The Free Trade Agreement between Colombia and USA: What can happen to Colombia?

Orlando Gracia

Hernando Zuleta

Abstract

In order to assess the impact of a Free Trade Agreement (FTA) between Colombia and the United States of America, we describe the characteristics of the Colombian economy emphasizing its trade patterns and perspectives and identifying the sectors and regions that are likely to be the most sensitive to a FTA. We argue that the effects of a bilateral trade agreement between the USA and Colombia would be similar to those of past trade reforms. We first analyze the effect of past reforms over a diverse sample of countries such as Chile, Colombia and Mexico and then, using an applied general equilibrium model, simulate the effects over the Colombian economy of a bilateral agreement with USA. The simulations show that, although small, there is an increase in welfare and production of the Colombian consumers and firms.

I. Introduction

Colombia will face a major challenge in international trade when, in the medium term, countries of the American continent form the biggest free trade area in the world. Currently, Colombia is about to take an important step in this direction signing a bilateral Free Trade Agreement (FTA) with the USA. In this paper we, first, identify the most important effects that this FTA is likely to produce on the Colombian economy and then we propose a series of actions that have the potential to reinforce the positive impact of a FTA while smoothening the effect on poverty and income distribution.

In order to assess the impact of a FTA we first review the experiences of both Colombia and Mexico with the trade liberalization of the 90's and NAFTA, respectively. Second, we use a Computable General Equilibrium Model (CGE) calibrated for Colombia and simulate the possible consequences of different trade policies.

We describe the characteristics of the Colombian economy emphasizing its trade patterns and perspectives and identifying the sectors that are likely to be the most sensitive to a FTA. We argue that the effects of a bilateral trade agreement between USA and Colombia would be similar to the effects of past trade reforms undertaken in Colombia.

With regard to the effect of free trade reforms on income distribution, a common finding in the empirical literature[1] is that skill premiums increased in roughly the same percentage across industries, that the proportion of skilled workers rose in every industry and that the sectors that experienced larger tariff reductions and increased imports competition experienced a rise in informal employment. However, the effect that trade reforms had on Colombian wage distribution is small compared with what happened in Mexico. We suggest as a possible explanation for this difference the behavior of FDI in the two countries.

We also review the experience of Mexico and Chile and try to derive some lessons for Colombia. We observe that the economic performance of Mexico was outstanding after NAFTA and Chile also performed very well after its trade reforms. In both countries the average wages increased and the gross capital formation as a percentage of GDP was significantly higher than in Colombia for the last decade. For the case of Mexico some effects on income distribution deserve special attention: (i) Differences in income across geographical regions grew. In particular, Mexico City and the areas close to the United States were benefited the most. (ii) The skill premium grew dramatically. (iii) Manufacturing was by far the winning sector, while agriculture is perceived as a loser.

Based on the experience of Mexico and Chile and supported by the simulations, we claim that the effect of a free trade agreement between Colombia and United States will be small but positive for the Colombian economy as a whole. However, to guarantee that the benefits derived from such an agreement can spread to different geographical regions and different economic sectors, Colombian government must undertake several measures: (i) integrate all the regions of the country in economic unity. This implies the construction and

[1] See for Example Attanasio, Goldberg and Pavcnik, 2003.

improvement of transportation infrastructure; (ii) increase the share of skilled workers in labor supply. This implies better efficiency and more government spending on education; and (iii) it must be clear what kind of productive structure is beneficial for the Colombian society. In particular, since the agreement can affect negatively part of the agricultural sector, it must be clear if the government should or should not negotiate special clauses for it. In order to answer this question, a detailed study on the agricultural sector is necessary, evaluating its efficiency, demand for labor and importance for the economy as a whole.

II. What happened with the reforms of the 90's?

The assessment of the impact of the Colombian 1990's economic reforms is a hard task, considering the broad scope of the policies implemented. We evaluate three main variables: trade performance, income distribution and economic growth[2].

In the late 80's, Colombia began a major trade reform. The reform was accompanied by modifications of the labor regime in order to reduce labor rigidities and some reforms in the financial system to enhance resources mobility. More than a decade after the trade reform began it is possible to describe the behavior of the main variables of the economy and try to derive some lessons from the recent history.

Table 1

Colombian Trade Policy

	1985	1990	1995	1999
Trade Policy Index	0.21	0.41	0.52	0.56
Average Import Tariff	83	23	13	12
Import Tariff Dispersion	28	14	5	6

Source: Lora (2001)

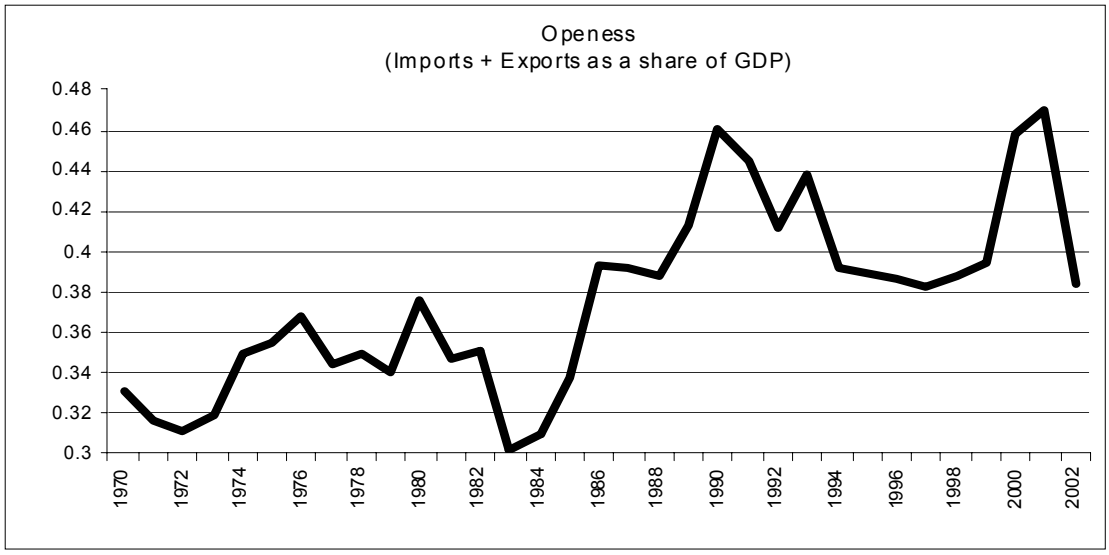
Table 1 shows two dimensions of the trade reforms. Row 2 shows the average import tariff and row 3 the import tariff dispersion[3]. The Trade Policy Index is a calculation made by

[2] For a comprehensive evaluation of the reform see IADB(2004 and 1997).

Lora (2001) which considers these two dimensions. It seems that the process of liberalization took two important steps, one between 1985 and 1990 and the other between 1990 and 1995. After 1995 there has been a small reduction in average tariffs and a small increase in tariff dispersion.

The first result to highlight is the effect that the reforms had on imports and exports as a percentage of GDP. Figure 1 presents the sum of exports and imports as a share of GDP. The rise of this share between 1983 and 1990 -consistent with the first liberalization step- was more than 15 points as a share of GDP. However, when we take average values before and after the reforms, the rise of the share is between 5% and 10% of GDP. Today, international trade is about 40% of Colombian GDP, substantially lower than in countries like Mexico and Chile (both around 60%).

Figure 1



Source: DANE and authors Calculations

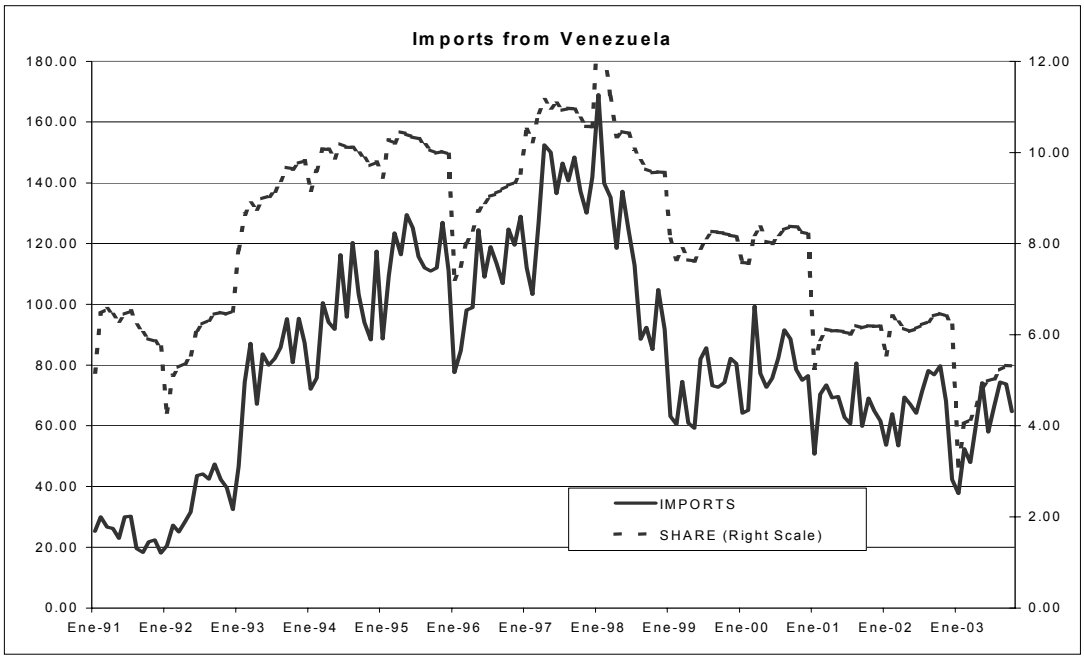
Thus, although the reforms had an effect on the share of international trade, such an effect has been relatively small. Among the possible explanations for this fact we can find the following arguments:

[3] The import tariff dispersion indicate the variance in tariffs among different goods.

1. The geographical characteristics of Colombia constitute a natural protection against international trade, at least when compared with Mexico and Chile. Indeed, Colombia does not have the proximity to the USA that Mexico enjoys. Similarly, the average distance from the sea is substantially higher in Colombia than it is in Chile.
2. The initial import tariffs were higher in Colombia than in Chile and Mexico and the average import tariff is still higher in Colombia (see table 2).
3. The poor performance of the Venezuelan economy, one of the main trade partners of Colombia, has harmed the process of internationalization of the economy (see figures 2 and 2a).
4. The lag in transportation infrastructure increases the costs of international trade (see tables 3 and 3a).

From table 2, it seems that the difference in import tariffs is not main cause of the "trade gap". Thus, the openness of the economy may depend also on the Colombian government's effort to improve the transportation infrastructure and also on the recovery of the Venezuelan economy. In other words, the effect of a FTA alone is likely to be relatively small.

Figure 2



Source: DANE

Figure 2a

Source: DANE

Table 2

	Average Import Tariff			Trade Policy Index		
	1985	1990	1999	1985	1990	1999
Colombia	46.4	23.0	11.8	0.29	0.41	0.56
Chile	36.0	14.9	10.6	0.49	0.57	0.61
México	34.0	13.1	10.1	0.29	0.42	0.51

Source: IDB and Lora (2001)

Table 3
Port Efficiency

	Cargo Handling Restriction Index*	Median Clearance Time (Days)	Port Efficiency Index**
Chile	0	3	3.76
Colombia	0.5	7	2.26
México	0.5	4	3.34

Source: Clark, Dollar and Micco (2004).
*Zero means no restrictions, 0.25 minor restrictions, 0.5 if a joint venture is condition is imposed, 0.75 if a very high national participation in the company is required and 1 if foreign companies are simply forbidden to provide cargo handling services.
** Taken from Clark, Dollar and Micco (2004).

Table 3a

	Chile	México	Colombia
Kilometers of roads per million citizens	860	900	350

Source: Federación Colombiana de Transportadores de Carga por Carretera.

After a short appraisal of the evolution of international trade, the next step is to identify trade openness reform's "winners" and "losers"; that is, which sectors were benefited from the tariff reduction and which sectors were harmed. Table 4 present exports composition in 2000. In Table 5 we calculate the growth rate of exports in dollars for the eighties and nineties. Finally, in Table 6 we do the same exercise for imports.

Table 4
Colombia: Exports Composition (2000)

Coffee	6.22%
Oil	24.86%
Coal	9.60%
Agriculture	8.58%
Bananas	3.17%
Flowers	4.97%
Manufacturing	45.59%

Source: DANE

Table 5
Colombia: Exports Growth

Exports Growth by Sector (average rate)	80-90	90-2000
Coffee	-4.99%	-2.83%
Oil	34.30%	62.20%
Coal		56.99%
Nickel	133.78%	297.44%
Emeralds	8.33%	8.95%
Gold	1.89%	-32.15%
Agriculture	6.70%	8.57%
Bananas	12.94%	14.66%
Flowers	8.92%	18.03%
Other agricultural goods	1.41%	-15.70%
Manufacturing	6.04%	18.77%
Chemicals	9.17%	33.28%
Textiles and leather	8.78%	11.16%
Food	1.66%	19.52%
Machinery and equipment	1.79%	25.70%
Metals	2.41%	24.67%
Paper	5.33%	13.40%

Source: DANE

Table 6
Colombia: Imports Growth by Sector (average rate)

Imports Growth by Sector (average rate)	76-86	86-96
Agriculture	26.10%	30.18%
Fishing and Hunting	21.82%	74.68%
Meats	27.41%	23.36%
Processed Cereals	29.88%	50.09%
Dairies	15.73%	26.44%
Sugar		115.70%
Processed Tobacco	-1.16%	28.06%
Other processed agricultural goods	20.11%	28.04%
Wood and furniture	29.57%	49.57%
Chemicals	30.61%	27.08%
Machinery and equipment	28.31%	32.41%
Transports	21.85%	37.75%
Services	23.34%	45.06%
Commerce and recovery products	34.35%	92.00%
Communications	41.60%	21.55%
Services for firms	18.36%	55.90%
Personal Services	35.24%	20.85%

Source: DANE

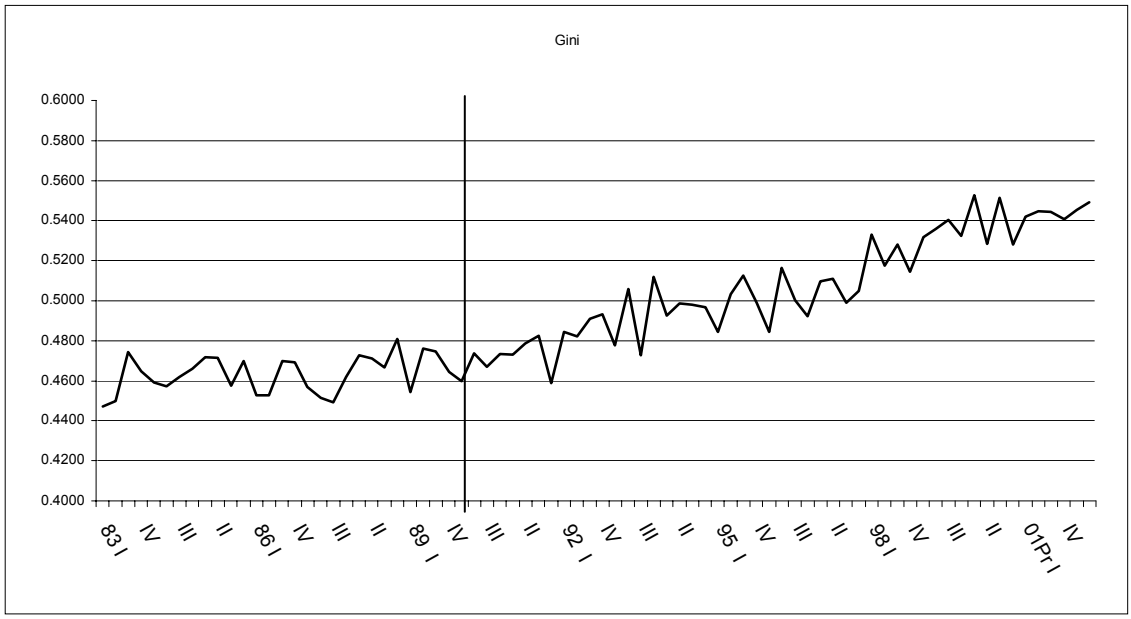
Manufacturing has been one of the big winners from trade liberalization. In particular, Chemical Products, Machinery and Equipment and Basic Metals have experienced an important increase in export activity. Among the losers Coffee, Gold and other agricultural products present an important reduction in exports. Regarding imports, Sugar, Commerce, Fishing and Hunting and Wood presented the most rapid acceleration in imports after the trade reforms (see Table 6). Thus, trade liberalization reform and regional integration have had a positive impact over the countries manufacturing exports performance. In the future, as will be shown in the simulation below, it is likely that the effects that past trade reforms had on each sector will get stronger if a bilateral trade agreement between USA and Colombia takes place.

While the evidence supports the idea that the reforms of the 90's generated an increase in efficiency (see Fernandes, 2002 and Eslava et.al, 2004), there is some concern about the effect that trade had on income inequality and that on the prospect of a bilateral agreement would exacerbate the problem of inequality.

A standard measure of inequality is the Gini coefficient. Figure 3 presents the evolution of this coefficient for labor income between 1983 and 2001. This data shows that the 1990's witnessed an expansion in income inequality. Although a complete account of this result has to be studied, the deterioration of income distribution can be related to two main factors: the unequal performance among economic sectors and the increase in wage premiums.

As it shown in figure 4, average real wages presented positive growth for the majority of sectors between 1988 and 2001. However, the growth rates were not equal for all the sectors and it was negative for some of them. In particular real wages in the commercial sector decreased, perhaps as a consequence of the big increase of imports in the sector (see table 6).

Figure 3. Gini Coeficient. 1983-2002



Source: DANE

The issue of skill premiums was addressed in a systematic way by Attanasio, Goldberg and Pavnic (2003). These authors use data obtained from DANE, DNP and the United Nations for the period 1984-1998 and find, among others, the following results:

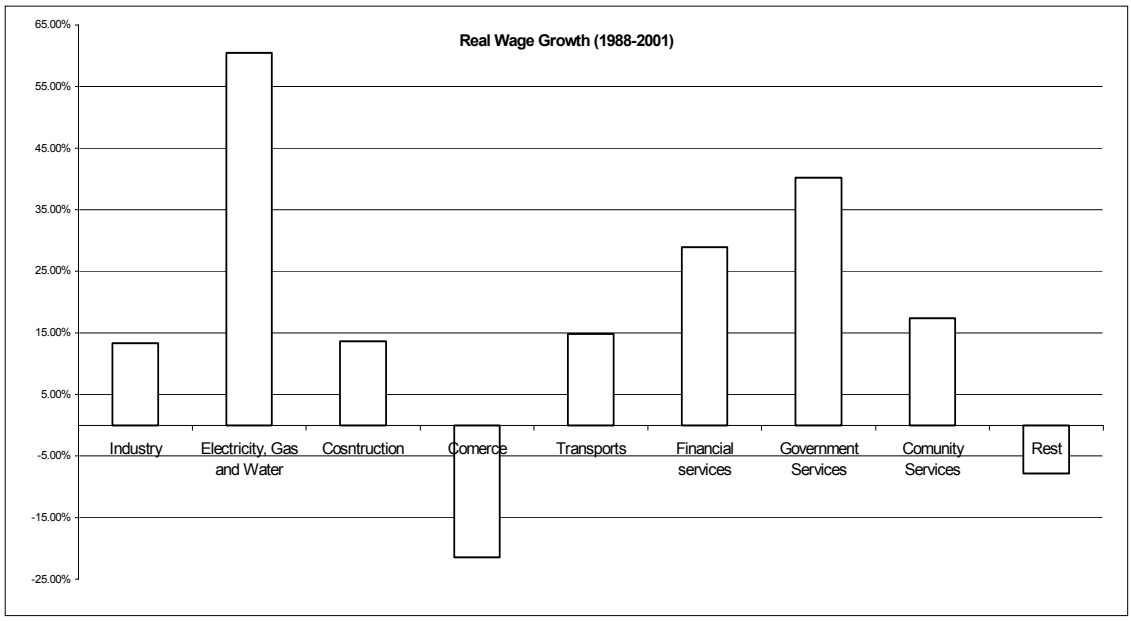
1. Trade reform positively affected wage premiums.
2. Changes in skill premiums are roughly the same across industries.
3. There is no evidence of reallocation of labor. This result is consistent with the differences in real wages growth rates among sectors.
4. The proportion of skilled workers rose in every industry, suggesting that during the 90's many of the firms in Colombia undertook skill-biased technological changes.
5. The sectors that experienced larger tariff reductions and an increase in imports saw a rise in informal employment.
6. The effect that trade reforms had on Colombian wage distribution is small compared with what happened in Mexico (see Gordon, 2003). A possible explanation for this difference is the behavior of FDI in the two countries.

Until now we have assessed the distributive effects of the reforms but we have not identified the effects for the Colombian economy as a whole. Were the reforms good in the aggregate? Should the current government undertake further reforms in the same direction? In figure 5 we can see the behavior of GDP growth and inflation during the last decade of 20^{th} century. In terms of inflation the decade was a complete success. However, economic growth was not consistently high. Indeed, the first years of the decade were characterized by an acceleration of economic growth, but after 1995 the growth was reduced until 1999, when the economy suffered its worst recession in the last 60 years.

Even though the recession may be related the changes in trade policy, its cause may be found in the management of fiscal policy. Indeed, a new constitution signed in 1991 imposed increasing spending obligations on the Colombian government. Consequently, public expenditure as a percentage of GDP rose from 20% in 1990 to 28% in 1995 and finally to 36% in 1999. The upsurge of public expenditure led to an appreciation of the peso that, together with the reduction in tariffs, generated a huge commercial deficit. The macroeconomic situation of the early 90´s led individuals to increase consumption, thereby increasing tax revenue and balancing the fiscal budget for some years. However, the continuous growth in public expenditure generated a growing fiscal deficit in the late 90´s.

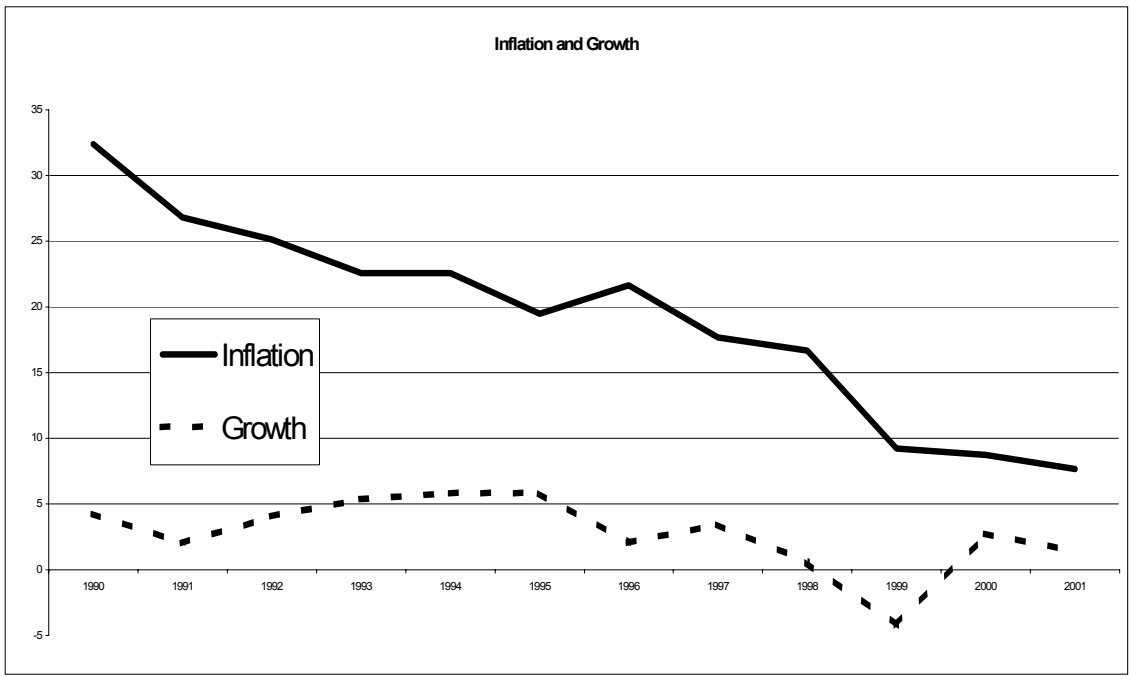
Finally, the persistence of fiscal and commercial deficits, together with the crisis in other Latin-American countries, caused a interruption of capital inflows and a currency crisis.

Figure 4. Real Wage Growth 1988-2001



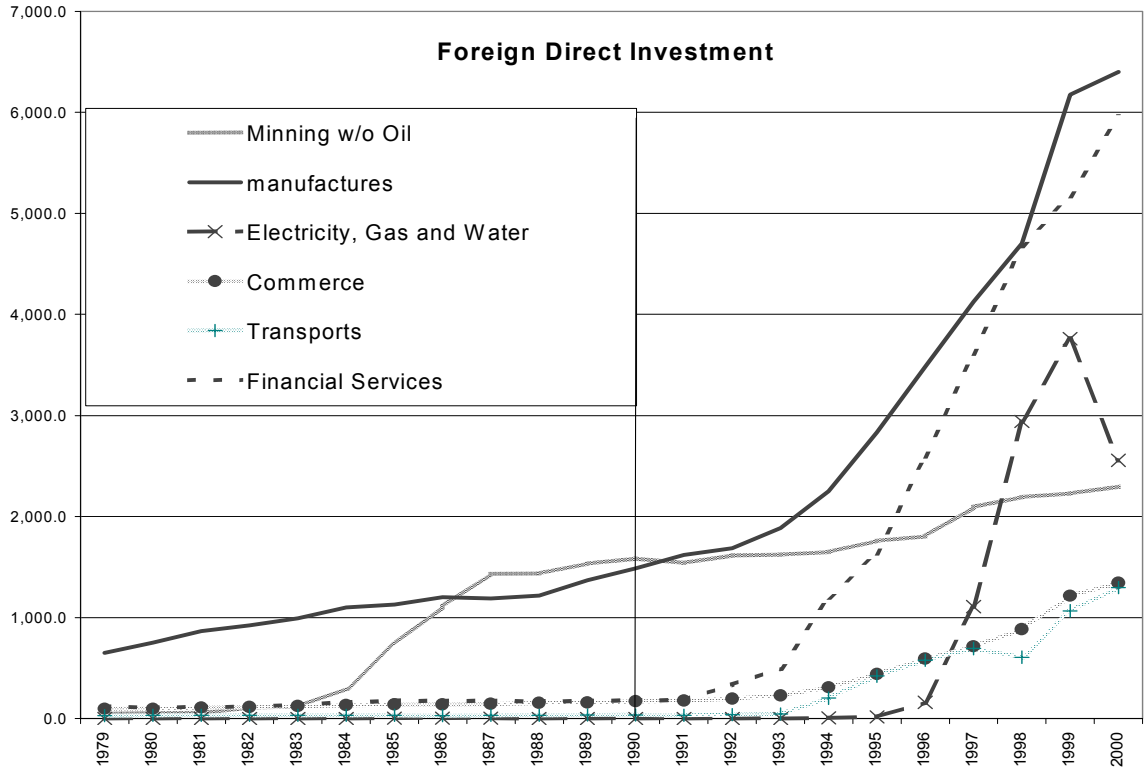
Source: DANE

Figure 5



Source: DANE

Figure 6



Source: DNP and Banco de la República

Thus, it is not possible to blame the crisis on the tariff reductions alone. A mixture of bad economic policy and bad luck are to blame. In spite of these factors, a comprehensive analysis of the effects that the reforms may have on long run economic growth must look at incentives to invest. Four factors suggest that the reforms succeeded in increasing the incentives to accumulate both human and physical capital:

(i) The rise in skill premium reflects an increase in incentives to invest in human capital.

(ii) Increasing foreign investment (see figure 6) shows that investment in physical capital became much more productive after the reforms.[4]

(iii) According to Fernandes (2002) a 10 percent-point drop in Colombia's ad-valorem tariff translates into a 3-percent increase in manufacturing productivity.

[4] Another interpretation is that privatizations attracted foreign investment. Therefore public profitable firms became private and the new owners were not Colombians. However, the empirical relevance of this interpretation is weak (see Fernandez (2001) or Eslava et.al. (2004)).

(iv) According to Eslava et. al. (2004), "market reforms are associated with rising overall productivity that is driven by reallocation away from low- and towards high-productivity business".

III. Colombian Trade Patterns

Comparing the growth rates of exports before and after the reforms give us an idea of their effect on the trade direction. Table 7 shows the share of exports by geographic zone in 2001 and the growth rate of exports between 1980 and 1990, before the reforms, and between 1990 and 2001, after the reforms. The USA appears to be the main buyer of Colombian goods, followed by Venezuela, the nearest neighbor. The European Union, as a whole, is in the third place. The reforms and the trade agreements favored exports to Latin America and, in particular, to the Andean Group; exports to the USA were not affected; and, clearly, exports to the European Union decreased.

Table 7
Colombia: Share of Exports by Geographic Zone.

	2001	Growth 80-90	Growth 90-2001
Developed Countries	60.32%	-2.93%	-20.27%
USA	42.72%	54.63%	3.46%
European Union	13.90%	-34.01%	-50.92%
Latin-America	36.40%	-1.72%	109.13%
Andean Group	22.44%	-43.96%	307.22%
Venezuela	14.14%	-57.46%	369.78%
Peru	2.26%	78.29%	70.97%
Ecuador	5.70%	-43.80%	417.16%
MERCOSUR	1.78%	-45.35%	62.53%
Brazil	1.36%	94.60%	205.76%
Rest of Latin-America	12.18%	83.93%	12.80%
México	2.13%	19.94%	251.95%
Chile	1.37%	48.72%	-43.59%

Source: DANE

Table 8 shows the share of non-traditional exports (excluding oil and coffee) by geographic zone. The effects of reforms and trade agreements were strong. Exports to the countries with which Colombia signed trade agreements (Venezuela, Peru, Ecuador, Mexico) grew substantially more in the 90's than in the previous decades.

Table 8
Share of Non-traditional Exports by Geographic Zone

	1980	1990	2000
USA	27.7%	36.0%	31.6%
European Union	17.2%	17.2%	9.8%
Japan	4.2%	5.0%	1.1%
Latin-America	43.0%	33.8%	51.2%
Andean Group	26.0%	11.8%	31.4%
Venezuela	18.7%	6.2%	20.1%
Peru	2.0%	2.7%	3.7%
Ecuador	5.2%	2.7%	7.0%
Mercosur	1.6%	1.4%	3.2%
Mexico	1.0%	1.5%	3.2%

Source: DANE

Table 9
Colombia: Share of Imports by Geographic Zone

	1997	Growth 90-97
USA	41.53%	17.26%
European Union	15.77%	-24.03%
Japan	4.21%	-52.55%
Canada	2.39%	-32.02%
Venezuela	9.99%	73.74%
Peru	1.03%	-42.62%
Ecuador	2.58%	216.87%
Bolivia	0.37%	230.37%
Argentina	0.75%	-69.19%
Brazil	2.81%	-15.80%
Mexico	3.51%	66.85%

Source: DANE

Table 9 shows the share of imports by geographic zone in 1997 and the growth rate of imports between 1990 and 1997. The USA appears as the main source of Colombian imports, followed by the European Union and Venezuela. Looking at growth rates of imports it seems that the reforms and the trade agreements favored imports from the Andean Group, with the exception of Peru, and also from Mexico; imports from the USA grew but in a more moderate way; and, imports from Canada, Mercosur and the European Union decreased.

From tables 7, 8 and 9 two main facts stand out: the USA is the main trade partner of Colombia and the trade agreements signed with the Andean countries have had a strong effect on trade flows. Therefore, it is likely that a bilateral free trade agreement between the USA and Colombia will have significant effects on the quantity of trade flows and on the composition of Colombian trade. But in terms of the trade balance, what are the most vulnerable sectors?

Table 10
Colombian Trade Balance by Geographic Zones (Millions of Dollars)

	Total	USA	European Union	Japan	Latin-America	Andean Group	Mercosur	Mexico	Chile
1991	2447.34	857.20	992.33	-196.19	857.66	320.65	-213.81	-99.61	108.29
1995	-2642.3	-1176.5	135.2	-667.6	-269.0	286.2	-513.5	-363.3	-45.1
2003	-64.5	1556.9	-155.1	-362.1	245.0	269.3	-740.3	-276.7	-76.2

Source: DANE

The decrease in imports from Europe, Japan and Canada also stand out. Even though a complete explanation for this fact goes beyond the aim of this paper, in future research it would be interesting to explore whether, in an era of economic blocks the absence of agreements between these countries and Colombia led to trade deviation.

Table 10 shows the trade balance between Colombia and a group of countries for the years 1991, 1995 and 2003. The balance with some regions is persistently negative while with others it is persistently positive. However, the bilateral flow of goods and services between the USA and Colombia seems to be more sensitive to macroeconomic conditions and, for this reason, is positive for some years and negative for others.

Table 11 shows imports from the USA by sector. Almost half of the imports coming from the USA are Metals, Machinery and Equipment. This fact, together with the current level of tariffs (see the appendix) suggests that a bilateral trade agreement would reduce the cost of capital goods and generate incentives for investment[5].

Table 11
Share of Imports from USA

	2001
Metals, Machinery and Equipment	44.5%
Chemical Products	26.5%
Food, Beverage and tobacco	6.5%
Agriculture and hunting	5.2%
Textiles, clothing and leather	5.8%
Basic Metals	4.4%
Paper and editorial products	3.3%
Sub-total	92%

Source: DANE

Thus, in principle, a bilateral trade agreement between Colombia and USA would not have negative consequences for the trade balance[6] and it may reduce the cost of capital goods in Colombia. However, the production in some sectors could be negatively affected by the

[5] The current government has implemented a policy of zero tariffs for imports of goods relate with investment enhancement.
[6] By a trade agreement we mean a bilateral reduction (or elimination) of import tariffs. Off course if the reduction of import tariffs is not bilateral the effects are different.

agreement. In particular, Food, Beverage and tobacco; Textiles, clothing and leather; Agriculture and hunting; and Paper and editorial products are vulnerable sectors.

IV. What can we expect?

In the previous sections we reviewed the recent Colombian trade data in an effort to forecast the possible consequences of a bilateral free trade agreement between the USA and Colombia. In this chapter we try to derive some lessons from the Mexican experience after signing a trade agreement with the USA and Canada. We also review the experience of Chile because among Latin-American countries it has been the most liberal economy in terms of international trade[7].

The experience of Mexico

Overview

NAFTA is an agreement between the United States, Canada and Mexico that was signed in December 1992 and implemented on January 1, 1994. NAFTA represents one the most important economic achievements for Mexico (Barclays Capital Research, Emerging Markets Drivers, January 9, 2004). The agreement turned Mexico into an export growth story without precedents. Exports quadrupled in 10 years, increasing from USD 40 billion in 1990 to USD 165 billion in 2000. Total exports and imports rose to USD 337 billions, or 55% of Mexico's GDP, compared with only USD 64 billion in 1990. As a result, Mexico replaced Japan as the second largest trading partner of the USA until 2003, when it was in turn replaced by China. NAFTA also helped diversify Mexico's economy and therefore reduced its dependence on oil. Oil exports were 80% of total exports in the early 1980s, but fell to a low of about 7% of total exports in 2000, although since then they have risen to 11.3% in 2003, owing to an overvalued exchange rate.

[7] See The Index of Economic Freedom, computed by the Heritage Foundation for 161 countries since 1995.

For these reasons, Mexico became an attractive investment opportunity for the USA multinational companies during the second half of the 1990s. NAFTA raised attractive investment opportunities in Mexico and ushered in an important economic achievement period, turning Mexico into an export-led growth story. While foreign direct investment remains low, it improved dramatically, thanks to NAFTA, reaching an average USD 10 billion in recent years, compared with only USD 2.6 billion in 1990. Moreover, Mexico alone accounts for about two-thirds of the foreign direct investment to Latin America.

Economic growth was the greatest achievement of Mexico's during this period. Following the 1994-95 crisis, growth averaged 5% from 1998-2000, as NAFTA successfully integrated Mexico's business cycle into that of the United States.

Table 12

Mexico Exports and Imports composition by sector (2002).

	Exports	Imports
Agriculture	2.10%	2.89%
Stock, agriculture, hunting and fishing	0.36%	0.30%
Extractive Industries	7.61%	1.17%
Manufactures	89.70%	95.22%

Source: INEGI

Table 13

Mexico, Exports and Imports 2001

	Exports	**Imports**
Latin-American Association for Integration (ALADI)	1.91%	2.82%
Colombia	0.32%	0.20%
Centro-American Common Market (MCC)	0.91%	0.21%
Rest of Latin-America	0.44%	0.04%
Caribbean Common Market (CARICOM)	0.15%	0.03%
Canada	1.94%	2.51%
United States of America	88.67%	67.73%
European Union	3.37%	9.69%
China (Taiwan)	0.11%	1.79%
Asia (without Middle East)	1.21%	12.96%
China (Beijing)	0.18%	2.39%
Japan	0.39%	4.80%

Source: INEGI

Finally, to have an idea of the effects of NAFTA on different sectors and on trade with different countries, tables 12 and 13 present the composition of Mexico's sectoral international trade and trade partners. From table 12 it follows that the most active sector in terms of international trade is manufacturing. Therefore, if the predictions of trade theory are right, we should observe productivity gains in this sector.

With regard to the trade destination, USA is definitively the main commercial partner of Mexico. However, the country is more important as a market for exports than as a source of imports. Therefore, it seems that the effects of NATFA were bigger opening markets for Mexican products than introducing competing products from the rest of North America. Besides USA, the most important sources of imports are Asia, Europe and Latin-America.

Labor Market

The integration of Mexico into the North American economy has had profound consequences for the Mexican labor market. According to the classical theory of trade, free trade is supposed to equalize the prices of tradable goods and prices of factors. However, the differences between Mexico and the rest of North America are not limited to factor abundance. It seems that technologies are different. In particular, total factor productivity appears to be higher in the United States than in Mexico.

Besides free trade, NAFTA generated an increase in capital flows from the USA to Mexico and labor flows from Mexico to USA. These two forces make relative factor supply less different than before the agreement. However, in spite of NAFTA, North American labor market integration has a long way to go. Wages in USA are still substantially higher than those in Mexico. This can be related to barriers to factor flows that limit migration on the part of USA and discourage investment on the part of Mexico.

In any case, NAFTA has had clear effects on the Mexican labor market. The literature on the impact of Mexico's policy reforms on wages underlines the following effects (see Gordon, 2003):

(i) Increase in average wages.
(ii) Increase in wages volatility.
(iii) A substantial increase in the return to skills leading to an increase in wage inequality.
(iv) Wages in states on the Mexico-USA border have increased relative to wages in the rest of the country.

The increase in average wages is one of the expected results of NAFTA. However, as we mentioned above, wages in USA are still higher than in Mexico and the gap does not seem to be shrinking. So the effect of labor market integration on average wages was not significant.

The reduction of barriers to trade and foreign investment has led to an increase in the demand for skilled labor in Mexico and, as a result, the returns to education experienced a substantial increase. Increases in returns to education during the 90's were nationwide and followed increases in returns to education in the USA (see Gordon, 2003). Partial labor-market integration helps to explain this effect. Foreign direct investment plus skill biased technological innovations (may be imported) can explain the rest of the story.

Finally, the fact that wages grew more in regions with higher FDI, higher rates of migration to the USA and higher exposure to trade indicate that the integration of the Mexican economy with the rest of North America was helpful to workers in the regions where such integration occurred. In other words, only a part of Mexico enjoyed the benefits of NAFTA and this fact reflects a lack of integration within Mexico.

Manufacturing Productivity

One of the main reasons why economists are in favor of free trade is because specialization is usually accompanied by an efficient allocation of factors and, in this way, it increases productivity. In the case of Mexico, the behavior of total factor productivity (TFP) prior to NAFTA was definitively poor and a motivation for becoming part of the commercial bloc. Mexico's overall TFP performance was disappointing since the early 80's to the mid 90's

(between minus 1 and minus 2 percent) and free trade was a tough way to restart economic growth.

After eight years of the agreement, Fernando Lopez Cordova (2003) presented a serious study trying to identify the effects of NAFTA on manufacturing productivity. Four effects deserve to be highlighted:

1. Industries that compete with North American imports saw a productivity jump by 13% from 1993 to 1999.
2. Exporting Industries experienced a productivity growth of 4% during the same period.
3. Industries without links to foreign trade or foreign investment experienced a TFP growth of 1%.
4. The increase in preferences granted to Mexican goods increase the level of productivity but not its growth rate.

Therefore, the effects of NAFTA on manufacturing productivity were positive and important; increasing competition was more important than increasing access to the North American market and only the industries that were affected by the agreement experienced significant productivity improvements.

Agriculture

As was indicated above, manufactured products have been a successful example of the positive effect of NAFTA. Agriculture, however, is described as a complete disaster by some journalists and farmers. In this section we review the available data with some detail in order to present an overview of the performance of the sector and try to distinguish the effects of NAFTA from the structural problems of Mexican agriculture.

Mexico's agriculture was NAFTA's most protected sector from the beginning. Indeed, 88% of the agricultural exports gained immediate tariff-free access to USA and 61% to Canada while the share of tariff-free Mexico's imports from USA was 36% and from Canada was 41%. Mexico eliminated tariffs on 42% of imports from USA over a ten-year period ending

in 2003 and 18% will continue to have positive tariffs until 2008. In contrasts 100% of USA imports from Mexico are free of tariffs as of 2003. (*Secretaria de Economía, de México, 2003*)[8].

Even though Mexico's agriculture is the most protected sector within North America, Mexico belongs to the World Trade Organization and, in order to fulfill the signed treatments, must give tariff free access to imports of certain goods. In particular, only 38% of Mexico's agricultural imports are tariff-free because of NAFTA.

Agricultural exports have benefited from Mexico's trade opening. In 1986, when Mexico joined GATT, agricultural exports were stagnant. From 1986 to 1993, exports rose by 5% a year. With NAFTA, between 1994 and 2001, the growth rate of agricultural export was 12% on average. Imports have also increased. From 1986 to 1993, imports rose by 23% a year. With NAFTA, between 1994 and 2001, the growth rate of agricultural imports was 6% on average[9].

Within agriculture, fruits and vegetables have been a success during NAFTA. Exports of Mexican fruits and vegetables to USA rose by 118% from 1993 to 2001 from US$1.38 billion to US$3.02 billion. The other side of the story is the behavior of the meat producing sector. Beef has been one of the most negatively affected products. The liberalization of the beef market started in 1989 when import tariffs were eliminated in order to compensate domestic scarcity with imports. From 1993 to 2001, imports of beef rose from 4% to 21% of domestic production while local production grew 1.6% a year. Similarly, pork-meat imports increased from 5.8% to 17.9% of domestic production between 1993 and 2001 while domestic production grew 4.2% a year.

At first sight it seems that NAFTA has damaged the meat producing sector. However, one reason for the increase in agricultural imports is the fact that per capita consumption of animal-protein food has grown rapidly in recent years. From 1990 to 2001 per capita

[8] Moreover, Mexico has adopted a protection scheme similar to that used in USA, i.e., Mexico has been providing direct subsidies to some portion of their farmers.
[9] *"La política de Comercio Exterior de México en el Sector Agroalimentario"* José Rodolfo Arias Arizpe, Secretaria de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, México, Noviembre 2002.

consumption of beef rose from 12.3 to 16.4 kilograms and consumption of pork meat grew from 11.2 to 14 kilograms[10].

In summary, although Mexican agriculture performance has not been outstanding since the beginning of NAFTA, free trade is helping an efficient reallocation of resources in rural areas. Similarly, the evolution of per capita consumption of animal-protein food indicates that free trade had succeeded increasing consumer's welfare. These results are consistent with the expected effects of a free trade agreement.

Trade is not enough: Chile and Mexico

The economic performance of Chile and Mexico has been clearly better than that of Colombia since the late 80's (see figure 7). However, the excellent economic performance in Chile has been persistent while the growth path of Mexico has been irregular. If we take a close look to figure 7 it appears that the per capita GDP gap between Colombia and Mexico has been roughly constant between 1985 and 1993; between 1994 and 1995 the gap was reduced, growing after 1995. Even though international trade cannot account for the whole story, it is evident that the trade reforms in Chile and NAFTA help to explain the differences among the three countries.

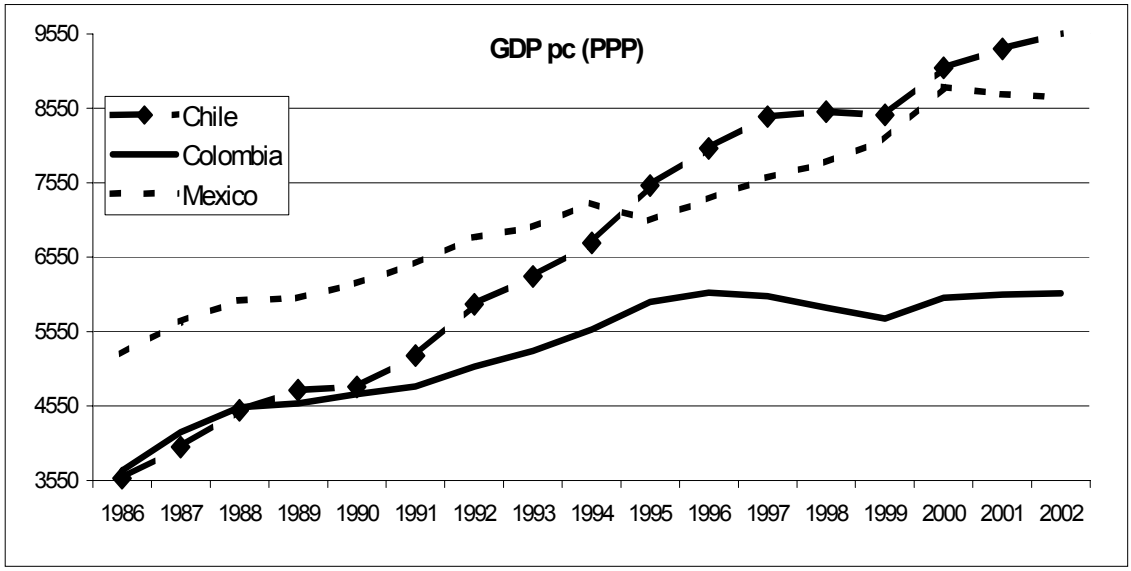
As indicated above, the economic performance of Mexico was outstanding after NAFTA and Chile also performed very well after its trade reforms. In both countries the average wages increased and the gross capital formation as a percentage of GDP was significantly higher than in Colombia for the last decade (see figures 8, 9 and 10).

However, the economic growth experience of Mexico and Chile has been completely different in the last two decades of the 20th century, even when considering that both countries experienced profound economic crises in the early 80's, the recovery paths were different. Indeed, Chile recovered its economic growth trend in less than a decade and,

[10] A similar story can be told about chicken and eggs.

since then, its economic growth rate has been higher than before the crisis. In contrast, Mexico couldn't achieve positive per capita growth rates until the late 90's.

Figure 7



Source: World Bank

The economic literature provides three possible explanations for the differences in economic performance[11]: (i) *Real wages behavior*. According to this explanation, the Chilean government revised its wage indexation policy and allowed real wages to fall. This view argues that this policy, together with policies that produced a rapid depreciation of the real exchange rate, generated an export boom that helped the rapid recovery. (ii) *The effect of external debt on the investment climate*. According to this hypothesis, new investors were discouraged from investing in Mexico, fearing that most of the returns would be taxed to pay off old loans. (iii) *Structural Reforms*. According to this point of view, the main difference can be found in the way in which the two countries addressed structural reforms such as fiscal policy, privatizations, trade and banking sector.

Bergoeing, Kehoe, Kehoe and Soto (BKKS) present a broad study, reviewing all the possible explanations. For them, the different economic performance of Mexico and Chile after the 1980's crisis is explained by differences in TFP growth. Productivity showed

[11] See for example Bergoeing, Kehoe, Kehoe and Soto (2001); Glade (1996); Hachette and Luders (1993); De la Cuadra and Hachette (1991); Sachs (1989) and Corbo and Fisher (1994) for these hypotheses.

different growth paths because Chile undertook important reforms in the banking system and bankruptcy laws that Mexico did not.

For BKKS, the most important factor was Chilean willingness to pay the costs of reforming the banking system and letting inefficient firms go bankrupt. This fact explains the higher Chilean domestic credit as a percentage of GDP since the 80's compared to that observed in Mexico for the same period (see figure 11). In second place, Chile reaped the benefits of reforms in privatization during the 80's while Mexico was just beginning to implement them. Similarly, openness to foreign direct investment and deregulation in domestic industry occurred first in Chile.

Additionally, there are at least three indicators that score higher in Chile than in Mexico and Colombia. The first one is education; Figure 12 and Figure 13 show the adult illiteracy rate and tertiary school enrollment respectively. The illiteracy rate of Mexico has been consistently twice as much of that shown in Chile. In 2000 the Mexican illiteracy rate is close to eight percent, the illiteracy rate of Chile in 1980. Second, since the 80's the tertiary school enrollment has grown continuously in Chile while in Mexico it has been roughly constant.

A third difference can be found in the technology available in each country. Figures 14 and 15 show the penetration of personal computers and mobile phones in Chile, Mexico and Colombia. Small differences in the beginning of the 90's have grown to become substantial in the years 2000 and 2001. As expected, Chile managed to rapidly increase the number of mobile phones and personal computers, mainly since the mid 90's; Mexico, while behind Chile, is doing much better than Colombia.

Another relevant difference is the transportation infrastructure. In the second section on the paper we showed the indices of Port Efficiency and kilometers of roads per million citizens. It seems that Chile has better ports than Mexico and Colombia, and Mexico has better ports than Colombia. However, with regard to roads, Mexico is slightly better that Chile. In any

case, the lag of Colombia is striking; the roads should be multiplied by a factor of 2.5 to have a road network as good as the Mexican.

Finally, according to Caballero, Engel and Micco, 2004 microeconomic flexibility is higher in Chile and Colombia than it is in Mexico, meaning that the response at the firm level to changes in the economic environment is faster in the first two countries.

Figure 8. Real Wage in Mexico. 1988-2003
Source: Bergoeing, Kehoe, Kehoe and Soto (2001)

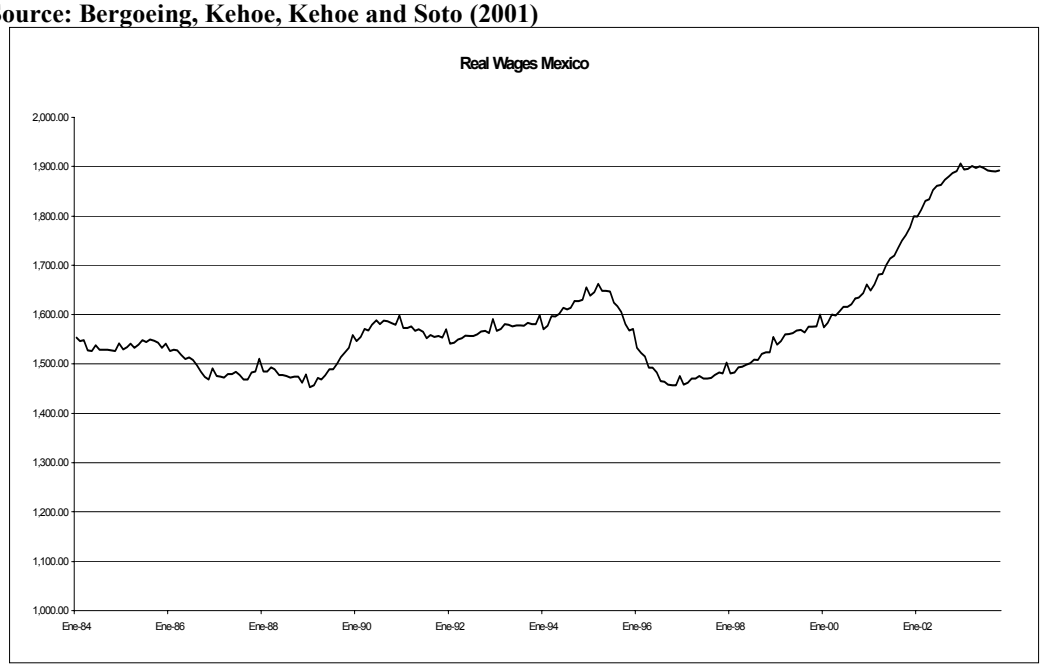
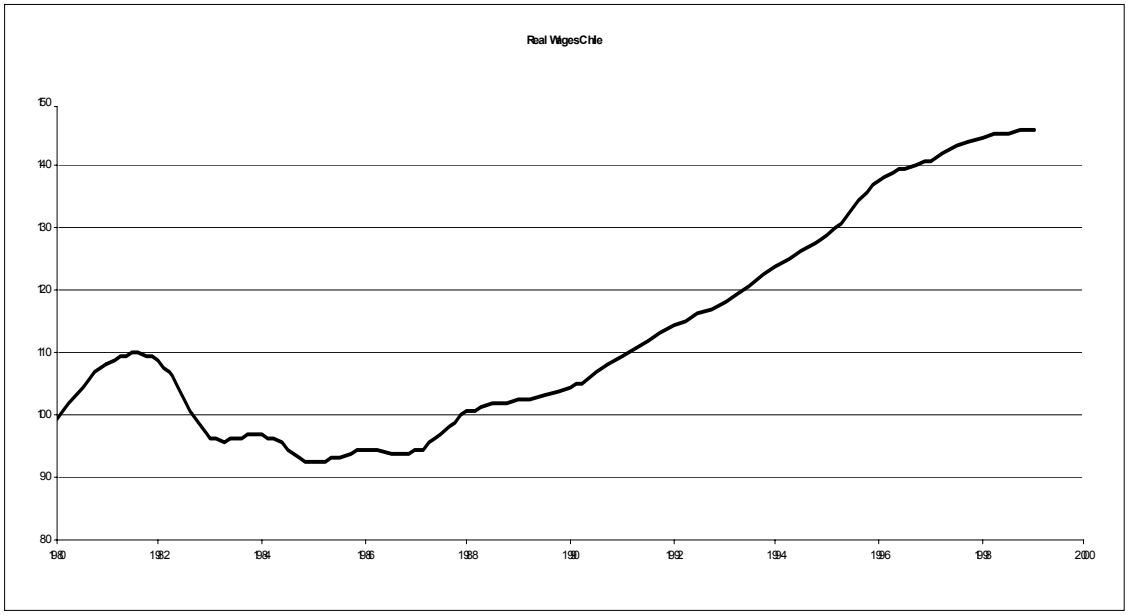
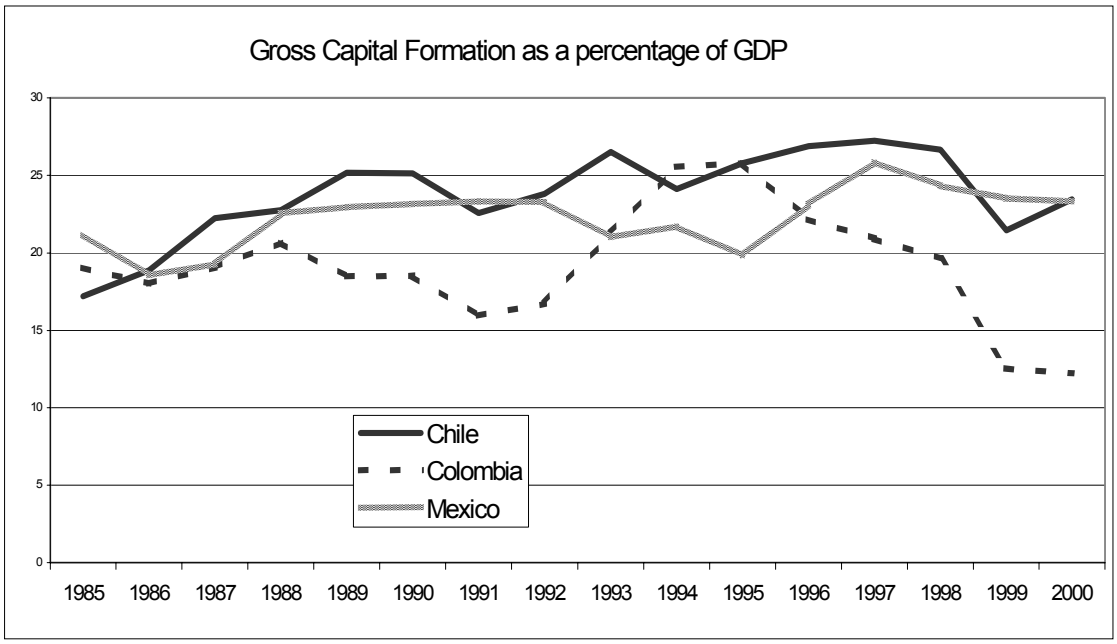


Figure 9. Chile. Real Wages. 1988-2000



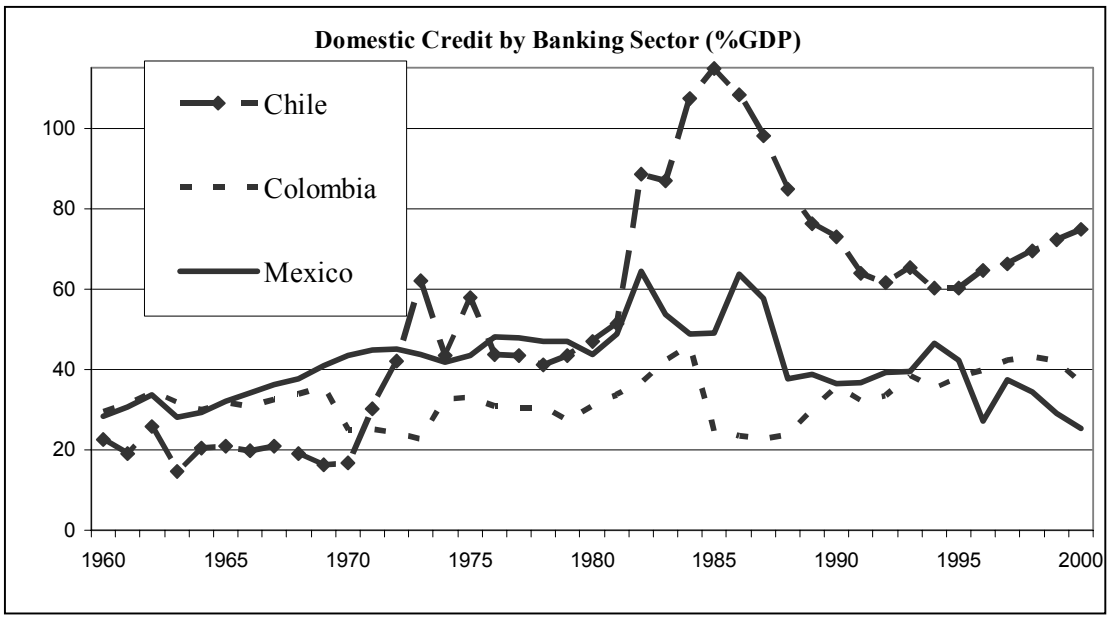
Source: Bergoeing, Kehoe, Kehoe and Soto (2001)

Figure 10



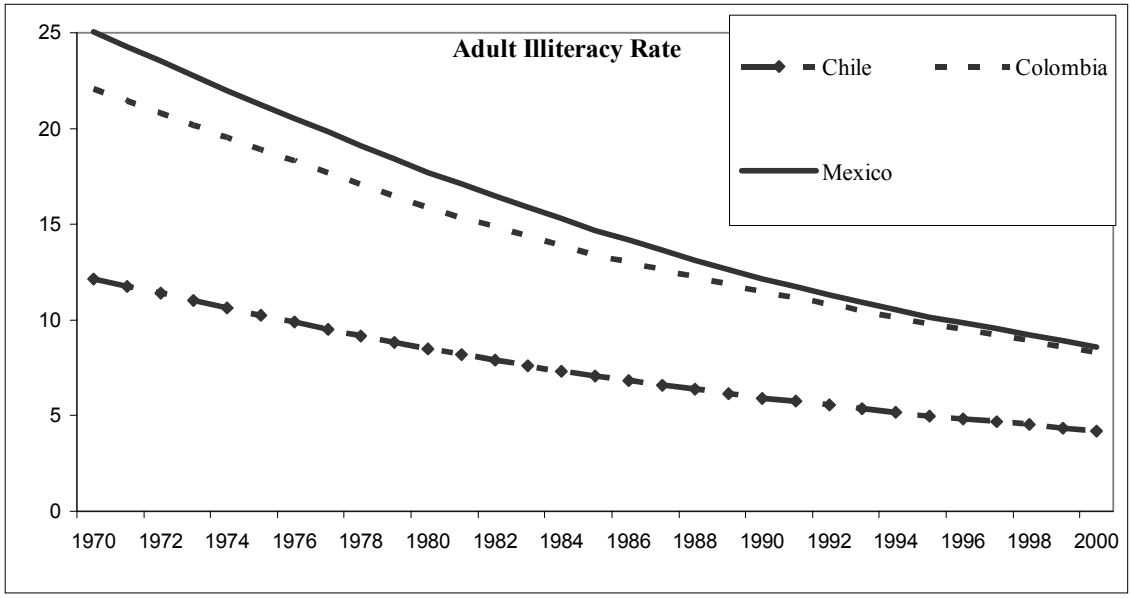
Source: World Bank

Figure 11



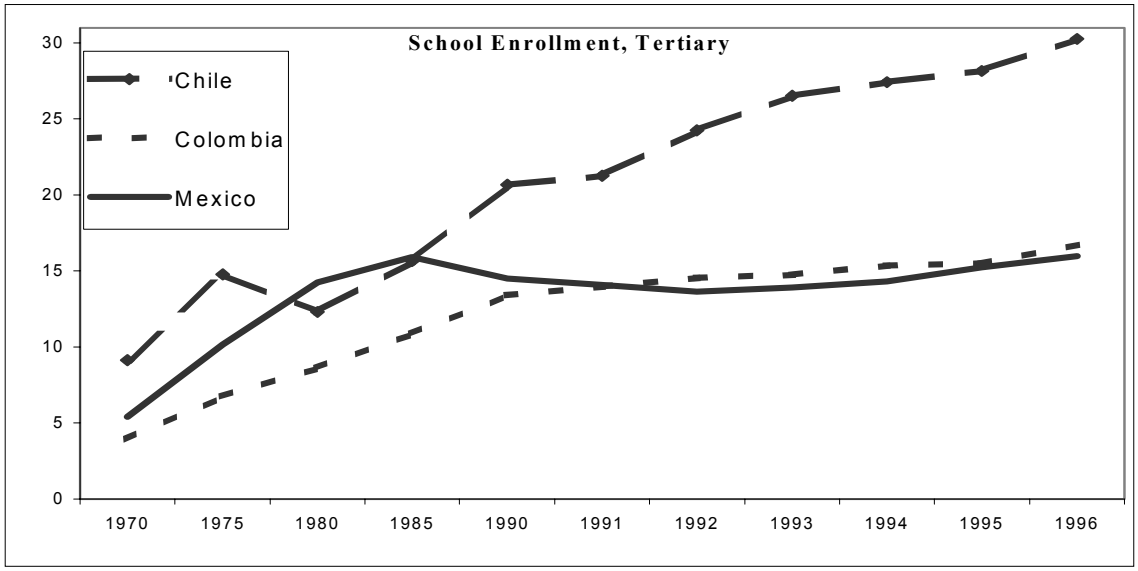
Source: World Bank

Figure 12



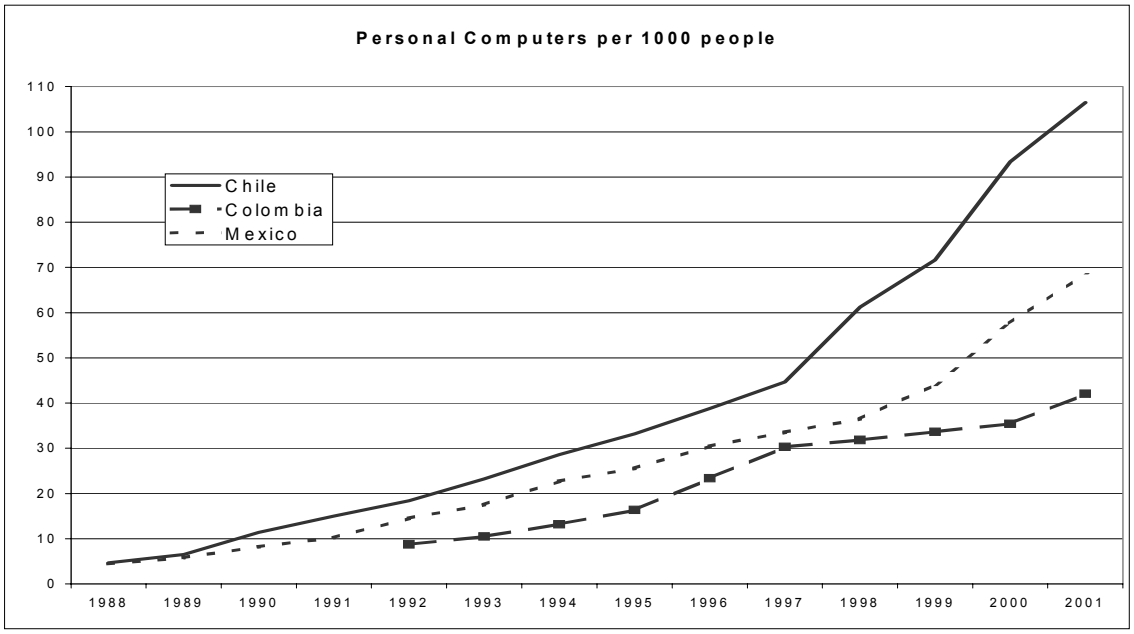
Source: World Bank

Figure 13



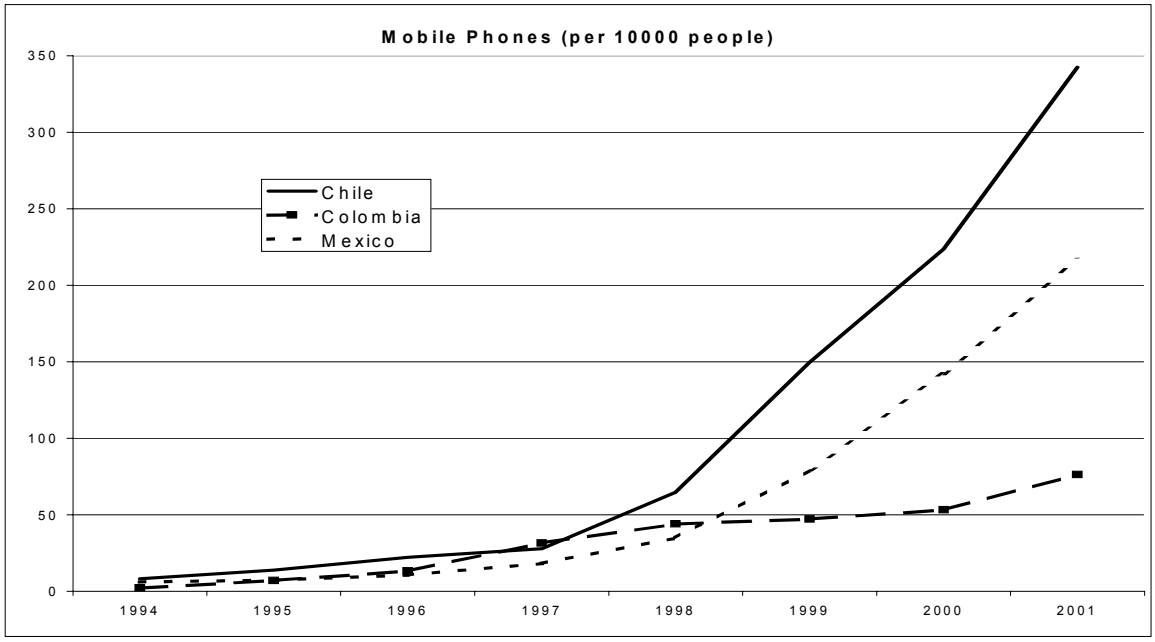
Source: World Bank

Figure 14



Source: World Bank

Figure 15



Source: World Bank

VI. Simulating the FTA

In the previous sections we reviewed the recent economic history of Colombia, Mexico and Chile to derive some lessons for the future. In this section we simulate the possible consequences of a FTA between USA and Colombia using a multiregional Computable General Equilibrium model (CGE)[12]. We proceed as follows; first we present the main modeling aspects, emphasizing strengths and weakness of the analysis, then we present the simulations and finally the results of those simulations are discussed.

The model[13]

The multiregional model is based upon the GTAPinGAMS[14] framework. This framework provides a basic CGE model similar to the Global Trade Analysis Project-GTAP[15] model (Hertel, et. al. (1997)). Here we aggregate the GTAP's different regions into 12 regions (including Colombia) that are relevant to the Colombian case observing historical trade patterns. The general specification of this model follows earlier studies of trade agreements, such as the model of trade policy options for Chile and Brazil (Harrison, Rutherford and Tarr, 2002) and the FTAA analysis for Colombia (Rutherford and Light, 2002). The model incorporates 57 production sectors and 5 factors of production, although we aggregate them to 10 sectors and keep the factor specification. Tables A1 to A7, in the appendix, display sectors, factors, regions and the base year data structure of the model for trade, consumption and production.

The specification of the model follows the work by Rutherford and Tarr (1999) on the Uruguay Round, Chile, and Brazil and Rutherford and Light (2002). We concentrate here on the "base" model, which is static and assumes constant returns to scale (CRTS). Apart from the fact that imports and exports are distinguished by many regions, the structure of

[12] Although , the model was available thanks to the Directorate of Economic Studies at the Departamento Nacional de Planeación in Colombia, the views expressed in this paper are those of the authors and do not correspond to those of the Colombian Government.
[13] This section follows closely DNP (2003) and Light (2004)
[14] See the GTAPinGAMS homepage at: http://debreu.colorado.edu/gtap5/
[15] See http://www.gtap.agecon.purdue.edu/databases/v5/v5_doco.asp for a detailed description of the data.

the model within any country is very close to the basic GTAPinGAMS model. That is, production entails the use of intermediate inputs and the primary factors (Labor, Capital and Land). Primary factors are mobile across sectors within a region, but are internationally immobile. We assume Constant Elasticity of Substitution (CES) production functions for value added, and Leontief production functions for intermediates and the value added composite, i.e. we allow for substitution between capital and labor in the production of value added, but impose a constant relation between intermediate inputs and value added, which imposes a less flexible structure to the economic system. Output is differentiated between domestic output and exports, but exports are not differentiated by country of destination[16].

Changes in welfare are measured using the representative agent's utility. We use the equivalent variation measure to combine the effect of simultaneous price and income effects. This measure computes the percentage change in income that is equivalent to the change in consumption the representative agent can afford in the counterfactual. The GTAPinGAMS framework allows us to explicitly evaluate the importance to Colombia of improved market access for the United States (and to other regions), as well as potentially detrimental trade-diversion effects upon neighboring countries like Venezuela, Ecuador and Brazil.

The base year data in both models comes from national accounting data for 1997. In order to reconcile several trade agreements signed since 1997, we adjust the model and tariff structure to reflect the current trade regimes. Relevant agreements are the Andean Trade Pact, where there is a free trade zone within the Andean Community, and MERCOSUR, which is a free trade area between Brazil, Argentina, and Uruguay. In addition to MERCOSUR and the Andean Pact, we also assume that NAFTA operates as an effective free trade area with zero tariffs between the U.S., Canada and Mexico, but each of the three countries has its own external tariff. Although there are many other regional preferential trading arrangements in the Americas that are implemented at different levels of effectiveness, the GTAP dataset does not incorporate several of these preferential tariff

[16] See figure A1 in the appendix.

rates. Therefore, we use a combination of tariff rates taken from the GTAP5[17] dataset, as well as more recent statistics from the IADB-FTAA trade database[18].

Like any model, this one is a simplification of an economic problem using theoretically sound assumptions. These assumptions and simplifications do not invalidate the relevance of the results but an account of each of them is important to understand the simulations. We list some of the strengths and limitations of using the Multiregional Trade model for bilateral trade policy analysis.

Strengths

- Multiregional framework: This approach has two advantages. First, it explicitly accounts for the effects that trade agreements have over all foreign countries. This is important because allows to asses changes in the comparative advantage in all foreign countries and in this way determine trade-diversion and trade-creation. Second, the multiregional framework describes the importance of the agreements to other country's welfare. For example, it is possible to identify key exports for Mexico – which will help Colombia to understand the motivation behind some policies for key trading partners. The multiregional framework allows us to see the strategic complementarities between countries, identifying possible trading partners and the effects of trade agreements upon non-participating nations, so that policy makers can take into account the effects not only of their own policies, but to also account for policies followed by other countries.

- Consistent and comparable Data: The GTAP dataset and GTAPinGAMS model is a consistent and comparable dataset across a large number of countries. That is, the GTAP research group is careful to consistently define the nature of each commodity. Because sectoral definitions are carefully defined and checked, output and consumption can be compared across sectors and countries.

[17] For a detailed report that describes how tariff and non-tariff barriers are calculated, see GTAP website.
[18] The true barriers to agricultural imports are much higher than those reported in the GTAP data. See DNP (2003).

Limitations

- Representative Agent-RA framework: The model cannot address the distributional impacts of the trade agreements because there is only one agent per country. Since the representative agent (RA) framework represents welfare for the average citizen, poverty and income distribution cannot be addressed.

- Constant Returns to Scale: With this assumption we are able to analyze goods trade liberalization only. However, theoretical work done recently shows that most gains are found in services rather than in goods trade. Because this component is not captured by the multiregional model, the benefits from technology transfers and knowledge that comes with service liberalization will remain completely unmeasured.

- Aggregate Sectoral Definition: The GTAP model distinguishes 57 production sectors. While this is a large number of sectors when considering the computability of a multi-regional trade model and the difficulties of acquiring the data, it is not specific enough for particular industries to use.

- Potential Exports and Economic Structure: The multiregional trade model does not include sectors which were not traded during the base year, 1997. This effectively precludes the possibility of future exports from sectors that have a potential comparative advantage but that are not currently traded. More generally, the model is tied to the base-year data and does not reflect some potentially important economic changes.

- Current Account Balance Constraint: In our static, constant return to scale and representative agent framework, the current account balance is held constant during the counterfactual experiments. This constraint will introduce some undesired changes in the terms of trade for a country. In particular, the elimination of large

tariffs in the USA will induce exports of Colombian goods to the USA However given the fixed current account balance constraint referenced above, this will necessarily be counter balanced by a large and permanent increase in USA imports into Colombia. This result is required in order to ensure that the current account balance does not change as a result of the agreement.

- Static framework: In a dynamic sense the expectation would be that the liberalization process would trigger secular changes in investment patterns and productivity across a range of critical product and service sectors which would significantly improve GDP and export growth performance over time and improve the external balance situation. This feature is not included into a static model because it constitutes borrowing funds from the future without the opportunity cost of repayment. Following the permanent income hypothesis the trade liberalization would generate an increase in consumption (besides the augment in investment) and, in the short run, a trade deficit (see Kehoe (2003)).

- Full Employment: Labor supply is fixed, which can overstate the impact of free trade upon factor incomes.

The simulations

Simulations are performed against a base year data. The Base year refers to the structure of the Colombian economy recorded by the 1997's GTAP data base plus an update of the tariff structure between countries that have signed free trade agreements since then. Given that the exact tariff level and composition of those new agreements are hard to estimate, we use zero tariffs for trade within commercial blocs and most favored nation tariffs for commerce outside the blocs whenever the data is not available. However, data for Andean countries and USA is completely updated. See the appendix for a complete account of the Colombian economy structure reported in GTAP data base and the tariff structure implicit in the Andean Community and the preferential treatment of Colombian products by the USA after ATPA.

We used four basic scenarios for the CRTS model:

1. ATPA: Simulate the Andean Trade Preference Act, i.e. we implement a policy in the U.S. that puts a zero tariff on all the goods coming from the Andean countries (Bolivia, Colombia, Ecuador and Peru). This experiment allows us to asses the possible losses that these countries, particularly Colombia, might have if the ATPA is removed in the future. This is not really a counterfactual experiment, given that the Act is already in force. But could be helpful in evaluating the accuracy of model predictions and the effects of losing the preferences and not signing an agreement with the U.S.

2. BILAT: In this scenario we implement a bilateral free trade agreement between Colombia and the U.S. and maintain the ATPA preferences for the rest of the Andean countries. Thus, both Colombia and the U.S. eliminate all their tariff and non-tariff barriers and export subsidies for trade in goods and services between the two countries, while the U.S. allows preferential access to Andean countries. This scenario allows us to see the competitive and welfare effects for Colombia in contrast to the ATPA scenario, i.e. how much does Colombia gain or lose if the ATPA stands in place forever and Colombia signs a free trade agreement with the U.S. The quantitative difference between the results from this scenario and the ATPA scenario shows how much Colombia might gain or lose if it signs an agreement in the current economic context.

3. USCOL: In this scenario we simulate a bilateral free trade agreement between the U.S. and Colombia and eliminate the ATPA preferences for the other Andean countries. This experiment is quite similar to the bilat, though it allows us to see the competitive gains Colombia might have vis-`a-vis the other Andean countries, once the ATPA is eliminated. This is an important scenario because ATPA is not likely to stand forever and, the USCOL scenario, allows us to quantify the effects for

Colombia from being one of the first countries in signing an agreement with the U.S.

4. FTAA: We simulate the Free Trade Area of the Americas, eliminating all tariff and non-tariff barriers within the Americas having ATPA as a starting point. Thus, this scenario combines ATPA and multilateral liberalization.

Table 14 shows the scenarios emphasizing the agreements covered by each one.

Table 14

	ATPA	***BILAT***	***USCOL***	***FTAA***
ATPA	yes	yes	no	no
Bilateral Agreement	no	yes	yes	yes
Bilateral Agreements between USA and other countries	no	no	no	yes

Results

Under the scenarios described in the last section, the model's results show that, although small, there is an increase in welfare and production of the Colombian consumers and firms. As expected, a bilateral agreement strengthens the gains currently available under the ATPA preferential treatment[19].

The simulations show ***ATPA*** as the best scenario for the Colombian economy (see table 15). This result seems counterintuitive, because we must expect a bigger improvement in welfare and production coming from a more world integrated stance, but can be explained by the model's assumptions about government and trade barriers. Government collects taxes from production and consumption and transfers these revenues directly to the representative agent as an endowment. Then, although tariff revenues are not important

[19] The model allows for different degree of substitution, transformation and import price elasticities. Here we are reporting the realistic low elasticity scenario in which the elasticity of imports to domestic production is 2, the elasticity of transformation of domestic production to exports is 2 and imports price elasticity is equal to 4. Results for high elasticity values can be provided upon request.

within the government's revenue structure, this reduction trim down the consumption possibilities for the representative agent. This result comes from the assumption that the existence of low tariff barriers between a given trade partners shift the terms of trade in favor of the country imposing the barriers. This would imply that Colombia can affect the international price of some goods by increasing the supply of the goods that experienced the tariff reduction. Additionally, the difference between the bilateral agreement and *ATPA* cannot be taken as the latter being superior to the former. The bilateral agreement would make permanent existing preferences, creating stable conditions for local firm's new investment plans.

Table 15 shows the aggregate results of the simulations. Three points must be outlined from this table. First, economic integration brings larger welfare and production for the economy created by the import goods price reduction and by the expansion of the exports supply. Second, the real exchange rate depreciates under all scenarios that imply Colombian tariffs elimination. This is in line with the internal consistency of the model and the base year data which features a current account deficit of 5% of the GDP. In order to maintain unaffected the current account, the expansion in exports must be compensated with an increase in imports that create the depreciation. Third, tariff revenues are reduced, affecting the government transfers to households. If this effect wants to be avoided new sources of revenues have to be created.

Table 15

Summary Results

	ATPA	***BILAT***	***USCOL***	***FTAA***
Equivalent Variation	0.79	0.52	0.54	0.28
Δ Production	0.38	0.17	0.17	0.19
ΔTariff Revenues ($M)	55.33	-635.86	-637.54	-1107.57
Real Exchange Rate	-1.21	0.38	0.36	1.8
Δ U.S. Imports	3.4	31.4	31.0	20.3
Δ Exports to U.S.	20.4	27.1	27.9	22.5

In this type of models sectoral imports, exports and production are driven by the effect of the agreement on the relative prices. As can be observed from Table 16 the bilateral agreement and the FTAA scenarios generate an important improvement in the terms of trade, determined by the reduction in the price of imports after the elimination of trade barriers. Comparing this figures with that under ATPA and considering the size differences of the trade partners; this result highlights the impact over the cost reduction to consumers.

Table 16

Change in terms of trade (%)

	ATPA	*BILAT*	*USCOL*	*FTAA*
Cereals	0.93	19.69	19.8	22.36
Oil Seeds	5.08	17.2	17.81	18.02
Other Ag.	1.6	5.15	5.52	11.03
Energy and mining	1.3	2.03	2.03	7.62
Protected Manufactures	1.41	3.02	3.02	8.99
Food products	2.47	6.04	6.56	12.35
Textiles and Apparel	4.5	15.46	15.83	18.62
Other manufacturing	1.45	4.61	4.54	6.65
Services	0.86	0.33	0.33	-0.05

Exports and imports move in the expected direction (see Tables 17 and 18). Although production is reduced in some sectors affected by the increased competition, expanding sectors are absorbing resources from shrinking activities driven by the change in the relative prices (see Tables 19 and 20). As we mentioned above this drastic reallocation of resources is difficult to be observed in the available data and trade liberalization experiences, but are consistent with the model assumptions. In particular, the model cannot capture the smooth adjustment process that will take place after some clauses and exemptions are included in the text of the agreement.

Sector by sector results influence the relative remuneration to factors (See table 21). Unskilled labor wages increases by a higher proportion that those of skilled workers and other factors of production. These results are consistent with the inherent theory of the model but not by the facts described in the previous sections. This can be explained by the simplistic assumptions about both firm's competition and labor market structure.

ATPA vs. BILAT

Even though the advantages of a bilateral agreement are evident, some would be tempted to think that it is better to keep renewing tariff preferences and protect the local firms from the USA competing imports. We use two arguments against this point. One comes from the model results and the other from the Mexican experience.

The simulation results show the bilateral agreement as a superior scenario than ATPA because three superior benefits: (i) Terms of trade, (ii) Factors returns and (iii) consumers prices. Indeed, terms of trade are higher under *BILAT* because Colombian exporters face higher export prices and lower import prices. Factor returns are higher because a complete reallocation of resources is taken place. Finally, as explained above, consumers face lower consumption goods prices which are not completely translated in the welfare indicator by the loss in government revenue that is completely translated to the consumer's disposable income.

Additionally, from the effects not taken into account in these models, the great advantage of signing the agreement lies in the stability of the rules to investment. Indeed, the preferential treatment received by the Andean region under ATPA is temporary and subject to conditions that have to be renewed constantly. The bilateral agreement will provide security to investors, stabilizing their expectations and allowing long term investment in sectors and goods that prove to be successful under the new conditions. Although these features cannot be captured by this model, it does not mean that the agreement will improve Colombian prospects by itself. In effect, macroeconomic stability, trade related infrastructure and improvements in the investment environment are necessary to realize the expected gains.

Table 17

Colombian import volume (percentage change)

	ATPA	BILAT	USCOL	FTAA
Cereals	6.0	142.1	141.3	120.1
Oil Seeds	3.1	156.2	153.6	134.2
Other Ag.	7.2	72.9	71.7	47.4
Energy and mining	3.7	37.4	37.1	17.5
Protected Manufactures	2.8	38.6	38.2	19.2
Food products	6.7	84.2	82.0	57.2
Textiles and Apparel	5.0	64.3	62.7	41.7
Other manufacturing	2.9	25.7	25.6	16.5
Services	4.8	1.9	1.8	-0.8

Table 18

Colombian export volume (percentage change)

	ATPA	BILAT	USCOL	FTAA
Cereals	11.0	9.1	9.3	9.2
Oil Seeds	77.2	81.9	84.6	61.6
Other Ag.	11.8	13.9	14.4	13.6
Energy and mining	-4.1	-1.3	-1.2	1.4
Protected Manufactures	11.1	14.0	14.3	7.8
Food products	32.4	35.9	37.0	33.7
Textiles and Apparel	42.5	99.2	99.9	83.3
Other manufacturing	5.1	7.4	7.8	5.7
Services	-3.2	-1.2	-1.2	0.7

Table 19

Colombian production (percentage change)

	ATPA	BILAT	USCOL	FTAA
Cereals	-0.1	-6.4	-6.4	-7.0
Oil Seeds	6.4	7.3	7.5	6.2
Other Ag.	0.4	0.1	0.0	-0.5
Energy and mining	-2.4	-1.1	-1.2	-0.5
Protected Manufactures	-1.6	-1.6	-1.7	-2.2
Food products	0.5	0.3	0.3	-0.1
Textiles and Apparel	2.5	6.4	6.3	8.9
Other manufacturing	-1.7	-2.4	-2.4	-1.6
Services	-0.3	-0.3	-0.3	-0.1
Ownership of dwellings	0.3	-0.5	-0.5	-1.0

Table 20

Price of Consumer goods (percentage change)

	ATPA	BILAT	USCOL	FTAA
Cereals	0.1	-2.4	-2.4	-2.4
Oil Seeds	-1.6	-2.5	-2.5	-2.1
Other Ag.	0.6	0.7	0.7	0.5
Energy and mining	0.0	0.4	0.4	-0.3
Protected Manufactures	-0.7	-0.7	-0.7	-2.0
Food products	0.1	0.0	0.0	-0.1
Textiles and Apparel	-0.8	-2.8	-2.8	-3.3
Other manufacturing	-0.6	-1.1	-1.1	-1.3
Services	0.2	0.7	0.8	1.0
Ownership of dwellings	0.5	1.1	1.1	1.4

Table 21

Return to factors in Colombia (Percentage Change)

	ATPA	BILAT	USCOL	FTAA
SKL-LABOR	0.0	0.6	0.6	1.0
UNSKL LABOR	0.6	1.2	1.2	1.6
CAPITAL	0.3	0.8	0.8	1.1
CAP-PROF	0.9	1.7	1.7	2.1
N-RES	-3.0	-0.7	-0.8	0.7

VI. Conclusions

After assessing the effects of past trade liberalization reforms and evaluating the possible outcome a free trade agreement between Colombia and USA the following conclusions arise:

1. Although the past reforms had an effect on the share of international trade, such an effect has been relatively small compared with Chile and Mexico.
2. Given that the major part of the trade liberalization has been done, the effects of a FTA between Colombia and USA are likely to be relatively small.
3. The effect of a free trade agreement between Colombia and United States will be positive for the Colombian economy as a whole.
4. To guarantee that the benefits derived from such an agreement can spread to different geographical regions and different economic sectors, the Colombian government must undertake several measures: (i) integrate all the regions of the country in economic unity. This implies the construction and improvement of transportation infrastructure; (ii) increase the share of skilled workers in labor supply. This implies better efficiency and more government spending on education.
5. It must be clear what kind of productive structure is beneficial for the Colombian society. In particular, since the agreement can affect negatively part of the agricultural sector, it must be clear if the government should or should not negotiate special clauses for it. In order to answer this question, a detailed study on the agricultural sector is necessary, evaluating its efficiency, demand for labor and importance for the economy as a whole.

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Appendix

1. Regions, sectors and factors

Table A1

Regions in the Multiregional Trade Model	
col	Colombia
ven	Venezuela
xap[20]	Rest of Andean Pact
xsm	Rest of South America
bra	Brazil
msr	Mercosur Countries except Brazil
Mex	Mexico
cm	Central America and Caribbean
can	Canada
usa	United States of America
eur	European Union 15
row	Rest of World

Table A2

Factors of Production	
lnd	Land
skl	Skilled labor
lab	Unskilled labor
capres	Capital Natural resources

Table A3

Model Sectors

PDR	Paddy rice	VOL	Vegetable oils and fats	OME	Machinery and equipment nec
WHT	Wheat	MIL	Dairy products	OMF	Manufactures nec
GRO	Cereal grains nec	PCR	Processed rice	ELY	Electricity
V_F	Vegetables - fruit - nuts	SGR	Sugar	GDT	Gas manufacture - distribution
OSD	Oil seeds	OFD	Food products nec	WTR	Water
C_B	Sugar cane - sugar beet	B_T	Beverages and tobacco products	CNS	Construction
PFB	Plant-based fibers	TEX	Textiles	TRD	Trade
OCR	Crops nec	WAP	Wearing apparel	OTP	Transport nec
CTL	Bo horses	LEA	Leather products	WTP	Water transport
OAP	Animal products nec	LUM	Wood products	ATP	Air transport
RMK	Raw milk	PPP	Paper products - publishing	CMN	Communication
WOL	Wool - silk-worm cocoons	P_C	Petroleum - coal products	OFI	Financial services nec
FRS	Forestry	CRP	Chemical - rubber - plastic products	ISR	Insurance
FSH	Fishing	NMM	Mineral products nec	OBS	Business services nec
COL	Coal	I_S	Ferrous metals	ROS	Recreational and other services
OIL	Oil	NFM	Metals nec	OSG	Public admin - and defence - education - health
GAS	Gas	FMP	Metal products	DWE	Ownership of dwellings
OMN	Minerals nec	MVH	Motor vehicles and parts	CGD	Savings good /;
CMT	Bo meat products	OTN	Transport equipment nec		
OMT	Meat products	ELE	Electronic equipment		

[20] Ecuador, Peru, and Bolivia

2. Data structure at the base year (GTAP 1997)

Table A4

Imports Tariff Structure for Colombia and Major Trading Partners [21]

Trade From:	usa	colombia		xsm	eur	xsm	col
To:	col	usa97	usa02	usa	col	col	eur
Sugar	18.0	53.0	53.0	53.0	18.0	0.0	76.0
Milk products	19.0	42.0	42.0	42.0	19.0	19.0	88.0
Other Crops	9.0	22.0	3.0	22.0	9.0	9.0	3.0
Oil seeds	11.0	18.0	0.0	18.0	0.0	0.0	0.0
Wearing apparel	20.0	15.0	3.0	13.2	20.0	18.4	13.0
Textiles	16.0	12.0	6.0	16.0	16.8	20.0	11.0
Other Food products	18.0	11.0	0.0	11.0	18.0	18.0	29.0
Leather Products	13.0	6.0	0.0	5.7	16.3	10.0	5.0
Chemical, rubber, plastic	8.0	5.0	0.0	2.0	7.0	12.0	7.0
Vegetables and Fruits	14.0	5.0	0.0	5.0	14.0	14.0	15.0
Natural Gas and Minerals	5.0	4.0	0.0	0.0	5.0	5.0	0.0
Metal products	14.0	3.0	0.0	2.0	13.8	14.8	4.0
Other Machinery	9.0	3.0	0.0	2.0	8.4	14.0	2.0
Electronic equipment	6.0	2.0	0.0	1.8	6.6	6.0	4.5
Petroleum Products	10.0	2.0	0.0	1.5	9.3	9.0	0.2
Other Transport Equipment	3.0	2.0	0.0	0.9	3.7	20.0	1.0
Other Mineral product	14.0	2.0	0.0	6.0	15.0	14.0	7.0
Major Crops	14.7	2.0	0.0	1.7	17.6	17.1	18.2
Heavy Industry	13.8	1.5	0.0	0.9	10.5	5.8	0.1
Bo Meats	16.4	1.5	0.0	2.0	13.2	10.8	46.8
Wood, Paper, Publishing	13.6	1.2	0.0	1.3	11.6	10.5	1.5
Cereal Grains	12.0	1.0	0.0	1.0	12.0	12.0	39.0
Motor vehicles, parts	15.0	1.0	0.0	1.2	23.4	30.0	4.1
Finance and Other Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Savings Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dwelling Ownership	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation: All Modes	0.4	0.0	0.0	0.0	0.5	0.6	0.0
Services: Public and Private	0.0	0.0	0.0	0.0	0.0	0.0	0.0

[21] usa97: United States as reported in 1997 data, usa02: United States tariffs reported in IADB/FTAA database for 2001, plus textile exemptions, eur: European Union 15, xsm: Other South American Countries

Table A5
Structure of Export Sectors for Colombia[22]

	X-U.S.	X	%-X	LAB/VA	SKL/VA	CAP/VA	RES/VA
Oil	1641.3	2143.5	53.7	10.2	2.1	48.1	39.6
Other Crops	980.0	2802.9	82.0	46.5	0.6	25.1	27.8
Transportation: All Modes	383.0	1851.7	16.7	71.1	13.5	15.3	0.0
Wearing apparel	305.5	495.9	18.7	53.5	7.7	38.8	0.0
Finance and Other Services	206.4	1462.1	10.8	28.5	22.8	48.7	0.0
Heavy Industry	189.8	515.9	10.5	29.2	7.7	63.1	0.0
Other Food products	179.9	576.8	9.9	33.5	7.2	59.2	0.0
Petroleum Products	177.5	339.2	14.8	57.2	10.4	32.3	0.0
Vegetables and Fruits	152.5	480.7	14.6	46.5	0.6	25.1	27.8
Chemical, rubber, plastic	118.6	1210.6	15.0	33.4	7.8	58.9	0.0
Services: Public and Private	111.5	512.3	0.9	41.4	28.4	30.2	0.0
Coal	98.2	902.5	90.1	15.4	1.3	41.7	41.6
Other Mineral product	50.7	198.8	10.9	41.0	6.7	52.3	0.0
Leather Products	44.6	146.5	14.4	42.8	6.2	51.0	0.0
Textiles	42.5	310.0	14.8	45.5	6.8	47.7	0.0
Sugar	39.2	254.1	17.1	37.2	8.0	54.8	0.0
Wood, Paper, Publishing	33.3	288.4	6.9	43.7	7.5	48.8	0.0
Metal products	13.0	123.6	10.3	46.1	8.1	45.8	0.0
Other Machinery	12.6	387.6	15.9	49.7	12.2	38.0	0.0
Bo Meats	11.8	47.4	0.4	49.0	2.4	26.6	22.1
Major Crops	11.3	92.8	1.3	41.5	3.0	42.6	12.8
Motor vehicles, parts	3.2	118.9	7.7	59.8	11.9	28.3	0.0
Electronic equipment	2.3	14.8	3.5	52.0	12.4	35.6	0.0
Communication	0.9	10.3	0.4	21.5	17.2	61.3	0.0
Other Transport Equipment	0.9	15.9	5.4	60.5	11.3	28.2	0.0
Milk products	0.5	8.2	0.4	35.6	5.2	59.2	0.0
Cereal Grains	0.1	1.0	0.3	46.6	0.5	25.1	27.8
Natural Gas and Minerals	0.1	5.9	0.8	47.9	7.0	30.6	14.6
Oil seeds	0.0	1.1	0.4	46.6	0.5	25.1	27.8

[22] X-US: Colombian export value to the United States. X: Total Colombian Exports by Sector. %-X:Percentage of Colombian production that is sold as exports. (Exports/(Exports+Domestic). LAB/VA: Unskilled labor's value share in total value-added. SKL/VA: Skilled labor's value share in total value-added. CAP/VA: Capital value share in total value-added. RES/VA: Natural resource value share in total value-added.

Table A6

U.S. Imports and the Colombian Share

	%M	M from COL	Total M	%-COL	TM-COL[23]
Oil	52.1	1641.3	55396.5	3.0	0.0
Other Crops	34.6	980.0	6925.0	14.2	22.0
Transportation: All Modes	11.7	383.0	60470.6	0.6	0.0
Wearing apparel	37.7	305.5	36967.7	0.8	15.0
Finance and Other Services	1.6	206.4	43308.6	0.5	0.0
Heavy Industry	15.4	189.8	75766.4	0.3	1.5
Other Food products	7.1	179.9	14423.0	1.2	11.0
Petroleum Products	5.2	177.5	7853.9	2.3	2.0
Vegetables and Fruits	17.2	152.5	5000.2	3.1	5.0
Chemical, rubber, plastic	12.6	118.6	66076.6	0.2	5.0
Services: Public and Private	0.8	111.5	42316.5	0.3	0.0
Coal	1.2	98.2	294.5	33.3	0.0
Other Mineral product	15.2	50.7	12825.9	0.4	2.0
Leather Products	71.4	44.6	19893.5	0.2	6.0
Textiles	19.0	42.5	19611.3	0.2	12.0
Sugar	24.0	39.2	1220.3	3.2	53.0
Wood, Paper, Publishing	8.8	33.3	41645.2	0.1	1.2
Metal products	7.8	13.0	16407.3	0.1	3.0
Other Machinery	24.7	12.6	147719.3	0.0	3.0
Bo Meats	2.7	11.8	5567.0	0.2	1.5
Major Crops	7.0	11.3	10628.4	0.1	2.0
Motor vehicles, parts	26.9	3.2	109116.5	0.0	1.0
Electronic equipment	46.2	2.3	151114.4	0.0	2.0
Communication	2.9	0.9	8912.3	0.0	0.0
Other Transport Equipment	14.1	0.9	17662.3	0.0	2.0
Milk products	2.5	0.5	1206.6	0.0	42.0
Cereal Grains	1.6	0.1	548.5	0.0	1.0
Natural Gas and Minerals	28.1	0.1	9878.3	0.0	4.0
Oil seeds	4.8	0.0	477.8	0.0	18.0

[23] USA Tariffs to Colombian products using 1997's GTAP data. Some tariffs may be lower after ATPA

Table A7

Colombian Consumption (Millions of U.S. Dollars)

	%	Production + Imports	%M	%M from U.S.	TM-U.S[24].
Services: Public and Private	31.8	55125.0	1.6	27.9	0.0
Finance and Other Services	7.9	13737.3	11.7	14.3	0.0
Bo Meats	6.5	11337.8	1.0	44.6	16.4
Transportation: All Modes	5.9	10262.5	10.3	21.7	0.4
Chemical, rubber, plastic	5.9	10190.7	30.1	38.2	8.0
Dwelling Ownership	5.6	9778.9	0.0	0.0	0.0
Major Crops	4.8	8276.3	10.6	28.4	14.7
Other Food products	3.4	5855.2	7.0	11.9	18.0
Heavy Industry	3.3	5749.1	20.8	15.8	13.8
Other Machinery	3.3	5720.1	63.0	43.6	9.0
Wood, Paper, Publishing	2.7	4757.2	13.9	30.9	13.6
Vegetables and Fruits	2.2	3764.4	5.2	11.0	14.0
Motor vehicles, parts	1.9	3231.9	54.5	14.5	15.0
Communication	1.4	2442.1	0.8	19.0	0.0
Textiles	1.4	2428.5	23.3	25.2	16.0
Wearing apparel	1.4	2402.8	7.0	67.2	20.0
Milk products	1.3	2321.3	3.8	15.3	19.0
Petroleum Products	1.3	2291.1	10.6	14.6	10.0
Other Mineral product	1.3	2216.0	16.8	26.0	14.0
Oil	1.2	1998.8	0.0	0.0	0.0
Electronic equipment	1.1	1865.9	78.0	57.1	6.0
Metal products	0.9	1504.9	24.5	34.1	14.0
Sugar	0.8	1346.8	0.4	4.1	18.0
Leather Products	0.6	1001.2	9.3	9.8	13.0
Other Transport Equipment	0.5	871.8	68.2	44.1	3.0
Natural Gas and Minerals	0.4	750.9	6.3	18.0	5.0
Other Crops	0.4	699.7	6.0	16.3	9.0
Cereal Grains	0.4	681.3	48.7	67.4	12.0
Oil seeds	0.2	411.0	20.8	55.6	11.0
Coal	0.1	121.1	0.0	0.0	0.0

[24] Colombian Tariffs to U.S. products using 1997's GTAP data. Some tariffs may be lower after ATPA. A0: total consumption (Domestic production + Imports). %M: consumption imported. %M-U.S: Consumption imported from U.S.

Figure A1: Model Structure