raw data, Debaere and Mostashari (2005) estimate cross-sectional probit models pooling all countries and products where the dependent variable is a binary indicator taking the value of one if the United States import a given 10-digit HS level product from a particular country in a one- to three- years period (1999-2001) and the explanatory variables are the same indicator at the beginning of the sample period (1989-1991) to account for the influence of fixed costs related to exporting, the change in the tariff faced by the country at the product level, the change in its preference margin, country fixed effects, and industry fixed effects.[11] Estimation results indicate that both tariff reductions and increasing tariff preferences are associated with a larger range of goods exported to the United States. More specifically, the probability of exporting goods to that market increases with tariff cuts and tariff preferences. However, the impact of these variables appears to be small. Other factors such as macroeconomic conditions or technological innovations in production processes, captured through the fixed effects, seem to play a significant role in explaining observed changes in countries' extensive margins of trade.

This paper represents the first attempt to explicitly investigate the link between tariff reductions and the extent of new good exports directly at a highly disaggregated level. The empirical analysis has, however, some weaknesses, which justify a cautious attitude when

[10] These sectors are agriculture, textiles and garments, wood and paper, petroleum and plastics, mining and basic metals, machinery and transports, and electronics.

[11] Debaere and Mostashari (2005) also derive their estimation equation from a three-country Ricardian model.

interpreting results. First, countries are likely to respond significantly different to a given tariff reduction as they are differently endowed (e.g., human capital) or differently prepared (e.g., better infrastructure) to take advantage of a certain market access improvement. In other words, the slope and not only the intercept may differ across countries.[12] Hence, pooling across countries may lead to inaccurate estimates of the impact of tariffs on the probability of exporting, even when controlling for country fixed effects. Second, except for Greene (2001, 2003), the extensive use of fixed effects in non-linear models remains a highly controversial issue. As it is well known, the maximum likelihood estimator with fixed-effects is subject to the "incidental parameter problem" when the number of time periods is held fixed, i.e., the estimates of the parameters of interest will be biased and there is no consensus concerning how large this bias is.[13] Third, estimating just cross sectional probit models implies disregarding the additional identifying information coming from the time dimension of the panel formed by the original dataset. Fourth, and related, the relative importance of trade policy as a driving force for diversification might have a specific time profile. This may be due to the fact that, below certain tariff level, other factors than tariff may become predominant in fostering additional diversification.

Summing up, there is an emerging empirical literature that explicitly examines the link between trade policy and export diversification. This literature suggests that lower tariffs favor exports of new products. However, as discussed above, studies deriving this result either heavily draw on the Mexican/NAFTA experience or are country-unspecific and, more importantly, they are flawed with methodological problems. In the next sections, we will provide additional evidence. We will chiefly look at Colombian exports to the United States taking as benchmark Mexico and Chile, the two Latin American countries with an already active FTA with the United States.

[12] Even the common factors such as United States' aggregate demand may have different impacts across countries.

[13] In linear regression models, when the number of time periods is fixed, the parameters of interest are estimated consistently by eliminating the individual heterogeneity through the wiithin transformation. This is possible because the maximun likelihood estimation of these parameters and that of the individual effects are asymptotically independent (see Hsiao, 1990, and Baltagi, 1995). However, this is not the case in non-linear models (see Chamberlain, 1980). When only a few observations are available to estimate each individual effect, the estimation error of these effects does not vanish as the sample size grows and this contaminates the estimation of the parameters of interest (see Arellano and Hahn, 2007).

3. Data and Descriptive Statistics

Our database includes data on bilateral imports and tariffs for the United States over the period 1989-2005. We have built this database by reconstructing the so-called "large database" described in Feenstra et al. (2002) (currently unavailable online) and by updating it until 2005 using tariff and import data made available online by the USITC.

Bilateral import data are reported at the 10-digit Harmonized Tariff System (HTS10) level. As discussed in Debaere and Mostashari (2006), not all HTS10 codes are used throughout the sample period because some goods become obsolete, new goods emerge, and some are just reclassified. Since it is not possible to precisely determine what is driving the classification dynamics of specific product categories, our econometric analysis will be based on those products whose codes remained used over the whole sample period, i.e., 9,336 products classified in 97 chapters. Import values are given by the customs value for general imports, which measure the total physical arrivals of merchandise from foreign countries, whether such merchandise enters consumption channels immediately or is entered into bonded warehouses or foreign trade zones under customs custody. We concentrate on the binary dimension of these data by defining exported products as those registering positive imports in the United States. In this paper, we interpret diversification and number of exported products as interchangeable.

The tariff dataset is based on the Harmonized Tariff Schedule (HTS) of the United States. This dataset includes *ad valorem*, specific and *ad valorem* equivalent (AVE) based on the most favored nation (MFN) rate of the HTS; indicates products that are elegible for tariff preferences under free trade agreements (e.g., NAFTA) or under any preferential programs (e.g., Generalized System of Preferences, ATPDEA); and provides details of the applicable tariffs under all of these agreements and programs thus allowing to determine applicable tariffs where no trade is observed.[14] Tariff data are presented at the 8-digit level. We use *ad valorem* equivalents for each country of origin taking into account the information described above and apply the same tariff for all 10-digit products corresponding to each 8-digit code.[15]

During the first half of the 1990s, Colombia implemented broad macro structural reforms. Given that these simultaneous reforms generate multiple effects which are difficult to disentangle

[14] Nevertheless, it should be acknowledged that the tariff database has some limitations (see Feenstra et al., 2002). It does not include information on quotas, antidumping duties or special duties, rules of origin (which are import to determine elegibility for tariff programs), and "product sharing" arrangements (under which tariffs are only levied on foreign value added).

[15] Ad valorem equivalents are estimated from import unit values.

thus potentially affecting our estimations in non-controllable ways and that it takes time for them to produce their fruits, we believe that it is more appropriate that our core sample period starts on a later year instead of the first year for which we have data, 1989. We therefore focus on the period 1996-2005 when considering Colombia. In our analysis, we will also look at two relevant benchmark countries, Mexico and Chile. These economies already have an active FTA with the United States.[16] As they went through similar structural reform processes before 1989, in these cases, we will use all available data.[17]

Figures 2-10 present descriptive evidence on the evolution of tariffs and the absolute number of exported products for Colombia, Mexico, and Chile. Table 1 highlights the relative importance of the new products both in terms of the total number of products exported and in terms of Colombia's total exports to the United States, whereas Table 2 replicates this information at the sector (chapter) level. Finally, Table 3 reports the number of goods exported by Colombia as a percentage share of the total number of goods that might be potentially exported in each chapter for 1996 and 2005.

Figure 2 shows that the average tariff faced by Colombia in the United States has been declining in the last decade and that the number of goods exported to this country has substantially increased over this period (from 1146 in 1996 to 1887 in 2005)[18]. This expansion of the extensive margin accounts for 44% of the overall growth of Colombian exports to the United States in a simple algebraic decomposition of this growth into two main components, i.e., the number of products and the average exports by product. Further, on average, 13% of the products exported by Colombia to the United States each year over the period 1996-2005 are "new", i.e., they have not exported to this country during the seven previous years (see Table 1). When a more conservative definition of new product is adopted to account for the typical pattern of entries and exists in the export markets, this percentage share is still relatively high, exceeding 9% in the last four years. Note, on the other hand, that, except for particular years, these new products only account for a small fraction of total Colombian exports to the United States (see Table 1). Moreover, they also represent a small fraction of the United States' total imports of these goods. Thus, in 2005 Colombia accounted for less than 1% of the United States' imports in

[16] See Table A1.1 in Appendix 1.
[17] Reform periods can be considered end-1970s to mid-1980s for Chile and mid-1980s for Mexico.
[18] This figure shows a simple average of tariffs. Similar patterns are found using weighted averages. The same applies for Mexico and Chile.

84% of the 250 products identified as new and between 1% and 10% in 12% of these products.[19] This is consistent with economic theory and existing empirical evidence showing that, due to uncertainty about reliability of providers, new exports tend to be small in scale. These exports may eventually gradually expand upon satisfactory deliveries (see, e.g., Egan and Mody, 1992; Rauch and Watson, 2003; and Besedes, 2006).

The proportion of chapters with no or just a few exported products has diminished significantly (see Figure 3, right). Almost all chapters registered increases in the number of goods exported (Figure 4, left and right).[20] The relative importance of the new products, however, exhibits substantial variation across sectors (see Table 2). These products account for both large shares of the total number of products and the total exports for diverse sectors such as photographic and cinematographic goods; knitted and crocheted fabrics; zinc and articles thereof; other vegetable textile fibers; fertilizers; man-made staple fibers; and railway, tramways, signaling equipment, and parts thereof. [21]

When considering the total amount of products exported, three sectors stand out: articles of apparel and clothing accessories, not knitted or crocheted; articles of apparel and clothing accessories, knitted or crocheted; and nuclear reactors, boilers, machinery and mechanical appliances; and parts thereof (Figure 3, left, and Figure 4, left), which accounted for 6.1%, 2.7%, and 0.4% of Colombian total exports to the United States. The first sector exported 270 products in 2005 (53% of the total number of products within the chapter) up from 190 in 1996, whereas the second sector exported 217 products (56% of the total number of products within the chapter) up from 129 in 1996 (see Table 1). In 2005 several other chapters had more than 50% of tariff lines with positive exports, e.g., printed books (76%), headgear (72%), furniture (63%), and articles of leather (58%) (see Table 3). The picture is rather different for nuclear reactors, boilers,

[19] Nevertheless, it should be mentioned that Colombia is among the 14 exporters with the larger shares in the 50% of these new products.

[20] This seems to have been associated with larger sectoral exports. The simple correlation between the growth of exports and the growth of the number of products exported across sectors over the sample period is 0.30. This is significantly different from zero at the 1% level.

[21] One interesting question is who are the main exporters of the new products exported by Colombia to the United States. In the Appedix 2 we include Table A2.1 which lists the countries with the larger United States' imports for these products. China has the largest percentage share of the United States' imports in 26% of these products. Further, in 64% of the cases, China appears among the five exporter with the larger shares. The overlapping between Colombia's new exports and China's position has been increasing over time. Whether and what kind of implications this would have for Colombia depends, among other things, on the degree of differentiation of Colombian products, which, in turn, is determined by the production technology used and the human capital available. Mexico and Canada, tow countries with a FTA with the United States, and, to less extent, Germany and Italy, are also important exporters of those new products exported by Colombia to the United States.

machinery and mechanical appliances; and parts thereof. Even though the number of goods exported by this sector grew from 57 to 117 between 1996 and 2005, it represented only 13% of the total number of goods in the chapter.

The number of products exported by Mexico to the United States expanded impressively following the reduction in the tariffs faced in this market in the first half of the 1990s to reach 5041 in 1999, but it stagnated in the last years (Figure 5). Similar to Colombia, the proportion of chapters with no exported goods fell from 1990 to 2005. Note that this proportion is substantially lower for Mexico (Figure 6) Also in this case, the number of exported products increased in almost all chapters, with three outstanding sectors: nuclear reactors, boilers, machinery and mechanical appliances; parts thereof (538 products); electrical machinery and equipment and parts thereof (325 products); and articles of apparel and clothing accessories, not knitted or crocheted (339 products) (Figure 7, left and right). Two of these sectors coincide with those identified in Colombia. It can be observed that Mexico exhibits larger diversification in these sectors, especially in machinery.

Chile has a lower degree of export diversification than Colombia. The total number of products exported by Chile to the United States was 977 in 2005 (50% of that of Colombia). It should be noticed, however, that this number has been increasing since 2000, precisely the year in which Chile and the United States initiated negotiations towards the free trade agreement that entered into force in 2004 (see Figure 8). The number of chapters with no positive exports decreased markedly between 1990 and 2005, but it is still larger than in Colombia (Figure 9). Further, some sectors witnessed declines in the number of good they exported (Figure 10, left). The number of products exported to the United States has notoriously expanded in nuclear reactors, boilers, machinery and mechanical appliances, and parts thereof, from 27 in 1990 to 107 in 2005.

Can these developments be explained by trade policy and, more specifically, by market access conditions in the United States as determined by tariffs? The following sections provide more formal evidence in this regard. In particular, the next section describes the empirical methodology and Section 5 discusses the estimation results.

4. Empirical Strategy

As discussed before, in the existing literature two main empirical approaches have been used to undercover the link between trade policy and export diversification: simulations based on

calibrated models and econometrics. In this paper, we pursue the second strategy.

In particular, we are interested in assessing whether trade policy affects exports of new products. Two indicators are used to measure these exports: the number of exported products and a binary variable taking a value of one if the country exports a products and zero otherwise. Following Debaere and Mostashari (2005), trade policy will be proxied by two variables, the tariff and the (inverse) preference margin faced by the country in the United States market, both measured in terms of *ad-valorem* equivalents. Formally:

$$tariff_{cit} = ln(1 + own\_ave\_tariff_{cit}) \qquad (1)$$

$$preference_{cit} = ln\left(\frac{1 + own\_ave\_tariff_{cit}}{1 + row\_ave\_tariff_{cit}}\right) \qquad (2)$$

where $own\_ave\_tariff_{cit}$ is the estimated *ad valorem* equivalent tariff faced by county *c* on product *i* in year *t* and $row\_ave\_tariff_{cit}$ is the trade-weighted tariff of other countries (rest of the world) with the weights given by the trade shares from 1989. The total effect of the tariff faced by a country, holding constant all other countries' tariffs, will be then given by the sum of the estimated coefficients on these two variables (see Debaere and Mostashari, 2005).

We perform two main econometric exercises. First, we examine the impact of tariff and tariff preferences on the total number of products exported by each country to the United States over the period 1989-2005 and, for selected countries, that of these variables on the number of products exported by chapter over the same and shorter sample periods. The dependent variable is here a count variable and a Poisson model will be therefore used (see Greene, 1997). Tariffs will be aggregated at the country and chapter level, respectively, using simple and weighed averages.

Second, we investigate the effect of the aforementioned variables on the probability to export a particular product at the HS-10 digit level to the United States over the above mentioned lapse for selected countries. Thus, differently from Debaere and Mostashari (2005), we will perform probit estimations without pooling countries for the reasons discussed in Section2. Tariffs will be considered at the highest disaggregation level.

In all cases, we are dealing with panel data. The individuals of the panels are countries, chapters, and products, respectively, and the frequency of the data is annual. Hence, two main econometric issues must be addressed when estimating the relationships of interest. First, these relationships are intrinsically dynamic, so lagged dependent variables should be included among

the explanatory variables. Specifically, due to the presence of sunk costs, the number of products exported or whether a particular product is exported in a certain year depend on the value what has happened the previous year(s) (see Roberts and Tybout, 1997). Second, unobserved heterogeneity can be anticipated and should therefore be controlled for. It is well known that estimating dynamic panel data models with unobserved effects is challenging because it requires to properly solving the initial conditions problem.[22] Further, resolving this problem is substantially more difficult in nonlinear models. Here, to handle with this issue, we follow the approach proposed by Wooldridge (2005). This approach consists of modeling the distribution of the unobserved effect conditional on the initial value and any exogenous explanatory variables and estimating a random effects model by conditional maximum likelihood.

We now turn to sequentially formalizing the preceding arguments. We first estimate dynamic random effects Poisson models to identify the impact of trade policy on the total number of products exported by country and that of products exported by chapter for individual countries. Consider first the case where countries are the individuals of the panel and assume that the variable n_{ct} given $(n_{ct-1},...,n_{c0},z_c,\mu_c)$ has a Poisson distribution with mean $E(n_{ct}|n_{ct-1},...,n_{c0},z_c,\mu_c)=\mu_c exp(z_c\delta+g(n_{ct-1})\lambda)$.[23] In particular:

$$\begin{aligned} &E(n_{ct}|n_{ct-1t},..,n_{c0},tariff_{c1i},...,tariff_{ct},preference_{c1i},...,preference_{it},\mu_c)= \\ &=\mu_c exp(\tau_t+g(n_{ct-1})\lambda+\rho tariff_{ct}+\gamma preference_{ct}+\mu_c) \end{aligned} \qquad (3)$$

where t=1,…,T and 1 corresponds to 1990 (1996) and T corresponds to 2005; the initial time period, t=0, is 1989 (1995); n_{ct} is the total number of products exported by country c to the United States in year t; *g(.)* is a function that allows the lagged dependent variable to appear in a flexible fashion; and τ_t are unrestricted year intercepts. The unobserved effect μ_c is assumed to satisfy $\mu_c=v_c exp(\alpha_0+r_{c0}\alpha_1+z_c\alpha_2)$, where r_{c0} is a vector of functions of n_{c0} and z_c is a row vector of all (non-redundant) explanatory variables in all time periods, which are included to allow for partial

[22] Unless data from the start of the process are available, this amounts to specificying the relationship between the first observation in the sample and the individual specific effects. This depends on the model parameters and the distribution of the explanatory variables in periods before the first sample year, which is generally unknown (see Hu, 2002).

[23] A standard Poisson probability specification is as follows $p(n_{jt}|X_{jt},\mu_j)=\left[exp(-\pi_{jt}exp(\mu_j))(\pi_{jt}exp(\mu_j))^{n_{jt}}\right]/n_{jt}!$ and the joint density of $(n_{j1},...,n_{jT})$ and μ_j is $p(n_{j1},...,n_{jT},\mu_j|X_{j1},...,X_{jT})=p(n_{j1},...,n_{jT}|X_{j1},...,X_{jT})h(\mu_j)=\prod_t(\pi_{jt}^{n_{jt}}/n_{jt}!)exp(-exp(\mu_j\sum\pi_{jt}))exp(\mu_j\sum n_{jt})h(\mu_j)$ (see Hausman et al., 1984).

correlation between these variables and the unobserved effect in all years.[24] The specification for the Poisson model when the analysis is performed by chapters at the country level is similar.

To determine the influence of trade policy on the probability to export a good, we estimate the following dynamic random effects probit model for country *c*:

$$P(x_{cit}=1|x_{cit},...,x_{ci0},tariff_{ci1},...,tariff_{cit},preference_{ci1},...,preference_{cit},\mu_{ci})= \\ =\Phi(\tau_{ct}+\lambda_c x_{cit-1}+\rho_c tariff_{cit}+\gamma_c preference_{cit}+\mu_{ci}) \qquad (4)$$

where *t*, *T*, and τ have been already defined; and x_{cit} is a binary variable taking the value of one if country *c* exports product *i* to the United States in year *t* and zero otherwise. The unobserved effect μ_{ci} is assumed to satisfy $\mu_{ci}|x_{ci0},z_{ci}\sim N(\alpha_0+\alpha_1 x_{ci0}+z_{ci}\alpha_2,\sigma_v^2)$ where z_{ci} is a again a row vector of all (non-redundant) explanatory variables in all time periods.[25]

5. Results

Tables 4 and 5 present results from a dynamic random effects Poisson estimation, where the dependent variable is the total number of products exported by each country to the United States, and the key explanatory variables, tariffs and preferences, are constructed as weighted averages with 1989 export shares as weighting factors, so that they are potentially less affected by endogeneity problems (Equation 3).[26] We find that that lower average tariffs tend to be associated with a larger number of good being exported.

Larger average preferential margins also seem to favor a widening of the range of exported products (Table 4, first column).[27] Results hold for the whole sample period and shorter sub-periods as well (Table 5). Note that, in addition to the country random effects accounting for country heterogeneity, the specification used also includes the number of products exported in the initial year and in the previous year, vectors of tariff and tariff preference in all years, and time dummies to control for the impact of those variables that are common across countries.

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24 μ_c is also assumed to be independent of $(n_{c0},z_c)$and distributed $Gamma(\eta,\eta)$. This implies that, for each *t*, $n_{ct}|(n_{ct-1},...,n_{c0},z_c,v_c)$has a Poisson distribution with mean $v_c exp(\rho tariff_{ct}+\rho preference_{ct}+g_{ct-1}\lambda+\alpha_0+r_{c0}\alpha_1+z_c\alpha_2)$. Applying the product rule, the density of $(n_{c1},...,n_{cT})|(z_c,n_{c0},v_c)$ can be obtained and then integrating v_{ci} out of $Gamma(\eta,\eta)$, a density with the usual random effects Poisson form with $Gamma(\eta,\eta)$ heterogeneity is derived.

25 In particular, μ_{ci} is specified as follows: $\mu_{ci}=\alpha_{c0}+\alpha_{c1}x_{ci0}+z_{ci}\alpha_{c2}+v_{ci}$, where $v_{ci_i}$is independent of (x_{ci00},z_{ci}) and distributed as $N(0,\sigma_v^2)$. In this case, x_{cit} given $(x_{cit-1},...,x_{ci0},z_{ci},v_{ci})$ follows a probit model with response probability: $\Phi(\lambda_c x_{cit-1}+\rho_c tariff+\gamma_c preference+\alpha_{c0}+\alpha_{c1}x_{ci0}+z_{ci}\alpha_2+v_{ci})$.

26 Weighted averages with 1989 shares as weighting factors are potentially less affected by endogeneity problems and are therefore our preferred choice, so most estimations presented below correpond to averages with these weights.

27 Recall that preference is indeed the inverse of preference (see Equation 2).

Further, in the second column of Table 4, we add relevant exporter-specific control variables suggested by the economic literature such as gross domestic product (see Hummels and Klenow, 2005), gross domestic product per capita, gross domestic product per capita squared (see Imbs and Wacziarg, 2003; and Cadot et al., 2006), real exchange rate, and distance (see Hillberry and Hummels, 2005).[28] Estimation results controlling for these variables confirm that trade policy has played a non-minor role in shaping export diversification patterns across countries.[29]

The next tables, Tables 6 and 7, focus on Colombia and report estimates from a similar dynamic random effects Poisson model, but now where the dependent variable is the number of products exported by Colombia to the United States in each chapter of the HTS. As mentioned above, our core sample period is 1996-2005, but we also consider alternative period with different lengths and symmetric in size but covering different years. The main conclusion we can draw from these estimations is that lower average tariffs faced in the United States have favored exports of more goods. Tariff preferences do not seem to have a similar significant impact. These findings are robust across weighting schemes.

The previous estimates can be used to determine the number of products that Colombia would export to the United States in each chapter if all tariffs were set to zero and everything else, including market access conditions faced by other countries and relative production costs, remained unchanged in their 2005 levels.[30] Figure 11 shows simple averages of tariffs faced by Colombia in the United States in 2005 for those chapters with averages larger than zero, while Figure 12 displays the actual number of products exported by Colombia to this market in 2005 and the amount the country had exported if all tariffs had been zero for the same chapters, as

[28] Data on GDP and GDP per capita correspond to the purchasing power parity measure and are expressed in constant dollars of the year 2000. These data have been taken from the World Bank's World Development Indicators (WDI). Data on United States and partner countries' consumer price indexes and the exchange rate between the domestic currencies and the US dollar, which are employed to compute the real exchange rate, come also from the WDI. Finally, we use as distance measure the arithmetic mean of the bilateral distances between the largest cities of each exporter country and the United States calculated by CEPII. These inter-city distances are weighted by the share of the cities in the overall country population. The aforementioned additional explanatory variables, but real exchange rate, are added in natural logarithms terms.

[29] It should be noted that the vectors of the time-varying variables in all years corresponding to the additional explanatory variables could not be incorporated along them as suggested by Wooldridge (2005) because the complexity of the resulting specification led to non convergence in the estimation procedure. Hence, we have estimated a specification including the initial value and one year lag of the dependent variable, tariffs, preferences, the corresponding vector of these variables in all years, the control variables described above, and year-fixed effects.

[30] Preference margins are accordingly adjusted (assuming that, on average, tariff faced by other countries do not change). Note that estimated coefficients are also assumed to remain stable after complete trade liberalization takes place.

derived from estimates using simple averages of tariffs and preferences as explanatory variables. Significant increases would register in articles of apparel and clothing accessories, not knitted or crocheted, and knitted or crocheted as well. Goods exported in these chapters might rise by 30%. A similar percentage increase would take place in man-made filaments. Overall, the number of products exported would expand by approximately 10%, i.e., 200 products.[31]

How does the Colombia experience compare with that of the two Latin American countries with an already in place free trade agreement with United States, Mexico and Chile? This is informed in Table 8. In particular, this table presents the results of dynamic random effects Poisson estimations at the chapter level for symmetric (10 years), rolling periods. While in Chile there is no clear time pattern and tariffs are only significant in some periods, in Mexico there is an evident declining trend, so average tariffs have been highly significant in explaining the number of goods exported by Mexico to the United States, but their relative importance has been diminishing over time. Figure 5, which depicts the evolution of average tariffs and the total number of products exported by Mexico, is useful to understand what may be driving the observed pattern. This number increased rapidly when tariff started to be reduced and then stagnated once they reached very low levels (below 1%) in the second half of the 1990s. This may indicate that tariff removal has decreasing returns in terms of export diversification. In other words, getting better access to a foreign market through tariff cuts helps to increase the extensive margin of exports, but up to a certain point. When tariffs are low enough, other factors become more important to push diversification further. These factors may include, among others, physical infrastructure, which is a key determinant of transport costs (see Venables and Limao, 2001); institutional infrastructure related to trade facilitation (e.g., customs); logistics; and factor endowments determining the ability of the country to be active in certain sectors (e.g., human capital in industries producing high tech or differentiated goods).[32] Without substantial improvements in those areas, the impulse coming from trade liberalization comes to an end and may be even partially reverted as other countries either receive similar tariff treatment or

[31] Similar predictions performed based on estimations using weighted averages of tariffs and preferences as explanatory variables (both with contemporaneous and 1989 shares as weighting factors) suggest that the expansion in the number of exported goods could be larger. More specifically, the set of exported products might rise by 40%. The chapters with the largest increases would be: articles of apparel and clothing accessories, not knitted or crocheted and knitted or crocheted; machinery and mechanical appliances; parts thereof; plastics and articles thereof; other made up textile articles; sets; worn clothing and worn textile articles, rags; footwear, gaiters and the like; parts of such articles; and articles of iron or steel.

[32] Using bilateral product level data, Besedes and Prusa (2006) show that differentiated goods are more likely to survive (i.e., to be traded longer) in the United States market than homogeneous goods.

precisely implement reforms that strengthen the competitive position of their firms thus eroding the advantage of having lower tariffs. [33]

In the final sets of tables, Tables 9-12, we report estimations results based on a dynamic random effects Probit model (Equation 4), where the dependent variable is a binary indicator taking the value of one if the country exports a particular 10-digit HTS product to the United States and zero otherwise. In this setting, the random effects control for heterogeneity across products and the time dummies for all factors that are common across them.

Estimates in Tables 9-11 suggest that lower tariffs faced in the United States have been consistently associated with a higher probability that Colombia exports a product to this market and therefore with export diversification. This remains valid across alternative sample periods and regardless whether we use contemporaneous tariffs, lagged tariffs (to account for the fact that tariffs may affect export decisions with a lag), or lead tariffs (to account for possible anticipation effects). There is also evidence that tariff preferences seem to have promoted exports of more products, but again this effect is less robust.

To assess the economic significance of the impact of tariffs and preferences, we resort to the corresponding marginal effects. For the period 1996-2005, these effects are –0.119 and –0.106, respectively, when derivatives are evaluated at the mean of the explanatory variables. This implies that a one percentage decrease in the tariffs faced in the United States, holding constant the tariffs applied on other countries' goods, increases the probability that Colombia exports a good by almost 0.12 for the "average" good.

Estimations for Mexico and Chile based on symmetric 10-year sample periods are shown in Table 12. They allow us to draw similar lessons from those based on the Poisson model. Tariffs have been important to explain Mexican export activity at the product level, but their significance has been declining over time. Hence, once again, reduced tariffs foster diversification, but this effect vanishes out over time. Note that, in this case, tariff preferences enjoyed in the United States have been also initially significant for exports of new goods and, like tariffs, they ceased to be relevant in the last years. In Chile, tariffs appear as a significant

[33] Thus, for example, the removal of quotas on a large fraction of textile and cloth exports may affect countries' relative competitive positions and might have an impact on Colombia's actual and potential degree of diversification in two important sectors such as articles of apparel and clothing accessories, not knitted or crocheted; articles of apparel and clothing accessories, knitted or crocheted. In this regard, it can be mentioned for the sake of illustration that China's share of United States' imports of these sectors increased from 13% to 22% and from 7% to 14%, respectively, between 2004 and 2005.

determinants of exports in the two initial periods (1990-1999 and 1991-2000) and in last period considered (1996-2005). Interestingly, this last period includes two years under the free trade agreement between Chile and United States, which therefore seems to have strengthened the movement towards export diversification. Hence, from the experiences of Mexico and Chile, we can conclude that Colombia may witness a further expansion in the extensive margin of exports as a result of the implementation of the free trade agreement with the United States. Nevertheless, this favorable impact would eventually disappear over time as tariffs reach and remain at sufficiently low levels. Reforms in other important areas such as physical and institutional infrastructure would then become key factors for additional diversification.

6. Concluding Remarks

What should Colombia expect from the FTA with the United States? Many papers have been written to address this highly relevant policy question, but most of them are virtually silent on one import dimension in this debate, namely, the extensive margin of trade. Further, the existing empirical literature suggests that lower tariffs and larger preferential margins favor export diversification, but the evidence is either country unspecific or exclusively based on NAFTA as such and the studies on which it is based have some methodological flaws. We have aimed at contributing to the policy discussion on the effects of a FTA and filling the gaps in the literature, by essentially focusing on a still unexplored country, Colombia, and using highly disaggregated trade data and an estimation strategy recently proposed in the literature that allows us to overcome several critical econometric problems and thus obtain reliable estimates.

We find that tariff cuts have helped Colombia to diversify its exports to the United States. More specifically, lower tariffs have been associated with both a larger number of products exported by chapter and a higher probability of exporting a particular product. Both predictions based on estimates for Colombia and the evidence for Mexico and Chile suggest that the FTA is likely to induce further diversification. However, this effect will not last forever. After some year with tariffs in already low levels, other factors will become substantially more important if additional increases in the extensive margin of trade are to be achieved. These factors may include the physical infrastructure, the institutional infrastructure linked to trade facilitation, logistic conditions, and human capital endowments. Without improvements in these key areas, not only the perspectives of increased diversification, but also what has been already reached in this regard, may be at stake, as other countries may end up getting similar tariff treatment or

putting in place reforms that foster the competitiveness of their firms and therefore neutralize tariff advantages that their pairs may have in certain markets. The implementation of a well designed domestic agenda that systematically covers all these dimensions is then called for to maximize the gains from the opportunities generated by free trade agreements through improved market accesses.

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Table 1

Colombia Relative Importance of the New Products				
Year	New Product Definition 1		New Product Definition 2	
	Share of New Products in Total Number of Products	Share of Exports of New Products in Total Exports	Share of New Products in Total Number of Products	Share of Exports of New Products in Total Exports
1996	12.39	0.30	12.39	0.30
1997	11.97	3.93	12.59	3.93
1998	11.20	0.29	12.70	0.30
1999	13.02	1.08	15.12	1.19
2000	13.51	4.61	16.37	4.67
2001	10.50	0.29	13.79	0.39
2002	9.39	0.20	13.30	1.51
2003	9.86	0.24	13.73	0.28
2004	9.26	0.14	13.21	0.24
2005	9.06	0.24	13.25	0.30

The table reports the percentage share of new products in the total number of products exported and that of the exports of those goods in total exports for each year in the period 1996-2005. New products are alternatively defined as those products that were not exported from 1989 to the year before the one is being considered (Definition 1) or those products that were not exported in the seven previous years (Definition 2).

Table 2

Colombia Relative Importance of the New Products by Chapter					
Chapter		1996		2005	
		Products	Exports	Products	Exports
37	Photographic or cinematographic goods	100.00	100.00	100.00	100.00
60	Knitted or crocheted fabrics	100.00	100.00	100.00	100.00
79	Zinc and articles thereof	0.00	0.00	100.00	100.00
53	Other vegetable textile fibers; paper yarn and woven fabric of paper yarn	0.00	0.00	66.67	56.48
31	Fertilizers	0.00	0.00	66.67	16.91
55	Man-made staple fibers	40.00	1.92	58.33	47.16
52	Cotton	23.33	6.53	57.89	22.95
86	Railway or tramway locomotives, fixtures and fittings and parts thereof	0.00	0.00	50.00	97.59
59	Impregnated, coated, covered or laminated textile fabrics	100.00	100.00	40.00	0.80
91	Clocks and watches and parts thereof	40.00	3.26	37.50	12.77
87	Vehicles other than railway or tramway rolling stock, and parts thereof	16.67	0.52	33.33	16.03
35	Albuminoidal substances; modified starches; glues; enzymes	0.00	0.00	33.33	2.76
38	Miscellaneous chemical products	50.00	0.75	33.33	0.52
18	Cocoa and cocoa preparations	0.00	0.00	33.33	0.12
27	Mineral fuels, mineral oils and products of their distillation	20.00	0.25	33.33	0.04
22	Beverages, spirits and vinegar	30.00	10.89	30.00	9.78
85	Electrical machinery and equipment and parts thereof	25.93	6.99	28.26	0.53
90	Optical, measuring, medical instruments and apparatus; parts thereof	31.82	17.07	25.58	8.90
78	Lead and articles thereof	50.00	13.15	25.00	12.25
51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	25.00	0.87	25.00	4.71
57	Carpets and other textile floor coverings	0.00	0.00	25.00	2.59
58	Special woven fabrics; tufted textile fabrics; lace, tapestries; trimmings	50.00	1.01	23.08	0.64
25	Salt; sulfur; earths and stone; plastering materials, lime and cement	0.00	0.00	23.08	0.16
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	29.82	20.99	22.22	2.90
29	Organic chemicals	14.29	1.78	21.74	21.97
20	Preparations of vegetables, fruit, nuts or other parts of plants	12.00	10.38	20.93	2.70
44	Wood and articles of wood; wood charcoal	12.50	2.32	20.83	1.39
76	Aluminum and articles thereof	14.29	0.05	20.83	0.73
83	Miscellaneous articles of base metal	25.00	3.16	20.00	1.24

70	**Glass and glassware**	13.33	0.17	19.35	1.18
82	**Tools, implements, cutlery, spoons and forks, of base metal; parts thereof**	9.52	2.49	18.75	3.23
73	**Articles of iron or steel**	15.38	1.93	18.64	5.87
40	**Rubber and articles thereof**	40.00	69.45	18.18	11.45
46	**Manufactures of straw, of esparto or of other plaiting materials; basketware**	0.00	0.00	16.67	4.46
09	**Coffee, tea, maté and spices**	10.00	0.00	16.67	0.01
30	**Pharmaceutical products**	20.00	0.32	14.29	0.60
97	**Works of art, collectors' pieces and antiques**	0.00	0.00	14.29	0.11
11	**Products of the milling industry; malt; starches; inulin; wheat gluten**	0.00	0.00	14.29	0.06
56	**Wadding, felt ; special yarns, twine, cordage, cables and articles thereof**	33.33	61.62	14.29	0.03
33	**Essential oils and resinoids; perfumery, cosmetic or toilet preparations**	20.00	7.22	13.04	0.36
28	**Inorganic chemicals; organic or inorganic compounds of precious metals**	60.00	0.73	12.50	0.11
95	**Toys, games and sports requisites; parts and accessories thereof**	5.88	1.47	12.00	0.45
32	**Tanning or dyeing extracts; dyes, pigments, paints, varnishes, putty and mastics**	50.00	1.78	11.11	0.10
61	**Articles of apparel and clothing accessories, knitted or crocheted**	3.10	0.34	10.14	0.07
34	**Soap, organic surface-active agents, washing preparations**	20.00	2.55	10.00	0.18

The table reports the percentage share of new products in the total number of products exported and that of the exports of those goods in total exports by chapter for 1996 and 2005. New products are defined as those products that were not exported in the seven previous years (Definition 2). Only those chapters for which the percentage share of new products is at least 10% of the total number of products exported in the corresponding chapter in 2005 are shown.

Table 3

Colombia - Number of Products with Positive Exports as a Percentage of the Total Number of Products by Chapter				
Chapter		**1996**	**2005**	**2005-1996**
49	Printed books, newspapers, pictures and other products of the printing industry	64.71	76.47	11.76
65	Headgear and parts thereof	44.44	72.22	27.78
97	Works of art, collectors' pieces and antiques	63.64	63.64	0.00
94	Furniture; bedding, mattresses, mattress supports	27.63	63.16	35.53
42	Articles of leather; saddlery and harness; travel goods, handbags	43.04	58.23	15.19
61	Articles of apparel and clothing accessories, knitted or crocheted	33.25	55.93	22.68
69	Ceramic products	35.48	54.84	19.35
62	Articles of apparel and clothing accessories, not knitted or crocheted	37.25	52.94	15.69
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	15.79	52.63	36.84
21	Miscellaneous edible preparations	30.00	50.00	20.00
18	Cocoa and cocoa preparations	28.57	42.86	14.29
63	Other made up textile articles; sets; worn clothing and worn textile articles; rags	25.37	42.54	17.16
71	Natural or cultured pearls, precious or semi-precious stones, precious metals	30.68	38.64	7.95
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	16.39	37.70	21.31
06	Live trees and other plants; bulbs, roots and the like; cut flowers	34.38	37.50	3.13
46	Manufactures of straw, of esparto or of other plaiting materials	18.75	37.50	18.75
19	Preparations of cereals, flour, starch or milk; bakers' wares	21.74	34.78	13.04
57	Carpets and other textile floor coverings	0.00	34.78	34.78
17	Sugars and sugar confectionery	33.33	33.33	0.00
43	Furskins and artificial fur; manufactures thereof	0.00	33.33	33.33
55	Man-made staple fibers	1.53	3.67	2.14
88	Aircraft, spacecraft, and parts thereof	0.00	3.33	3.33
74	Copper and articles thereof	5.38	3.23	-2.15
16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	1.06	3.19	2.13
92	Musical instruments; parts and accessories of such articles	1.89	1.89	0.00
80	Tin and articles thereof	9.09	0.00	-9.09
23	Residues and waste from the food industries; prepared animal feed	4.76	0.00	-4.76
10	Cereals	4.17	0.00	-4.17
75	Nickel and articles thereof	4.17	0.00	-4.17
01	Live animals	0.00	0.00	0.00

02	Meat and edible meat offal	0.00	0.00	0.00
04	Dairy produce; birds eggs; natural honey; edible products of animal origin	0.00	0.00	0.00
26	Ores, slag and ash	0.00	0.00	0.00
36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations	0.00	0.00	0.00
41	Raw hides and skins (other than furskins) and leather	0.00	0.00	0.00
45	Cork and articles of cork	0.00	0.00	0.00
47	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper	0.00	0.00	0.00
67	Prepared feathers and down and articles made of feathers or of down	0.00	0.00	0.00
81	Other base metals; cermets; articles thereof	0.00	0.00	0.00
93	Arms and ammunition; parts and accessories thereof	0.00	0.00	0.00

The table presents the 20 sectors with the higher percentage shares and the 20 sectors with the lower percentage shares (ranked in descending order of 2005 shares).

Table 4

All Countries Dynamic Panel Poisson Estimates (1990-2005)				
Weighted Averages				
Period	**Without Control Variables**		**With Control Variables**	
	Tariff	**Preference**	**Tariff**	**Preference**
1990-2005	-0.224**	-24.341***	-1.004***	-10.690***
	(0.098)	(2.898)	(0.102)	(2.980)

The table presents estimates of Equation (3) based on a panel whose dimensions are countries and years. The dependent variable is the number of exported products by chapter and this number has been determined considering only those products that are present over the whole sample period. Estimations have been performed as suggested by Wooldridge (2005). Number of exported products in the first sample year, number of exported products in the previous year, vectors of tariffs and preferences for each sample year, and year fixed-effects are thus included, but not reported. Averages are weighted by the 1989 countries and product export shares. In the second column, control variables suggested by the economic literature are incorporated into Equation (3): the (natural logarithm of) gross domestic product; the (natural logarithm of) gross domestic product per capita and its square; the real exchange rate with the United States; and the (natural logarithm of) weighted distance to United States. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 5

All Countries Dynamic Panel Poisson Estimates (1990-2005)		
Weighted Averages Without Additional Control Variables		
Period	**Tariff**	**Preference**
1990-2005	-0.224**	-24.341***
	(0.098)	(2.898)
1991-2005	-0.021	-25.260***
	(0.102)	(3.051)
1992-2005	-0.935***	-14.262***
	(0.104)	(3.268)
1993-2005	-0.577***	-13.892***
	(0.122)	(3.502)

The table presents estimates of Equation (3) for different time periods, based on a panel whose dimensions are countries and years. The dependent variable is the number of exported products by chapter and this number has been determined considering only those products that are present over the whole sample period. Estimations have been performed as suggested by Wooldridge (2005). Number of exported products in the first sample year, number of exported products in the previous year, vectors of tariffs and preferences for each sample year, and year fixed-effects are thus included, but not reported. Averages are weighted by the 1989 countries and product export shares. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 6

Colombia Dynamic Panel Poisson Estimates (1994-2005) – Different Sub-periods		
Simple Averages		
Period	**Tariff**	**Preference**
1994-2005	-1.593**	1.511
	(0.683)	(1.390)
1995-2005	-1.857***	1.601
	(0.702)	(1.763)
1996-2005	-2.089***	-1.645
	(0.714)	(2.541)
1997-2005	-2.036***	-2.810
	(0.731)	(3.615)
1998-2005	-2.262***	-1.224
	(0.772)	(4.168)
Weighted Averages		
Period	**Tariff**	**Preference**
1994-2005	-1.762*	0.795
	(0.966)	(1.319)
1995-2005	-2.409**	-0.466
	(1.072)	(1.490)
1996-2005	-2.137*	-1.593
	(1.105)	(1.881)
1997-2005	-1.909	-3.493
	(1.172)	(2.360)
1998-2005	-2.224*	-4.002
	(1.234)	(2.736)

The table presents estimates of Equation (3) for different time periods, based on a panel whose dimensions are chapters of the HS classification and years. The dependent variable is the number of exported products by chapter and this number has been determined considering only those products that are present over the whole sample period. Estimations have been performed as suggested by Wooldridge (2005). Number of exported products in the first sample year, number of exported products in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. In the upper panel, simple averages of tariffs faced by Colombia at the product level and that of preferences are used, whereas in the lower panel averages are weighted by Colombia's 1989 exports shares. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 7

Colombia Dynamic Panel Poisson Estimates (1994-2005) - Different Symmetric Sub-periods		
Simple Averages		
Period	**Tariff**	**Preference**
1994-2003	-0.751	1.944
	(1.011)	(1.504)
1995-2004	-1.919**	1.490
	(0.792)	(1.839)
1996-2005	-2.089***	-1.645
	(0.714)	(2.540)
Weighted Averages		
Period	**Tariff**	**Preference**
1994-2003	-1.049	1.616
	(1.392)	(1.589)
1995-2004	-2.717**	-0.680
	(1.155)	(1.604)
1996-2005	-2.137*	-1.593
	(1.104)	(1.881)

The table presents estimates of Equation (3) for different (symmetric) time periods, based on a panel whose dimensions are chapters of the HS classification and years. The dependent variable is the number of exported products by chapter and this number has been determined considering only those products that are present over the whole sample period. Estimations have been performed as suggested by Wooldridge (2005). Number of exported products in the first sample year, number of exported products in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. In the upper panel, simple averages of tariffs faced by Colombia at the product level and that of preferences are used, whereas in the lower panel averages are weighted by Colombia's 1989 exports shares. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 8

Mexico and Chile Dynamic Panel Poisson Estimates (1990-2005) – Different Sub-periods				
Simple Average				
Period	**Mexico**		**Chile**	
	Tariff	**Preference**	**Tariff**	**Preference**
1990-1999	-3.853***	0.967	-3.962*	-0.569
	(0.300)	(0.937)	(2.109)	(2.760)
1991-2000	-3.446***	1.379	-3.759	2.438
	(0.294)	(0.888)	(2.538)	(2.815)
1992-2001	-3.081***	1.657*	-5.139	3.113
	(0.298)	(0.871)	(4.818)	(3.454)
1993-2002	-2.733***	1.299	-11.871**	0.461
	(0.318)	(0.869)	(4.912)	(3.510)
1994-2003	-1.465***	1.143	-15.350***	-1.521
	(0.391)	(0.899)	(4.936)	(3.583)
1995-2004	-0.307	1.380	0.125	4.879
	(0.420)	(1.003)	(0.739)	(2.937)
1996-2005	-0.035	1.729	-0.928	6.885*
	(0.472)	(1.206)	(0.579)	(4.056)
Weighted Average				
Period	**Mexico**		**Chile**	
	Tariff	**Preference**	**Tariff**	**Preference**
1990-1999	-1.769***	0.189	-2.668*	-5.824***
	(0.210)	(0.677)	(1.424)	(2.113)
1991-2000	-1.578***	0.206	-4.323**	-5.465**
	(0.207)	(0.691)	(1.747)	(2.153)
1992-2001	-1.485***	-0.147	-1.696	-4.113
	(0.214)	(0.671)	(3.173)	(2.522)
1993-2002	-1.389***	-0.438	-0.008	-1.451
	(0.232)	(0.631)	(3.262)	(2.710)
1994-2003	-0.634**	-0.245	-0.189	-0.713
	(0.286)	(0.627)	(3.342)	(2.998)
1995-2004	-0.086	-0.208	0.193	1.978
	(0.338)	(0.719)	(0.629)	(2.607)
1996-2005	0.284	-1.372*	-1.089**	-1.202
	(0.473)	(0.830)	(0.491)	(3.162)

The table presents estimates of Equation (3) for different (symmetric) time periods, based on a panel whose dimensions are chapters of the HS classification and years. The dependent variable is the number of exported products by chapter and this number has been determined considering only those products that are present over the whole sample period. Estimations have been performed as suggested by Wooldridge (2005). Number of exported products in the first sample year, number of exported products in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. In the upper panel, simple averages of tariffs faced by the country at the product level and that of preferences are used, whereas in the lower panel averages are weighted by the country's 1989 exports shares. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 9

Selected Countries Dynamic Panel Probit Estimates (1996-2005)		
Country	**Tariff**	**Preference**
Colombia	-1.518***	-1.351*
	(0.448)	(0.718)
Chile	-0.941***	1.229
	(0.331)	(0.873)
Mexico	-0.502	0.430
	(0.428)	(0.514)

The table presents estimates of Equation (4) for the period 1996-2005, based on a panel whose dimensions are products at the 10-digit level of HS classification and years. The dependent variable is a binary variable taking the value of 1 if the country exports the product to the United States and 0 otherwise (only those products that are present over the whole sample period are considered). Estimations have been performed as suggested by Wooldridge (2005). Export status in the first sample year, export status in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 10

Colombia Dynamic Panel Probit Estimates (1994-2005) - Different Sub-periods		
Sub-periods with common final sample year		
Period	**Tariff**	**Preference**
1994-2005	-0.783**	-0.644
	(0.389)	(0.495)
1995-2005	-1.282***	-1.075***
	(0.423)	(0.600)
1996-2005	-1.518***	-1.351*
	(0.448)	(0.718)
1997-2005	-1.616***	0.004
	(0.472)	(1.068)
1998-2005	-1.625***	0.736
	(0.505)	(1.289)
Symmetric Sub-periods		
Period	**Tariff**	**Preference**
1994-2003	-0.282	-0.591
	(0.521)	(0.566)
1995-2004	-1.466***	-1.302**
	(0.461)	(0.628)
1996-2005	-1.518***	-1.351*
	(0.448)	(0.718)

The table presents estimates of Equation (4) for different time periods, based on a panel whose dimensions are products at the 10-digit level of HS classification and years. The dependent variable is a binary variable taking the value of 1 if Colombia exports the product to the United States and 0 otherwise (only those products that are present over the whole sample period are considered). Estimations have been performed as suggested by Wooldridge (2005). Export status in the first sample year, export status in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 11

Colombia Dynamic Panel Probit Estimates - Lag and Lead Variables (1996-2005)		
Period	**Tariff**	**Preference**
1 year Lag	-1.344***	-0.605
	(0.466)	(0.737)
1 year Lead	-1.536***	-0.811
	(0.485)	(1.068)

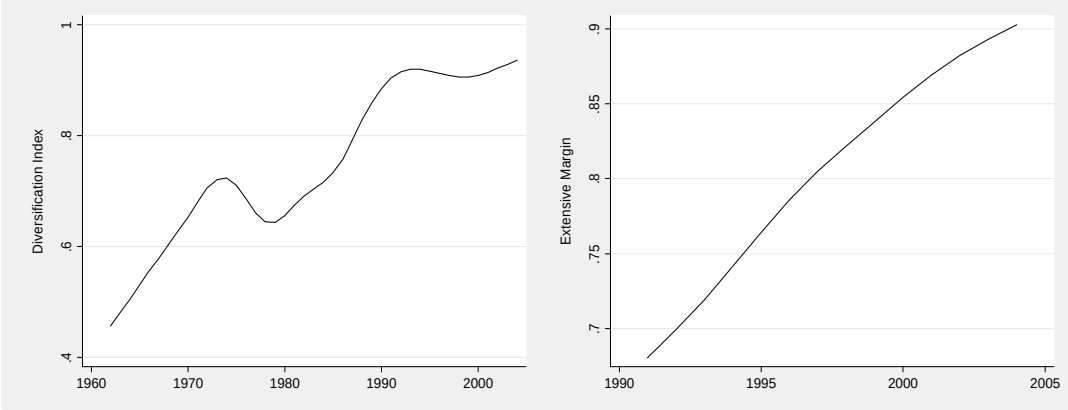
The table presents estimates of Equation (4) for the periods 1997-2005 (lag) and 1996-2004 (lead), based on a panel whose dimensions are products at the 10-digit level of HS classification and years. The dependent variable is a binary variable taking the value of 1 if Colombia exports the product to the United States and 0 otherwise (only those products that are present over the whole sample period are considered). Export status in year *t* is related to tariff and tariff preference in years *t-1* (lag) and *t+1* (lead) to account for differential timing effects and to control for possible endogeneity biases. Estimations have been performed as suggested by Wooldridge (2005). Export status in the first sample year, export status in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Table 12

Mexico and Chile Dynamic Panel Probit Estimates (1990-2005)				
Period	**Mexico**		**Chile**	
	Tariff	**Preference**	**Tariff**	**Preference**
1990-1999	-3.609***	-2.069***	-2.877***	-0.958
	(0.251)	(0.400)	(0.705)	(0.820)
1991-2000	-3.220***	-1.534***	-1.781**	-0.093
	(0.246)	(0.378)	(0.805)	(0.810)
1992-2001	-3.066***	-0.737**	-1.544	-0.129
	(0.252)	(0.369)	(1.118)	(0.909)
1993-2002	-3.174***	-0.611	-0.605	0.343
	(0.272)	(0.375)	(1.130)	(0.937)
1994-2003	-2.004***	-0.015	-0.659	0.069
	(0.331)	(0.391)	(1.163)	(0.973)
1995-2004	-0.860***	0.278	-0.302	0.983
	(0.375)	(0.439)	(0.447)	(0.789)
1996-2005	-0.502	0.430	-0.941***	1.229
	(0.428)	(0.514)	(0.331)	(0.873)

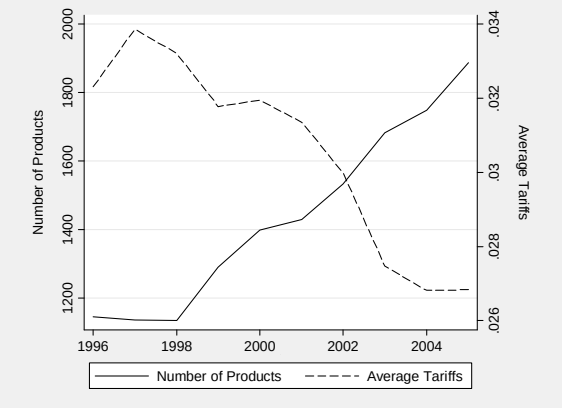
The table presents estimates of Equation (4) for different time periods, based on a panel whose dimensions are products at the 10-digit level of HS classification and years. The dependent variable is a binary variable taking the value of 1 if the countries exports the product to the United States and 0 otherwise (only those products that are present over the whole sample period are considered). Estimations have been performed as suggested by Wooldridge (2005). Export status in the first sample year, export status in the previous year, vectors of explanatory variables for each sample year, and year fixed-effects are thus included, but not reported. The estimated coefficient on tariffs corresponds to the total effect of tariffs as resulting from adding the estimated coefficients of own tariffs and preferences (see Debaere and Mostashari, 2005). Standard errors are shown in parentheses. *: significant at 10% level; **: significant at 5% level; and ***: significant at 1% level.

Figure 1
Diversification of Colombian Exports



The figure on the left shows the trend of the complement of the Herfindahl Index for Colombian exports at the 4-digit level of the SITC Revision 1 as obtained using the filter proposed by Hodrick and Prescott (1997), whereas that on the right presents the trend of the extensive margin as defined in Hummels and Klenow (1995) and calculated using data the 6-digit level of the HS.

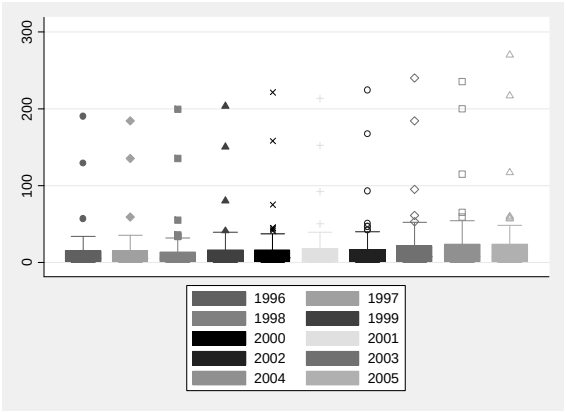
Figure 2
Average Tariff and Total Number of Products Exported by Colombia to the United States

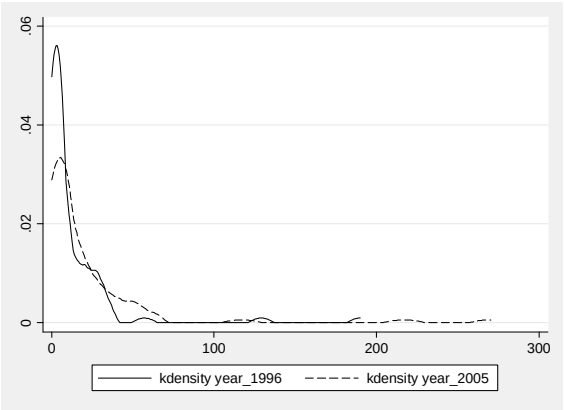


The figure shows the total number of products exported by Colombia to the United States and the (simple) average AVE tariff faced by Colombia in that market over the period 1996-2005.

Figure 3

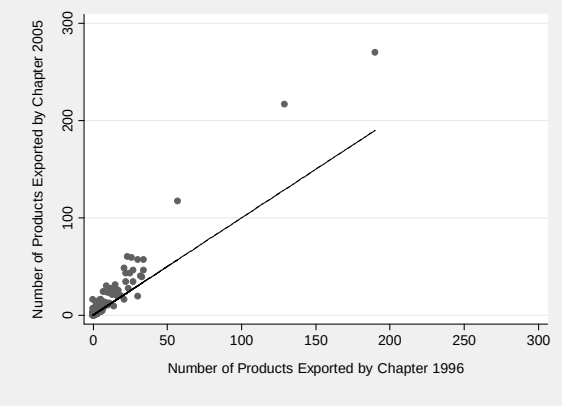
Distribution of Number of Products Exported by Colombia to the United States across Chapters, 1996-2005

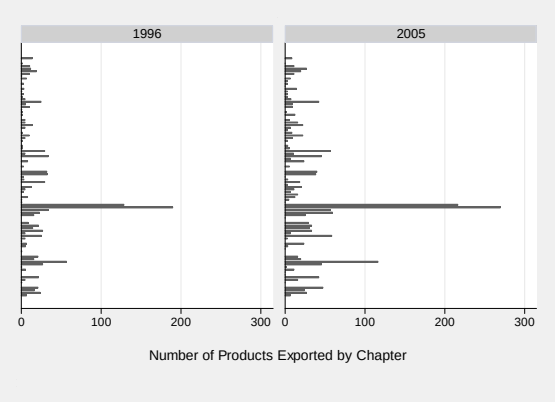




The figure on the left is a Box Plot showing the distribution of number of exported products across chapters for the period 1996-2005, whereas that on the right .presents kernel density estimates for 1996 and 2005 (using a Epanechnikov kernel).

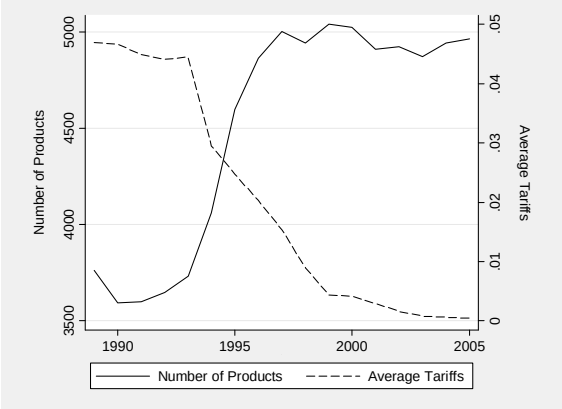
Figure 4
Number of Products Exported by Colombia to the United States, by Chapter, 1996 vs. 2005





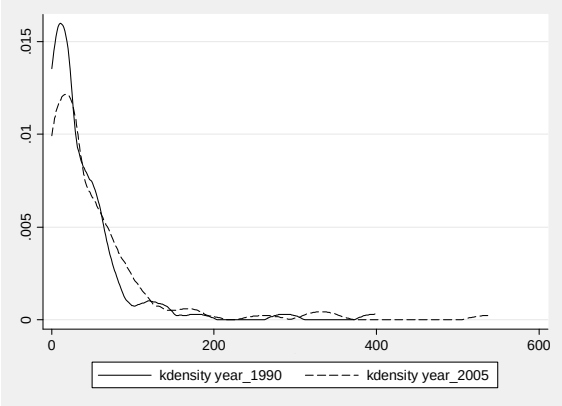
The figure on the right shows the number of products exported by chapter which are ranked on the vertical axis in ascending order from the top according to their codes.

Figure 5
Average Tariff and Total Number of Products Exported by Mexico to the United States



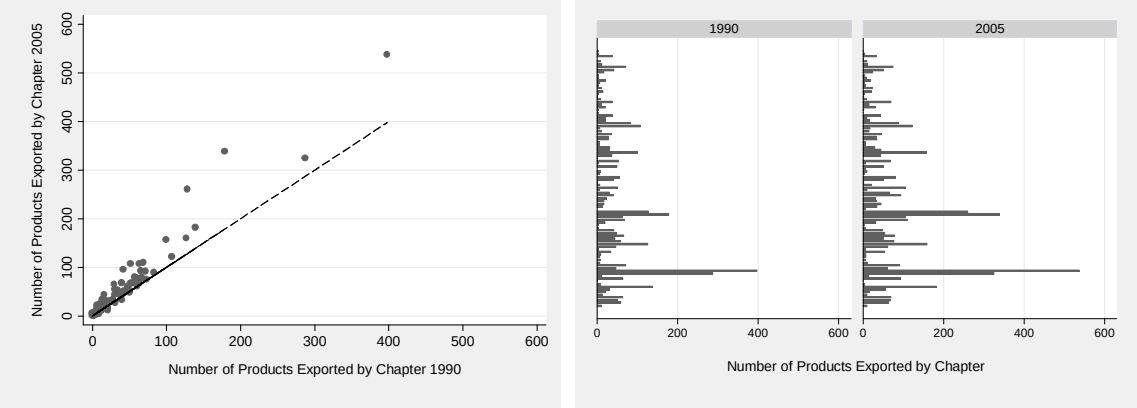
The figure shows the total number of products exported by Mexico to the United States and the (simple) average AVE tariff faced by Mexico in that market over the period 1989-2005.

Figure 6
Distribution of Number of Products Exported by Mexico to the United States Across Chapters, 1990 and 2005



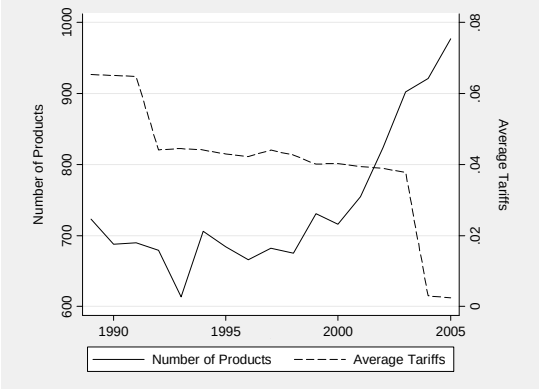
The figure presents kernel density estimates for 1990 and 2005 (using a Epanechnikov kernel).

Figure 7
Number of Products Exported by Mexico to the United States, by Chapter, 1990 vs. 2005



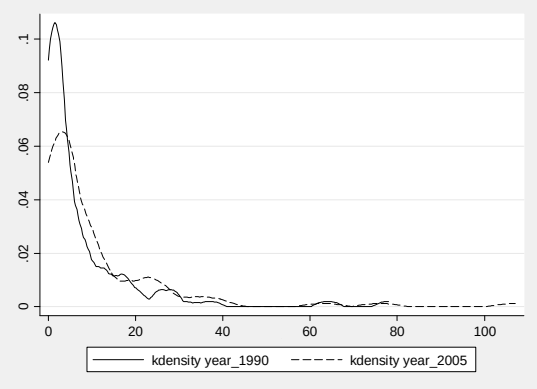
The figure on the right shows the number of products exported by chapter which are ranked on the vertical axis in ascending order from the top according to their codes.

Figure 8
Average Tariff and Total Number of Products Exported by Chile to the United States



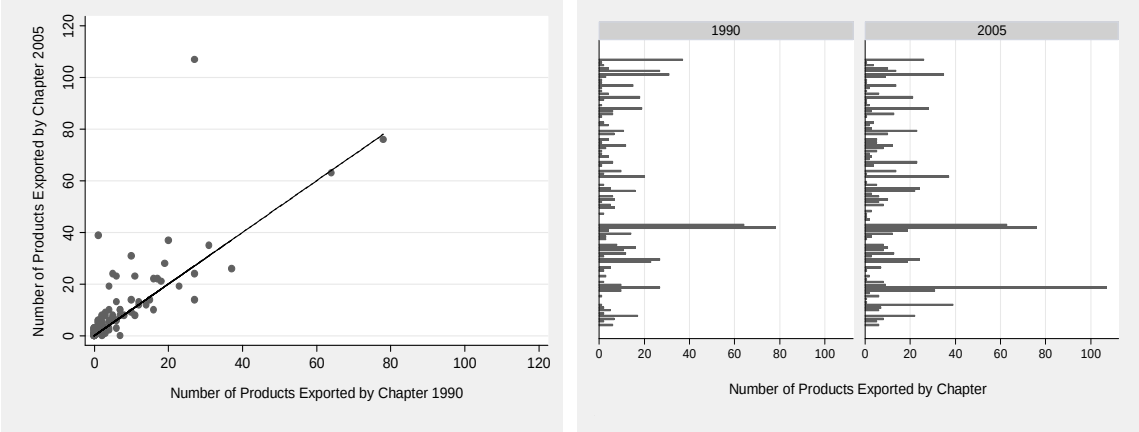
The figure shows the total number of products exported by Mexico to the United States and the (simple) average AVE tariff faced by Chile in that market over the period 1989-2005.

Figure 9
Distribution of Number of Products Exported by Chile to the United States across Chapters, 1990 and 2005



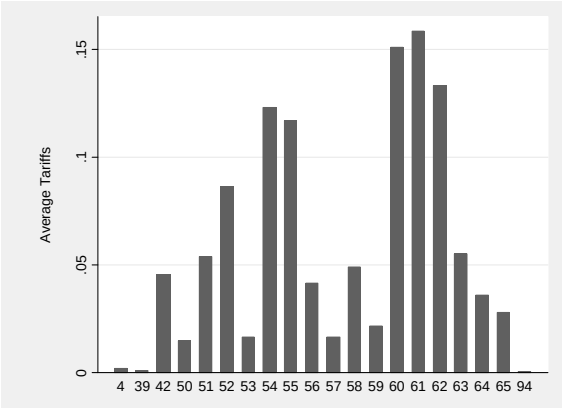
The figure presents kernel density estimates for 1990 and 2005 (using a Epanechnikov kernel).

Figure 10
Number of Products Exported by Chile to the United States, by Chapter, 1990 vs. 2005



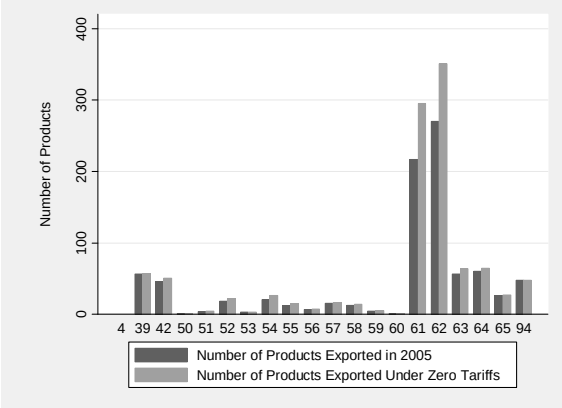
The figure on the right shows the number of products exported by chapter which are ranked on the vertical axis in ascending order from the top according to their codes.

Figure 11
Average Tariffs



The figure reports the simple average tariff faced by Colombia in the United States for those chapter in which they are larger than zero.

Figure 12
Actual and Predicted Number of Products Exported by Colombia to the United States by Chapter



The figure presents the actual number of products exported by Colombia to the United States in 2005 and the number it had exported if all tariffs had been set to zero and everything else remained in their 2005 levels.

Appendix 1

Table A1.1: United States Bilateral Trade Agreements (in Force and Under Negotiation)

Country/Group	Beginning of Negotiations	Completion of Agreement	Signing	Ratification	Entry into Force
Israel	January 1984		April 1985		August 1985
Canada	June 1986		January 1988		January 1989
NAFTA[2]	June 1991	August 1992	August 1992	November 1993	January 1994
Jordan	June 2000		October 2000		December 2001
Singapore	November 2000	January 2003	May 2003	July 2003	January 2004
Chile	December 2000	December 2002	May 2003	July 2003	January 2004
Morocco	January 2003	March 2004	June 2004	July 2004	January 2006[3]
Australia	March 2003	February 2004		July 2004	January 2005
Bahrain	January 2004	May 2004	September 2004	December 2005	August 2006
CAFTA-DR	January 2003[4]	December 2003	May 2004	July 2005	To be determined
SACU[6]	June 2003				
Panama	April 2004				
Colombia[7]	May 2004	February 2006			
Ecuador[7]	May 2004				
Peru[7]	May 2004	December 2005	April 2006		
Thailand	June 2004				
UAE	March 2005				
Oman	March 2005	October 2005	January 2006	July 2006	To be determined
Korea	February 2006				
Malaysia	March 2006				

(1) This date may indicate either the USTR's announcement of intent to negotiate or the actual beginning of negotiations. (2) NAFTA includes Canada and Mexico. (3) Pending approval of intellectual-property legislation by the Moroccan parliament. (4) With Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. USTR notified Congress of intent to begin negotiations with the Dominican Republic in August 2003. (5) CAFTA-DR has been implemented on a country-by-country basis as each member has met the conditions of the agreement. The agreement with El Salvador entered into force on March 1, 2006. The agreement with Honduras and Nicaragua entered into force on April, 1 2006. The agreement with Guatemala entered into force on July 7, 2006. (6) SACU includes Botswana, Lesotho, Namibia, South Africa, and Swaziland. (7) USTR's original declaration of intention to Congress to negotiate the Andean Trade Promotion Agreement, in November 2003, included Bolivia, Colombia, Ecuador, and Peru. These negotiations were later pursued on an individual basis. Negotiations with Ecuador were suspended on May 17, 2006.

Source: Ferrantino (2006).

Appendix 2
Table A2.1

Colombia New Products and Main Exporter Countries			
Year	**New Products**	**Main Exporter**	**Countries within the Five Main Exporters**
1996	142	Canada (27); Mexico (15); Japan (14); China (11); Germany (10)	Canada (67); Germany (65); Japan (54); Mexico (54); United Kingdom (50)
1997	143	Canada (26); China (17); Germany (14); Japan (14); Mexico (14)	Canada (67); Germany (58); China (56); Italy (55); Japan (49)
1998	144	Japan (27); Canada (19); Germany (13); Mexico (13); China (12)	Japan (68); Germany (63); Canada (62); China (60); United Kingdom (55)
1999	195	Canada (46); Japan (23); China (17); Germany (17); Mexico (16)	Canada (99); Mexico (74); Japan (74); China (73); Germany (70)
2000	229	Canada (63); China (29); Mexico (23); Japan (16); Germany (14)	Canada (131); Germany (96); China (89); Japan (86); Italy (81)
2001	197	Canada (50); China (42); Germany (12); Japan (12); Mexico (11)	Canada (100); China (88); United Kingdom (70); Mexico (68); Germany (66)
2002	204	China (42); Canada (41); Mexico (18); Japan (15); Italy (11)	Canada (98); China (97); Germany (65); Italy (64); Mexico (64)
2003	231	China (47); Canada (36); Mexico (19); Germany (15); Italy (13)	China (137); Canada (95); Germany (80); Italy (79); Mexico (69)
2004	231	China (50); Canada (39); Mexico (23); Japan (18); Germany (14)	China (127); Canada (102); Germany (77); Japan (72); Mexico (69)
2005	250	China (66); Canada (35); Mexico (24); Germany (16); Italy (13)	China (161); Canada (111); Italy (87); Germany (81); Mexico (79)

The table reports the number of new products exported by Colombia to the United States by year and the countries with the larger shares of United States' imports of these goods along with the number of times they appear as the exporter with largest share (Column 3) and the number of times they show up among the five countries with the larger shares (Column 4). New products are defined as those products that were not exported in the seven previous years (Definition 2).