

Trade openness, financial liberalization and volatility

The Latin American experience

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Introduction

In the 1990's, most Latin American governments implemented Washington Consensus type policies. Government sought to stabilize, liberalize and privatize. Central to this approach was trade openness and financial liberalization. Both types of policies which are complementary were undertaken with the promise that they would lead to stable and sustainable growth and improved welfare. The underlying rationale for trade liberalization was provided by the main free trade theorems arguing that 'free trade' is best. The arguments for financial liberalization are an extension of those of the gains to international trade in goods to international trade in assets. As hypothesized by orthodox economists free trade and financial liberalization would lead to an increase in the rate of growth through their positive effect on investment.

This paper analyses the effects of trade openness and financial liberalization on the growth trajectory of Latin American economies. It argues that trade openness and financial liberalization have not increased the rate of economic growth and in fact have enhanced its volatility. The paper comprises four sections. The first section describes the background leading the adoption of free market policies in Latin America. The second section shows that the adoption of trade liberalization and financial liberalization occurred roughly at the same time highlighting their simultaneity. It also explains the theoretical underpinnings justifying that in developing countries both sets of policies must be implemented 'simultaneously.' The third section analyses the relationship between trade liberalization, export performance and the pattern of export development. The fourth section analyses the effects of trade and financial liberalization on the rate of growth and its volatility in Latin America.

Trade openness and financial liberalization: the background

In the 1990's, Latin American governments adopted economic policies associated to the Washington Consensus and its mantra: "stabilize, privatize and liberalize."²

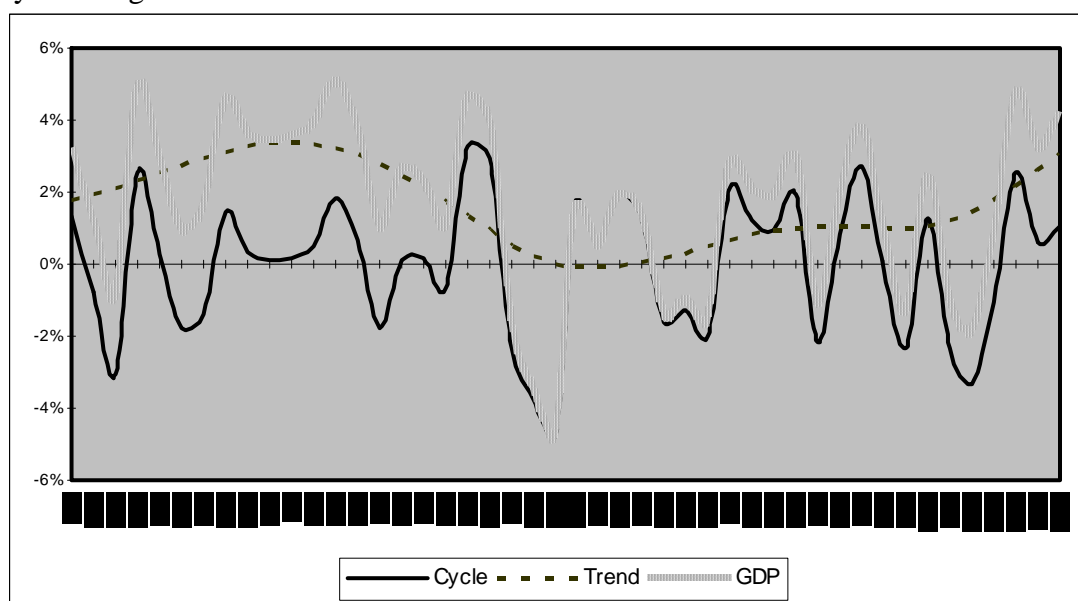
¹ Economic Commission for Latin America and the Caribbean (ECLAC), Santiago Chile. The opinions here expressed are the authors' own and may not coincide with those of ECLAC.

² See, Rodrik (2006). The original Washington Consensus consisted of ten reform policies: (1) fiscal discipline; 2) reorientation of public expenditure; 3) tax reform; 4) liberalization of financial markets; 5) competitive exchange rate; 6) liberalization of trade policies; 7) openness to foreign direct investment; 8) privatization; 9) deregulation and secure property rights. See, Williamson (1990).

The main event that produced this change was the debt crisis and its effects on Latin American economies. The debt crisis produced the largest drop in per capita GDP growth which occurred in 1983 as well as the worst decadal performance in the history of Latin America.

Following the onset of the crisis in 1980, Latin America GDP per capita growth contracted in the next three 1981, 1982 and 1983 by -1.8%, -3.6% and -4.7% respectively (Figure 1). The varying intensity of the debt crisis within Latin America produced large disparities of GDP per capita variation at the country level. In 1981, eight out of eighteen Latin American suffered contractions including three of the largest economies of the region Argentina, Brazil and Venezuela (-7.1%, 6.6% and -3.4% respectively). In 1982, all of Latin American economies, with the exception of Panama, experienced contractions. In 1983, Latin American economies contracted once again with the exceptions of Argentina and three Central American countries (Costa Rica, El Salvador and Nicaragua). In spite of the slow recovery process which began in 1984, these three years of massive downturns produced the worst decadal growth performance in Latin America and the 1980's were termed the 'Lost Decade.' (See Figure 1).

Figure 1: Latin America. Per capita GDP growth and its decomposition into trend and cycle using the Hodrick-Prescott filter. 1961-2006



Source: On the basis of World Bank Development Indicators (2008).

The simultaneity of trade and financial liberalization policies

Following the 'lost decade' and relying on a political discourse that put the blame of the output contraction on government interventionist policies followed in the 1960's and 1970's (termed import industrialization, ISI policies), Latin American governments implemented trade and financial liberalization policies simultaneously.

Free trade policies were defended using the arguments traditionally espoused in its favor. These are first that by free trade improves resource allocation and stimulates employment and growth. Second free trade is fair trade as it provides equal trading opportunity to all countries according to their respective capacities and endowments.

Third, free trade helps countries to achieve development rewarding economic agents and sectors with comparative advantage. Fourth, free trade benefits households and firms by widening the supply of products and lowering their costs. Finally free trade prevents rent seeking behavior and promotes good government.³

Country	GATT	WTO	Year of trade liberalization	Pre Trade Liberalization		Post-trade liberalization	
				Tariff rate	Tariff dispersion	Tariff rate	Tariff dispersion
Argentina	1967	1995	1991	42.0	15-115	12.5	5-22
Bolivia	1990	1995	1985	12.0		10.3	5-10
Brazil	1948	1995	1991	51.0	0-105	17.32	0-65
Chile	1949	1995	1976	35.0	35	11.33	11
Colombia	1981	1995	1986	61.0	0-220	10.60	5-20
Costa Rica	1990	1995	1986	53	0-1,400	14.30	5-20
Dominican Republic	1948	1995	1992	...	....	16.70	...
Ecuador	-	1996	1991	37.0	0-338	11.29	2-25
El Salvador	1991	1995	1989	20.0		9.38	5-20
Guatemala	1991	1995	1988	50.0	5-90	10.27	5-20
Honduras	1994	1995	1991	41.0	5-90	8.90	5-20
Mexico	1966	1995	1986	24.0	0-100	12.53	0-20
Nicaragua	1950	1995	1991	15.9	...	9.90	0-20
Panama	-	1997	1996	...	...	10.67	...
Paraguay	1994	1995	1989	...	...	10.91	3-86
Peru	1951	1995	1991	37.6	0-120	16.80	5-25
Uruguay	1953	1995	1990	32.0	10-55	14.00	12-24
Venezuela	1990	1995	1996	37.0	0-135	14.31	0-50

Note:
... denotes not available.
The pre-trade liberalization years are 1984 for Chile, 1985 for Bolivia, Costa Rica, Guatemala, Honduras and Mexico; 1987 for Brazil and Uruguay; 1986 for Argentina,; 1988 for Paraguay and Peru; 1989 for Ecuador and Venezuela; 1978-1984 for Nicaragua, 1980 for El Salvador. The post-trade liberalization year is 1990 for Mexico, 1991 for Argentina, Bolivia, Chile, Paraguay and Venezuela and 1992 for the rest of the countries.
Source: Wacziarg & Welch (2003); Henry (2007); World Bank (2003); WTO (2008b); Alam and Rajapatirana (1993); Cardoso and Helwedge (1992);

During this period Latin American countries completed their adhesion to the GATT and World Trade Organisation (WTO), reduced their tariff rates and opened up their economies. Following trade liberalization and taking the 1980's as a reference the

³ See WTO (2008a). The mainstream literature argues that there is wealth of empirical evidence supporting that trade (i.e., free trade) promotes growth and that the relationship between trade and growth has gained the status of a stylised fact in the growth literature. However, the transmission between trade and growth have not been received the required level of attention or study. As stated by Lewer et al. (2004) P.163: "A serious weakness of the many statistical studies (on trade and growth) is that they have not yet shed much light on *why* the statistical relationship between trade growth holds so robust...studies have tried to distinguish the channels of influence through which trade enhances economic growth, but the results are so far merely suggestive." Ultimately the authors suggest that the main possible channel through which trade influences growth is through investment.

average regional tariff rate declined from 37% to 12% in the trade liberalization period.⁴ For its part the openness coefficient measured as the sum of export and imports over GDP almost doubled increasing from 23% to 40% between the periods 1970-1980 and 2002-2006. (See, Tables 1 and 2 above and below).

Table 2			
Openness in selected regions of the world (Percentages of GDP)			
1970-2006			
	1970-1980	1981-1991	1992-2006
Latin America & Caribbean	23,50	28,26	40,34
East Asia & Pacific	22,08	37,89	66,23
Europe & Central Asia	...	45,35	69,78
Euro area	46,18	54,56	64,53
Middle East & North Africa	60,40	51,11	57,21
South Asia	15,56	18,26	30,90
Sub-Saharan Africa	53,93	53,19	61,69
World	32,49	37,35	45,54

Note: Openness was measured as the sum of imports and exports divided by GDP.
Source: World Bank Development Indicators (2008)

Around the same time, Latin American countries implemented financial liberalization policies. As table 3 shows, Argentina, Brazil Chile, Colombia, Mexico and Venezuela liberalized their respective stock markets (a indication of financial liberalization) in the late 1980's or early 1990's.

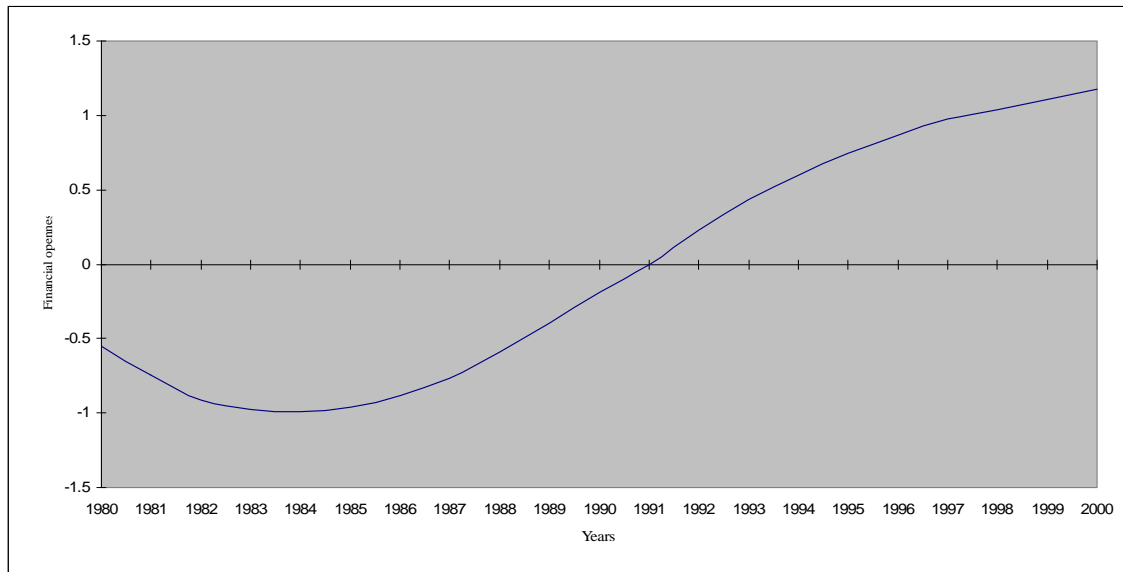
Table 3		
Latin America		
Year of stock market liberalization and means of liberalization		
Country	Year	Means of liberalization
Argentina	1989	Policy decree
Brazil	1988	Country fund
Chile	1987	Country fund
Colombia	1991	Policy decree
Mexico	1989	Policy decree
Venezuela	1990	Policy decree

Source: Henry (2007)

Further evidence of financial liberalization is provided by figure 2 below which shows an index of openness in capital account transactions developed by Chinn and Ito (2007). The higher is the value of the index the greater is the degree of openness of an economy to cross-border capital transactions. As the figure 2 shows, the level of financial openness rose to an index above zero and systematically increased throughout the 1990' decade reflecting the fact that Latin American countries became on average more 'financially open' in the 1990's.

⁴ It should be noted that the nominal tariff estimates presented in table 6 do not include para tariffs. The inclusion of para tariffs increases the rate of nominal protection. Edwards reports for example that the pre-tariff rate of protection including para-tariffs to be 92% for Costa Rica and 80% for Brazil whereas in table 6, the nominal level of protection is 53% and 51% for Costa Rica and Brazil respectively. See, Edwards (1995), p.200.

Figure 2: Latin America. Evolution of the financial openness indicator. 1980-2000 (Averages)



Source: On the basis of Chinn & Ito (2007)

The arguments supporting financial liberalization are very similar to those put forward for trade liberalization. Indeed both draw on the same principle, that of Allocative Efficiency and the arguments for financial liberalization, are in fact an extension to trade in assets of the classical arguments of the gains in international trade. Using the standard neo-classical growth model proponents of financial liberalization argue that financial liberalization and more precisely capital account liberalization improves the efficiency in the international allocation of resources. As put by Henry (2007) pp.887-888: “In the neoclassical model, liberalizing the capital account facilitates a more efficient allocation of resources and produces all kinds of salubrious effects. Resources flow from capital abundant developed countries, where the return to capital is high. The flow of resources in developing countries reduces their cost of capital, triggering a temporary increase in investment and growth that permanently raises their standard of living.”

The above argument can be formally explained through the fundamental growth equation, whereby the rate of growth of capital per worker is determined by the difference between the savings per worker and the savings necessary to maintain a constant relationship between capital and labor when the labor force grows at a given rate. That is,

$$(1) \quad k = sy - nk,$$

where,

k= the rate of growth of capital.

s= fraction of national income that is saved in every period.

y= national income.

n= the growth rate of the labor force.

In the steady state, the rate of growth of capital per worker is equal to 0 meaning, that the level of capital per worker is constant, the level of capital (K) grows at the rate of growth of the labour force, and the marginal product of capital (f') is equal to the rate of interest (r). That is,

$$(2) f'(k) = r$$

Since it is assumed that capital is abundant in developed countries and scarce in developing countries, the interest rate in developing countries (r_{dc}) is greater than the rate of interest in developed countries (r_{ddc}). This implies that, financial liberalization and capital mobility (and utility and profit maximization) will ensure that capital flows from developed to developing countries. The increase in capital flows generates a temporary increase in the rate of growth of capital and of capital per worker above their steady state values. This generates a permanent increase in the level of real GDP per worker.

The same logic underpins a more recent neoclassical approach to the understanding of international economic relations than of the intertemporal approach to the balance of payments (Obstfeld and Rogoff, 1996). Central to this approach is the fundamental equation for the optimum current account which states that the difference between private savings and investment (in turn equal to the current account) is equal to transitory income. Formally the fundamental equation for the optimum account is equal to:

$$(3) X-M = S-I = [1-r/(1+r)]Y_t$$

Where,

X = exports of goods and services.

M = imports of goods and services.

S = savings.

I = investment.

Y_t = temporary income.

r = the rate of interest.

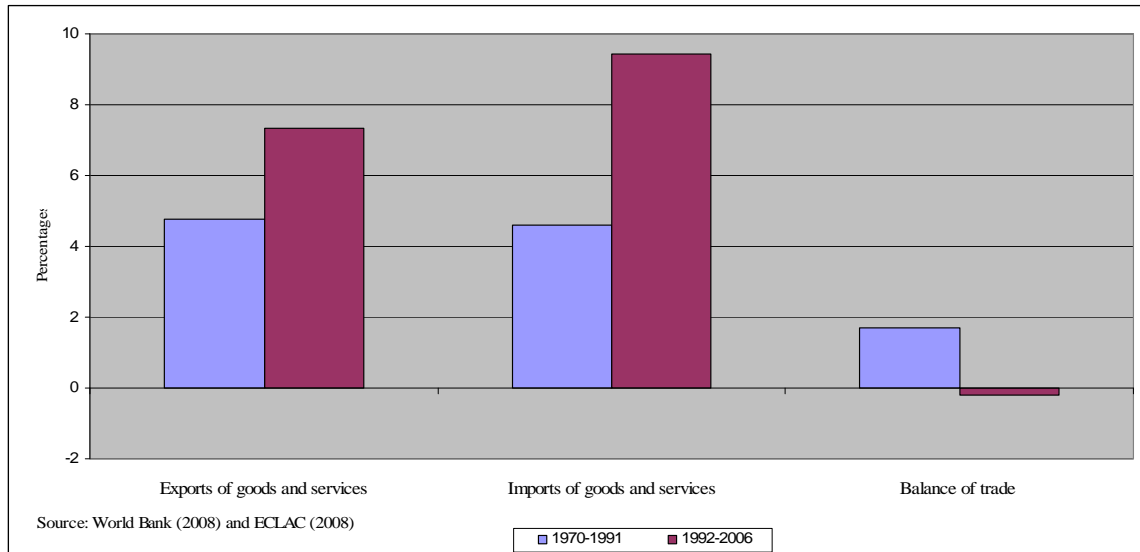
According to this approach, the current account is the result of consumption smoothing (i.e., when income is above its permanent level, consumption exceeds income; when income is below its permanent level, consumption falls below income) and the differences in the domestic and international rate of interest. The causality is as follows: changes in transitory income (Y_t) produce changes in net savings ($S-I$) which translate simultaneously into changes in the current account and in the rate of interest. Changes in the rate of interest induce the required capital inflow/outflow to match the current account gap.

Caeteris paribus it is assumed that in developing countries consumers favor present over future consumption (higher subjective discount rates and lower ratios of capital to labor (higher marginal product of capital)). As a result, developing countries have higher rates of interest than developed countries and are thus bound to experience capital inflows which are offset by current account deficits. In this sense, capital flows 'flow' from the North to the South.

Trade liberalization, export performance and the pattern of export development

Following the trade liberalization initiatives of the 1990's, Latin America managed to improve its export performance. The rate of growth of exports of goods and services increased on average from 4.8% in the period 1970-1991 to 7.3% in the period 1992-2006 (See, Figure 3). However, the increase in the rate of growth of exports was insufficient to enhance Latin America's participation in world trade.

Figure 3: Latin America. Exports and imports of goods and services (rates of growth) 1970-2006

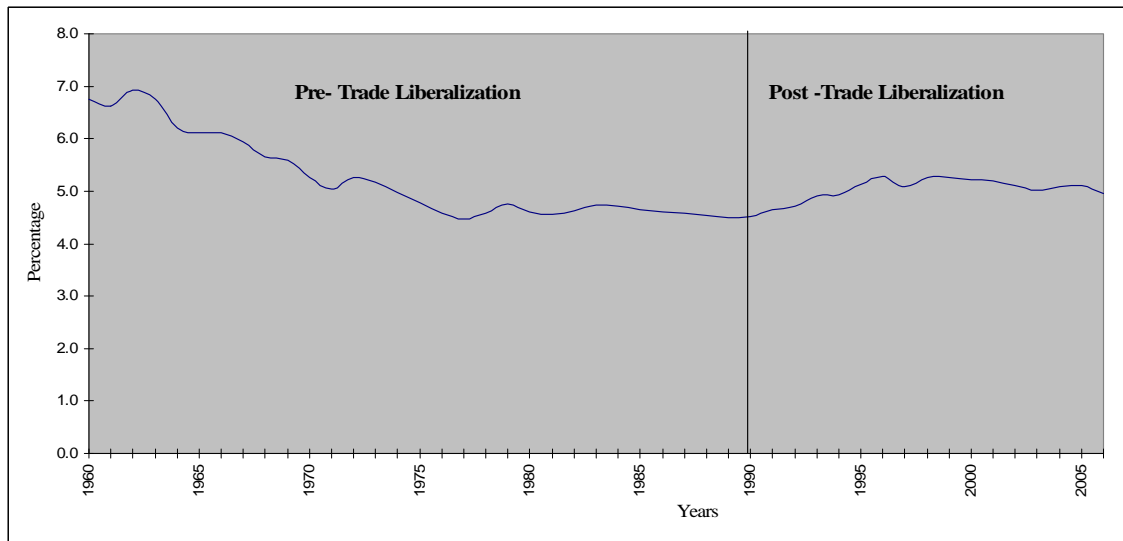


Source: World Development Indicators, World Bank (2008).

As shown in Figure 4 below, Latin America increased, albeit modestly, its share in World exports of goods and services from 4.5% in 1990 to 5% in 2006. Still, Latin America's share in world trade in the post trade liberalization period (1990-2006) never managed to reach the levels attained during the pre-liberalization era (1960-1970).

Finally, Latin America has not been able to improve its relative position in relation to other emerging market such as those of the East Asian bloc. It is worth noting that that the economies of East Asia and the Pacific and Latin America had similar shares of world trade in the periods 1970-1980 and 1980-1990 (4.41% and 4.56%; 4.86% and 4.60% for East Asia and the Pacific and Latin America respectively). However, during the last period considered 1990-2006 (that of trade liberalization), East Asia and the Pacific improved its share in world trade to reach 8% surpassing that attained by Latin America (5%).

Figure 4. Latin America. Latin America's share in World exports (In percentages) 1960-2006



Source: World Development Indicators. World Bank (2008).

Latin America's export performance can be explained in part by analyzing the region's export composition and then comparing it to the world composition of imports. The exercise consists in computing the composition of exports of Latin America by factor intensity and then comparing it to the factor intensity composition of world imports. If the Latin American factor intensity composition of imports differs substantially from that of world imports, this implies that Latin America's pattern of specialization does not meet the conditions of external demand.

Table 4 below shows the exports of Latin America to the world classified by factor intensity into four categories using the SITC classification for the period 1980-2006. The categories include: i) primary commodities, ii) labour intensive and resource-based manufactures; iii) manufactures with low skill and technology intensity; iv) manufactures with medium skill and technology intensity; and v) manufactures with high skill and technology intensity (See again Table.4 below)

Table 4
Merchandise exports of Latin America to the rest of the world and world merchandise imports classified by group according to factor intensity
1980-2006 (In percentage of the total)

Product group	1980	1985	1990	1995	2000	2002	2005	2006
Exports of Latin America to the rest of the world classified by group according to factor intensity								
Primary Commodities	78.9	64.7	55.2	40.6	28.4	29.3	34.8	37.4
Labour intensive and resource-based manufactures	8.8	9.8	10.9	12.2	12.1	11.8	10.0	8.4
Manufactures with low skill and technology intensity	2.4	9.0	8.7	6.9	5.6	6.0	7.1	6.2
Manufacture with medium skill and technology intensity	3.8	7.9	13.5	22.6	28.4	27.8	25.6	25.2
Manufactures with high skill and technology intensity	4.8	7.9	10.3	15.3	23.6	23.1	20.3	20.2
Not classified	1.2	0.8	1.4	2.4	1.9	2.1	2.3	2.5
World imports classified by group according to factor intensity								
Primary Commodities	26.1	22.1	18.6	16.9	13.4	13.5	13.6	14.3
Labour intensive and resource-based manufactures	18.2	17.9	20.1	19.4	18.6	18.7	17.1	16.4
Manufactures with low skill and technology intensity	8.8	7.2	6.6	6.5	5.8	5.7	6.9	7.0
Manufacture with medium skill and technology intensity	32.3	37.3	38.8	41.6	46.5	44.8	44.6	44.7
Manufactures with high skill and technology intensity	11.7	12.0	12.3	12.4	12.5	13.9	14.5	14.4
Not classified	2.9	3.5	3.6	3.2	3.2	3.4	3.3	3.1
Coefficient of adaptation of Latin America's exports to World import demand								
Primary Commodities	3.02	2.93	2.97	2.41	2.12	2.16	2.55	2.61
Labour intensive and resource-based manufactures	0.49	0.55	0.54	0.63	0.65	0.63	0.59	0.51
Manufactures with low skill and technology intensity	0.27	1.24	1.31	1.06	0.95	1.05	1.03	0.88
Manufacture with medium skill and technology intensity	0.12	0.21	0.35	0.54	0.61	0.62	0.57	0.56
Manufactures with high skill and technology intensity	0.41	0.65	0.84	1.23	1.89	1.66	1.40	1.40
Note: Authors' own computations based on the classification provided by UNCTAD (2002) and data obtained from WITS (2008).								

The empirical evidence presented shows a change in the composition of Latin American exports to the rest of the world, which affects mainly primary commodities and manufactures with medium and high skill and technology intensity.

Since 1980 the share of both manufactures with medium skill and technology intensity and manufactures with high skill and technology intensity began to witness an increase. Their respective export shares rose from 3.8% and 4.8% in 1980 to 25% and 20% of the total in 2006. At the same time and during the same period the share of commodity exports declined from 79% to 37% (See Table.4 above).

For their part, the shares of the two remaining categories, labour intensive and manufactures that are resource-based manufactures and have low skill and technology intensity have not changed significantly over time.

As these numbers reflect, the change in the composition of exports was prior to the trade liberalization period. As a result, trade liberalization per se did not produce any change with respect to the share of commodities in Latin America's export basket, but merely reinforced a previously existing trend.

Furthermore, in spite of the decline in the commodity share of exports, the export structure is predominantly commodity oriented. This characteristic is even more pronounced when the analysis is carried out at a more detailed and disaggregated by-product analysis on a country-by-country basis.

Table 5 below shows the ten leading traditional Latin American exports products on a country-by-country basis for 1995 and 2005, classified by major categories. The categories include food and agriculture, beverages, oils and seeds, raw materials, mining and energy. The ten major commodity exports accounted on average for 56% of the total for Latin America.

At the country level, the data reveals that the set of count first subset of countries (Paraguay, Uruguay, Panamá and Nicaragua) is highly specialized in the export of traditional commodities and has strengthened its pattern of specialization over time. For this group of countries, the ten major leading commodities represented 64% and 71% of total exports of goods in 1991 and 2006.

The exception to this pattern of specialization include, mainly Central American countries (Costa Rica, El Salvador, Guatemala, Honduras) which have markedly decreased their degree of specialization in primary commodities (54% and 29% of the total). These countries have switched to the export of textiles. At the country level in 1990 textile exports represented, 37.4%, 22.8%, 24.0%, 22.9%, of the total exports to the United States for Costa Rica, Guatemala, Honduras and El Salvador respectively. In 2005, textile exports represented 21%, 55%, 81%, and 83% for the same counties respectively (See Table 8 in the Annex).

Table 5
Latin America (Selected countries)
Export share of the ten leading products
1995-2006 (In percentages)

	Food and Agriculture		Beverages		Oil and seeds		Raw materials		Mining		Energy		Total traditional		Other		Total	Total	
	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006	
Argentina	18.0	9.5			17.4	21.0				2.9	7.6	16.2	43.0	49.6	0.0	0.0	43.0	49.6	
Bolivia		2.6			7.3	11.5			38.3	16.7	11.9	46.3	57.5	77.1	13.0	2.4	70.5	79.5	
Brazil	7.3		4.2	2.1	4.4	6.9	3.5		8.2	6.2		7.6	27.6	22.8	6.2	11.7	33.8	34.5	
Chile	10.7	6.8					6.8	2.7	45.7	52.3		2.0	63.2	63.8	1.5	4.1	64.7	67.9	
Colombia	22.2	9.4							7.4	14.5	21.4	26.1	51.0	50.0	13.5	13.0	64.5	63.0	
Ecuador	39.8	21.3	6.2	1.2		1.2			2.2		35.1	56.9	83.3	80.6	1.8	4.7	85.1	85.3	
Paraguay	40.7	33.9			29.8	44.7							70.5	78.6	7.9	2.1	78.4	80.7	
Perú	13.3	7.1	5.3						38.0	49.3	5.0	7.2	61.6	63.6	0.0	5.8	61.6	69.4	
Uruguay	36.3	42.8				3.0						4.4	36.3	50.2	15.4	5.6	51.7	55.8	
Venezuela									3.9	2.3	76.3	87.2	80.2	89.5	4.9	3.5	85.1	93.0	
Costa Rica	34.4	14.5	15.5	3.5									49.9	18.0	5.3	37.2	55.2	55.2	
El Salvador	10.4	7.1	37.7	9.9								2.9	48.1	19.9	11.3	21.6	59.4	41.5	
Guatemala	23.2	16.8	28.1	13.8		3.0					1.7	6.7	53.0	40.3	7.1	13.3	60.1	53.6	
Honduras	34.8	17.2	28.6	17.5		3.0			2.2				65.6	37.7	8.5	19.4	74.1	57.1	
Nicaragua	32.2	45.5	23.5	15.1						5.3			55.7	65.9	15.7		71.4	65.9	
Panamá	58.6	75.1	5.8						3.2				67.6	75.1	7.1	2.2	74.7	77.3	
México												9.3	13.2	9.3	13.2	33.5	35.2	42.8	48.4

Source: Own computations based on the anuario estadístico de la CEPAL (2007)

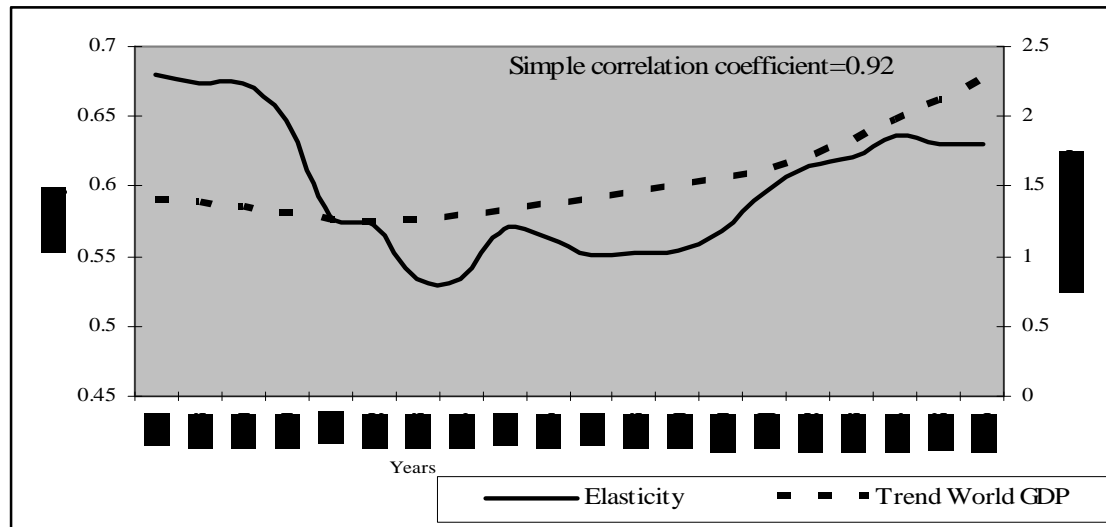
The comparison of the export composition of Latin America's exports to that of world imports shows that Latin America's specialization in manufactures with high skill and technological intensity and more importantly commodities is greater than that required by the rest of the world. In the case of commodities, the ratio of the composition of Latin America's share of commodities as a percentage of its total imports relative to the share of world commodity imports in relation to world imports is equal on average for the whole period to roughly 2.5%. That is, Latin America's specialization in the exports of commodities is more than twice as greater as that required by the composition of imports of the rest of the world (See Table 5 above).

Contrarily, Latin America's export specialization of labour intensive and resource-based manufactures and manufacture with medium skill and technology intensity falls below that required by world imports. The ratio of Latin America's exports of labour intensive and resource-based manufactures and manufacture with medium skill and technology intensity to that of imports of these categories from the rest of the world is on average 0.5.

In short, trade liberalization has not managed to change the composition of Latin America's exports to meet the conditions of demand from the rest of the world. As a result Latin America has not been able to boost exports on a sufficient scale to gain world market share. In this sense it is important to note that contrary to free trade rhetoric increasing exports is not equivalent to changing their composition towards products with a higher value added but means rather changing the composition to meet external demand (i.e., world imports). The fact that Latin America does not have its export basket attuned to world demand is reflected in the fact that the overall income elasticity of demand for its exports from the world is less than unity.

Figure 5 below shows the income elasticity of demand for Latin American exports from the world and the trend of the rate growth of world GDP. The export elasticity was computed from a standard export equation using space-state econometric techniques. That is, exports (in real terms) are posited as a function of the terms-of-trade and world real GDP per capita. The trend in real world GDP growth was obtained using a standard filter decomposition technique, the Hodrick-Prescott method.

Figure 5: Latin America. Income elasticity of demand for Latin American exports in real terms from the world (using the Kalman filter) and trend in world GDP growth (in real terms) (derived from the Hodrick Prescott method). 1987-2006.



Source: On the basis of World Development Indicators (2008).

Figure 5 shows that the income elasticity of Latin America's exports follows the trend of world GDP growth. The correlation coefficient between both series is 0.91 for the whole period considered and is statistically significant. However, the trajectory of the moving elasticity coefficient indicates that the final value of the elasticity coefficient is equal to 0.63, and that the maximum and minimum values are 0.68 and 0.63.⁵

Overall, the growth in exports of goods and services has not been able to keep pace with the rise in imports which also accompanied the process of trade liberalization. As indicated above, exports of goods and services expanded at a rate of 4.8% and 7.3% in 1970-1991 and 1992-2006. For their part imports of goods and services expanded at rates of 4.6% and 9.4% for the same periods respectively.

⁵ Formally, in the general case a state space model representation for an $n \times 1$ vector y_t , comprises two equations.

$$(2) y_t = Z_t \alpha_t + c_t + \varepsilon_t$$

$$(3) \alpha_t = d_t + T_t \alpha_{t-1} + \nu_t$$

Where Z_t is a conformable matrix, associated to the $(m \times 1)$ vector of unobserved state variables α_t . T_t is a matrix of parameters; d_t and c_t are vectors that include exogenous and observable variables. The error terms ε_t and ν_t have the usual assumptions. By construction the $(m \times 1)$ vector of unobserved state variables α_t follows an autoregressive process of the first order. The most used algorithm to estimate the parameters of Eqs. (2) and (3) is the Kalman filter. The statistical significance of the correlation

coefficient was determined on the basis of the formula: $\rho = \frac{r(\sqrt{n-2})}{\sqrt{1-r^2}}$ where r is the simple correlation

coefficient and n the number of observations. ρ follows a student-t distribution. In this particular case the computed t value is equal to 9.31 above the critical 1.64 at a 95% level of confidence.

[FIGURES WITH BALANCE OF PAYMENTS FOR LA COUNTRIES]

As a result, the position of the balance of trade on goods and services deteriorated during the trade liberalization period. Indeed, the balance of trade posited a positive result for the pre-trade liberalization period, 1980-1990 (2.6% of GDP) which turned negative on average for the post-liberalization period 1991-2006 (-0.2% of GDP). (See Table 10 in the Annex).

Moreover, the analysis on a country-by-country basis for all Latin American economies shows, with very few exceptions, the same results. Following trade liberalization, the position of the trade balance on goods and services deteriorated (See Figure 3 above).

The effects of trade and financial liberalization on growth and volatility

The current pattern of trade in Latin America has two major implications for economic growth. It has limited its potential for growth expansion and has imparted volatility to the growth trajectory.

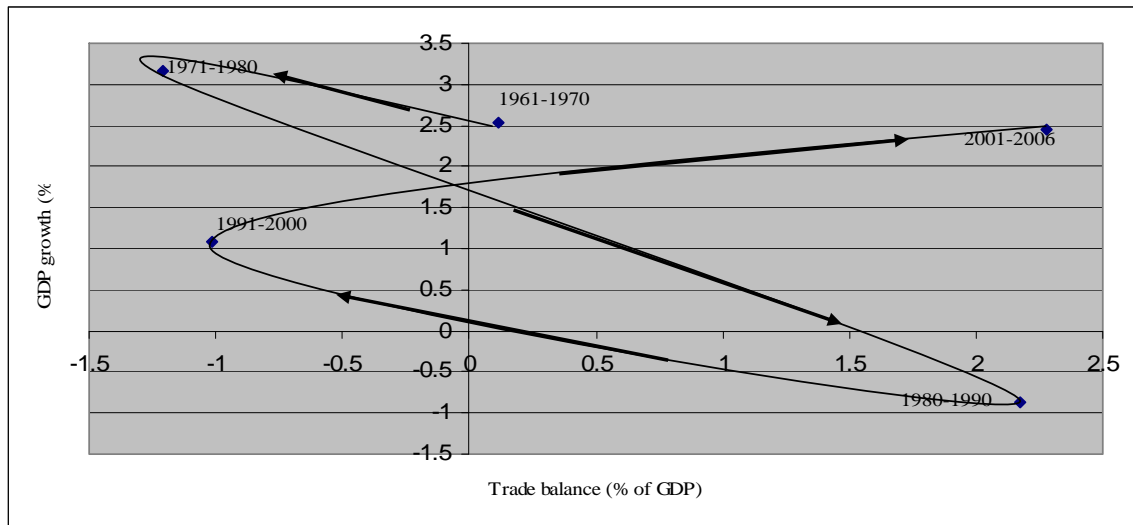
The pattern of trade specialization in Latin America, limits export and hence economic growth since it is not able to meet the conditions of demand from the rest of the world. As a result and as shown above the export elasticity for Latin American products from the rest of the world is less than unity. That is, export growth in Latin America is not commensurate to the growth of demand in the rest of the world.

Also, the negative trade balance that characterize the external position of most Latin American countries imply that trade acts as a leakage rather than an injection on the economy.⁶ A way to understand this relationship is provided in Figure 6 below, which shows that the negative balance of trade which was similar in the 1970's and 1990's supported a lower rate of growth in the latter period (1% and 2.7% for 1971-1980 and 1.4% for 1990-2000).⁷

⁶ Within the non-mainstream literature this point has been made by Kalecki (1969), Minsky (1986), McCombie and Thirlwall (1984),

⁷ Figure 5 appeared originally in UNCTAD (1999). Its potent message has been hammered in by Ocampo (2003 and 2004).

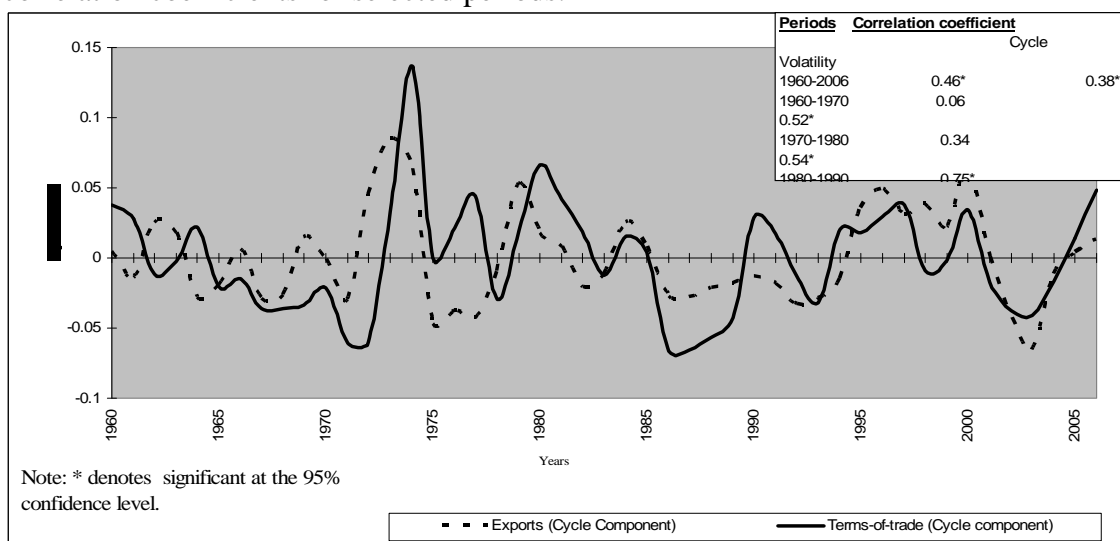
Figure 6: Latin America. Relationship between the balance of trade on goods and services (as percent of GDP) and the rate of growth of per capita GDP. 1961-2006.



Source: On the basis of World development Indicators. World Bank (2008a) and UNCTAD (1999).

The pattern of export specialization has also enhanced the potential for volatility because the main export category, i.e. commodities, besides being dependent on foreign demand is, by definition, also dependent on the terms-of-trade. *Caeteris paribus*, the frequency and size of terms-of-trade fluctuations will affect the evolution of exports. Figure 7 below shows the evolution of the cyclical components of exports of goods and services and that of the terms-of-trade for the period 1960-2006 and the simple correlation coefficients for the entire period and the sub-periods 1960-1970, 1970-1980, 1980-1990, 1990-2000 and 2001-2006.

Figure 7: Latin America. Evolution of the cyclical component of exports of goods and services in real terms and terms-of-trade for 1960-2006 (Hodrick-Prescott Method) and correlation coefficients for selected periods.



Source: On the basis of World Development Indicators. World Bank (2008).

The evidence shows that starting in 1980, the correlation coefficient between the cyclical components of the terms-of-trade and that of exports becomes significant and remains so throughout the trade liberalization period. For the period 1980-1990, the correlation coefficient is equal to 0.75. For the periods 1990-2000 and 2001-2006, the correlation coefficient is equal to 0.49 and 0.83 respectively.

More to the point, the correlation coefficient between the volatility of the terms-of-trade and that of exports is positive and statistically significant for all periods under consideration. Thus, as expected the greater and/or more frequent are the fluctuations in the terms-of-trade (that is the more volatile they are) the greater and more frequent will be the fluctuations in exports as well. In turn, the cyclical component of exports is also significantly associated with the cyclical component of Latin America per capita GDP both in levels and percentage growth.

The volatility imparted by terms-of-trade fluctuations (real volatility) on the growth trajectory of the Latin American economy is compounded by two factors. The first is financial volatility which became prominent during the 1980's debt crisis and especially in the 1990's decade due to greater degree of financial openness of Latin American economies. The second refers to the policy reaction of Latin American governments and policy makers to real and financial volatility.

At the same time the region experienced various episodes of sudden capital stops. Recent empirical evidence shows that Latin American countries experienced 25 episodes of sudden capital stops in the 1990's double that of the 1980's (13). In addition, the evidence indicates that the average magnitude of financial shocks rose from 0.7% of regional GDP in the 1980's to 3.5% of GDP in the 1990's. In other words, financial shocks not became more frequent in the 1990's but also more significant in terms of their relative importance with respect to Latin American GDP.

The response of Latin American governments to real and financial volatility (terms-of-trade and sudden capital stops) has been in general uniform. It consists in the contraction of internal demand (absorption) in same or year that follows a significant terms-of-trade decline or sudden capital stop. Table 6 below, shows that the average contraction in absorption due to both financial and terms-of-trade shocks for the period 1980-2006, was equivalent to roughly 10% of regional GDP.

Table 6		
Latin America		
Average contraction in absorption (domestic demand) due to financial and terms-of-trade shocks. 1980-2006.		
In percentage of regional Latin American GDP.		
	Financial shocks	Terms-of-trade shocks (real shocks)
Latin America	6.99	2.64
South America	3.26	1.49
Central America	0.15	0.23
Mexico	3.58	0.92
Source: Titelman, Pérez Caldentey and Minzer (2008)		

The terms-of-trade volatility as well as the sudden capita stops which have accompanied the general process of economic liberalization and the policy reaction that followed have had arguably important effects both on the trend and the fluctuations in the trajectory of GDP growth in Latin America. In terms of its trend, GDP growth in the 1990's was on average half that registered in the protectionist cum ISI period. For the period 1960-1979, the average rate of growth of Latin America GDP equaled 2.8%. This also holds with a few exceptions at the country level as 13 of 18 countries experienced lower rates of GDP per capita growth in the 1990's than in the period 1960-1980.

In the 1990's decade the rate of regional GDP growth reached only 1.4% on average. In terms of its fluctuations, the available evidence shows that volatility of GDP growth as measured by the coefficient of variation increased in the 1990's. In the period 1960-to 1980, the coefficient of variation equaled 0.47 rising to 2.25 in the 1990's.

Table 7
Latin America
Selected macroeconomic indicators
1960-2006

	1960-2006	1960-1979	1980-1990	1991-2001	2002-2006
Rate of growth of actual GDP per capita (In percentages)	1.6	2.8	-0.4	1.4	2.2
Rate of growth of the trend component of GDP per capita (In percentages)a/	1.6	2.6	0.2	1.0	2.2
Frequency of GDP per capital cycles (number of years)	...	2	2	4	4
Coefficient of variation of GDP per capita growth					
Latin America	1.56	0.47	5.75	2.25	1.26
East Asia and the Pacific	0.50	0.88	0.26	0.36	0.08
Middle East and North Africa	1.77	1.10	8.47	0.78	0.59
South Asia	0.94	3.28	0.36	0.46	0.37
Amplitude of cycles b/	3.14	3.08	2.93	3.41(4.42c/)	3.81

Notes:

a/ The trend and cycle components of the rate of growth of GDP per capita was obtained through the use of the Hodrick-Prescott filter.

b/ The amplitude of the cycle was computed as the distance in percentage growth points between peaks and troughs.

c/ Amplitude of cycle for the period 1995-2001.

Source: Titelman, Pérez-Caldentey and Minzer (2008)..

More precisely, in the 1990's Latin America witnessed on a more frequent basis periods of acceleration and deceleration in the rate of growth of GDP per capita. In the period running from 1960 to 1980, Latin America experienced an acceleration/deceleration in its rate of per capita GDP growth every four years. Thereafter, the region experienced an acceleration/deceleration every two years. Moreover, the amplitude of the fluctuations in GDP became more pronounced during the liberalization period. The distance between peak and trough measured in percentage growth points in the Latin America per capita GDP series equaled on average 3.1% for the period 1960-1979 increasing to 3.4% for the period 1990-2001 and 4.4% for the period 1995-2001 (see Table 7 above).⁸

⁸ Finally, it is to be noted that GDP growth is more volatile in Latin America than in other regions of the world including East Asia and the Pacific, Middle East and North Africa and South Asia.

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Annex

Countries	Products	Years				
		1990	1993	1996	1999	2005
Costa Rica	Machinery	4.6	5.7	8.1	43.9	38
	Fruits and nuts	22.8	22.4	20	13	15
	Textiles and apparel	37.4	41.2	35.5	20.8	8
	Subtotal	64.8	69.3	63.6	77.7	61
El Salvador	Textiles and apparel	22.8	51.5	67.2	82.8	81
	Coffee and tea	36.1	20.2	4.9	4.2	2
	Electrical machinery	10.3	6.5	3.1	1.9	1
	Fish and mollusks	5.2	4.3	3.7	1.7	0.5
	Subtotal	74.4	82.5	78.9	90.6	84.5
Guatemala	Textiles and apparel	24	45.8	47.7	54.9	84.5
	Coffee	23.7	12.9	15.6	13.4	9.2
	Fruits and nuts	15.3	11.6	10.8	8.6	12.2
	Fossil fuels	2.9	2	3.6	4.2	4.5
	Subtotal	65.9	72.3	77.7	81.1	84
Honduras	Textiles and apparel	22.9	55.6	69	80.9	71.2
	Fish and mollusks	12.6	9.9	5.7	4	4.1
	Fruits and nuts	12	14.6	10.9	1.9	4.3
	Coffee and tea	9.5	3.2	2.2	1.9	1.7
	Subtotal	57	83.3	87.8	88.7	81.3
Average	Textiles and apparel	26.8	48.5	54.9	59.9	54.0
	Fish and mollusks	8.9	7.1	4.7	2.9	7.0
	Fruits and nuts	12.7	11.3	10.3	7.2	10.2
	Coffee and tea	23.1	12.1	7.6	6.5	5.7

Source: (MAGIC, 2008); Rodlauer and Schipke.

Table 9
Latin America
Rate of growth of GDP per capita (using a five year rolling window)
1960-2006. In percentages

Countries	1960-1970	1971-1980	1981-1990	1991-2001	2002-2006
Argentina	2,5	1,4	-2,8	2,6	3,9
Bolivia	0,5	1,5	-2	1,3	1,6
Brazil	3,3	6	-0,4	0,9	1,8
Chile	1,8	1,5	2,2	4,6	3,2
Colombia	2,3	3,1	1,5	0,7	2,9
Costa Rica	2,8	3	-0,1	2,4	3,6
Dominican Republic	2,9	4,5	0,4	3,9	3,3
Ecuador	1,3	4	-0,5	0,4	3,5
El Salvador	2,2	0	-1,4	2,2	0,8
Guatemala	2,7	3	-1,5	1,6	0,5
Honduras	1,6	2,2	-0,7	0,5	2
Mexico	3,4	3,7	-0,2	1,6	1,7
Nicaragua	3,5	-2,2	-3,7	1,2	2,2
Panama	4,8	1,5	-0,6	2,6	3,9
Paraguay	1,8	5,9	-0,2	-0,5	1
Peru	2,4	0,9	-2,7	1,9	4,2
Uruguay	0,4	2,7	-0,5	1,9	3,3
Venezuela, RB	1,5	-0,7	-1,8	0,2	2,7
Latin America	2,6	3,2	-0,4	1,4	2,2
South America	1,8	2,6	-0,7	1,4	2,8
Central America	2,9	1,2	-1,3	1,8	2,2

Source : Own computations on the basis of World Bank Development Indicators (2008a/).

Table 10
Latin America. Current account indicators as % of GDP
1980-1992-2006

	1980-1991	1992-2006
Current account balance	-1.88	-1.65
Exports of Goods	12.81	16.34
Imports of Goods	-10.09	-15.68
Balance of Trade	2.72	0.66
Balance of goods and services	1.70	-0.19
Income balance	-4.12	-2.67
Net unilateral transfers	0.54	1.22
Capital and financial account	0.05	2.36
Reserves	2.26	-0.43

Source: On the basis of ECLAC (2007) and World Bank Development Indicators (2008a/)