Alternative Measures of Potential Economic Growth in Latin America

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Contents

Summary[1]

The document analyses the dynamics of economic growth in Latin America. The objective is to present from a didactic perspective several techniques used for extrapolating growth trends, and apply them to the regional situation at the end of the 1990-2003 economic cycle. The document reviews the medium term determinants of growth in the region from the dual standpoints of production function approaches and export-led models, contrasting the particular situation of the principal sub-regions in Latin America. In this process, a series of issues are raised, ranging from the impact of structural reforms on total factor productivity, to the Balance of Payment constraints and the sustainability of the export-led model. Even if the potential for export-led growth seems higher than may have been expected, structural reforms did not have the expected beneficial effect on the supply side of the economy. Productive capacity has been debilitated by years of reduced investments, and total factor productivity has not responded positively to the reforms. Comparing the empirical outcome of various theoretical schools and methodologies, the study determines a set of plausible economic scenarios for the region, and concludes by highlighting some economic policy conditions for strengthening its growth potential and ensure being in a better position to seize the opportunities offered by external markets.

I. Introduction

In the first decades following the Second World War, the total Gross Domestic Product of Latin America and the Caribbean registered high and stable growth rates. Extrapolating future growth rates out of such a stable history was apparently a rather easy exercise, at least up to 1980. Nevertheless, this apparent stable pattern was just that, apparent. In particular, since the end of the Breton Woods agreements in 1973, economic growth had been sustained at the cost of increasing nominal instability and increasing external debt. This pattern broke down in the early 1980s, with the debt crisis that marked the beginning of the "lost decade". Even if the region was able to emerge from this crisis and resume a new cycle of growth in 1991, it is obvious from figure 1 that the recent past diverged dramatically from older trends, and that these historical patterns are probably a poor predictor of the future.

Moreover, when it comes to analyzing economic perspectives from a statistical point of view, the past achievements that serve as a basis for the statistical estimation of the forecasts should be assessed in relation with the dynamics of the Rest of the World, to use a National Account terminology. This is particularly important from a developing economy's viewpoint, because the evolution of the international markets determines in a large measure their sustainable growth potential (sustainable being considered here in its macroeconomic signification).

FIGURE 1
LATIN AMERICA AND THE CARIBBEAN: OBSERVED AND EXTRAPOLATED
GDP 1950-2005 (1950=100)
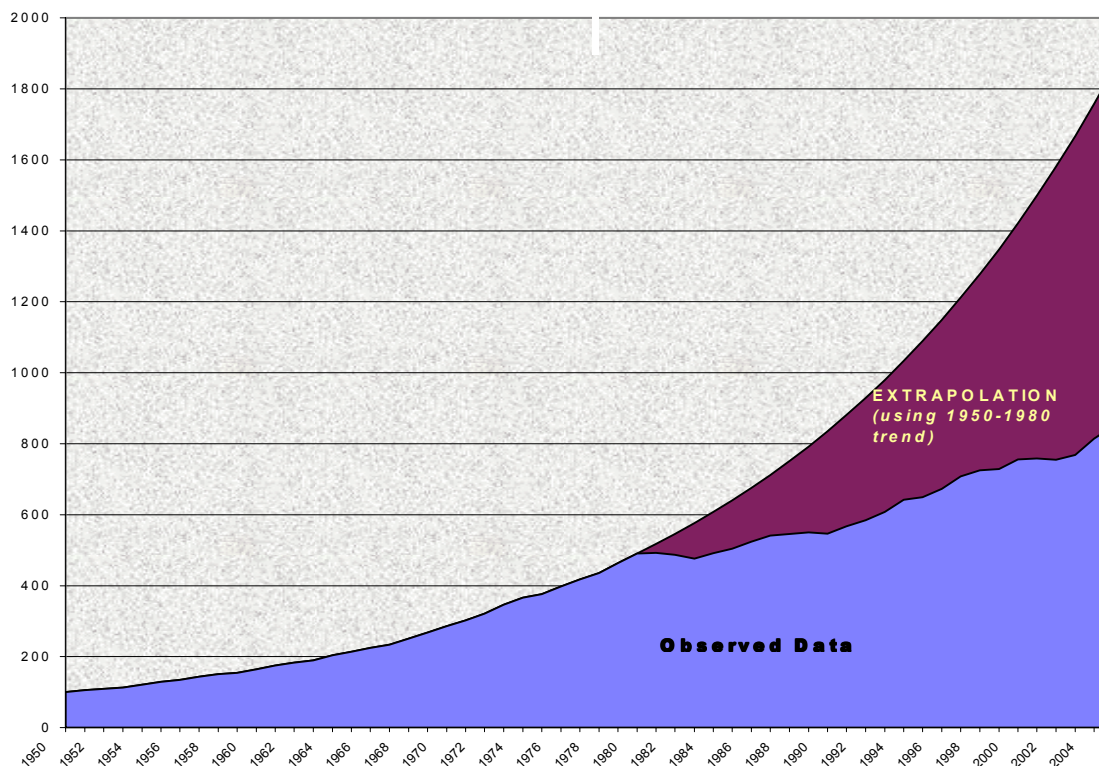
Source: Author's calculation based on ECLAC data.

Using this yard stick, it appears that the 1950-1980 period of high growth was not as good as we thought. Table 1 compares growth per capita in several regions of the world, and puts the Latin American results in an international perspective.

TABLE 1
RATE OF GROWTH OF WORLD PER CAPITA GDP
NATIONAL AND REGIONAL AVERAGES 1870-2001 a/

	1870-1913	1913-1950	1950-1973	1973-2001
World	1.30	0.88	2.92	1.41
Latin America	1.82	1.43	2.58	0.91
Africa	0.57	0.92	2.00	0.19
Asia (excl. Japan)	0.42	-0.10	2.91	3.55
Eastern Europe	1.39	0.60	3.81	0.68
Western Europe	1.33	0.76	4.05	1.88
Selected Countries				
Japan	1.48	0.88	8.06	2.14
USA	1.82	1.61	2.45	1.86
USSR (former)	1.06	1.76	3.35	-0.96

Source: Maddison (2003).
Note: a/ Average annual rates of growth at 1990 International Geary-Khamis dollars.

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The region was an outstanding performer during the pre-WWII period, when its rate of growth was among the highest ones, and superior to the world average. After the WWII, Latin America was a rather poor performer, taking world growth rate as an indicator of expectable achievement. In particular, the Asian countries, which applied also an import substitution policy in the 1950s, but adopted an export-led model, were able to achieve much higher growth rates.

Indeed, the so-called "Asian Miracle" was one of the reasons the region adopted a more extraverted economic model after the debt-crisis and reformed its economies during the 1980s. One of the questions addressed by our study is to look into the potential of such an export-led model in boosting growth potential.

After the structural reforms, growth of per capita income in the Latin American and Caribbean (LAC) region increased, but so did the world average. As a result, the gap between regional and world average remained the same (0.7 point of percentage), according to the Maddison (2003) data.

TABLE 2
RATE OF GROWTH OF WORLD PER CAPITA GDP, REGIONAL AVERAGES 1973-2001 a/

Economic cycles b/:	1973-1990	1991-2001
Total 15 Latin American countries	0.6	1.5
Total 29 Western Europe countries	2.0	2.7
Total Western Offshoots	1.9	2.7
- of which United States	2.0	2.7
Total Former USSR	0.7	-5.5
Total 16 East Asian countries	3.3	5.2
Total 15 West Asian countries	0.0	2.0
Total Africa	0.1	0.4
Total World	1.4	2.3

Source: Maddison (2003).
Note: a/ Average annual rates of growth at 1990 International Geary-Khamis dollars. b/ The economic cycles are those of the Latin American economies (see text). See Maddison (2003) for the composition of sub-regions.

Latin American recuperation in the post-reform era was concentrated in the first half of the 1990 decade (figure 2). In addition, growth experienced high volatility in the region during this period, which makes even more difficult extrapolating a tendency out of a simple time series exercise: The slowing-down pattern that seemed to emerge in the 1990s and led to the so-called lost "sexenio" broke down-down in 2003. This welcome break in the slowing down pattern poses a new problem for the forecaster: What is the potential for economic growth we can extrapolate for the region?

FIGURE 2
LATIN AMERICA AND THE CARIBBEAN: GDP GROWTH RATES 1994-2005,
WEIGHTED AND SEASONALLY ADJUSTED (Y TO Y)
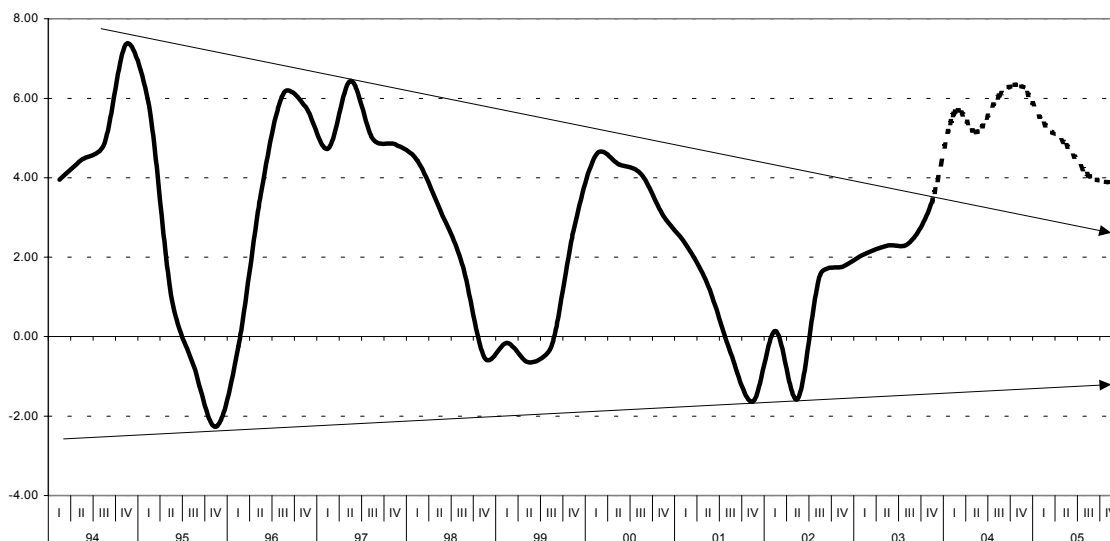
Source: ECLAC, Division of Statistics and Economic Projections.
Note: 2005 data are projections.

As a simple look at the data does not provide a clear answer, we should turn to a more analytical approach, making use of the various economic models that "explain" growth to intend reducing uncertainty about the future outcomes. The literature on this subject differentiates basically between supply and demand factors, and between potential output and potential growth. Broadly speaking, the debate between supply and demand approaches reminds us of the specificities of the classical and neoclassical schools, on one hand, and the Keynesian one on the other.

The concept of potential output (in level) is more normative and static: given a set of inputs, what can we expect as maximum output? How far are we from the production frontier? The second approach in terms of growth is more operational and prospective: what are the determinants of growth? What can we expect from plausible scenarios? Both approaches are complementary. For example, once we are able to calculate the potential GDP for two separate years, it is then possible to deduce the growth rate between them. Conversely, the potential growth rate is calculated between present GDP and a potential one.

Albeit the calculation of potential output is usually identified with the (neo) classical approach, and the analysis of potential (sustainable, guaranteed) growth rate is commonly linked to the Keynesian school, the frontier between them is not clear-cut. For example, the dynamic of catching-up (when convergence means that the projected growth rate depends on the initial level of GDP and its optimal steady state one) is firmly anchored in the neo-classical tradition. On the other hand, explaining endogenously the evolution of factor productivity –a by-product of the Solow model– may require using post-Keynesian or Schumpeterian concepts.

II.   Trend patterns in the LAC region

It is usual to differentiate economic trends from cyclical behaviour and shocks. Several techniques are used, from the most simple (fitting a trend line to the data) to more complex approach (ARIMA, Kalman filter).

The Hodrick-Prescott (HP) method is still one of the most popular filtering technique to calculate a trend (Y*t) out of observed data (Yt):

$$\text{Min } \{(Yt-Y^*t)^2 + \lambda\,(Y^*t - 2Y^*(t-1) + Y^*t-2)^2\} \qquad\qquad [1]$$

The parameter λ shifts the balance between (i) having an accurate picture of the reality, corresponding to a low value for $(Yt-Y^*t)^2$, and (ii) having a smooth pattern for our tendency – a low value for $(Y^*t - 2Y^*(t-1) + Y^*t-2)^2$. The higher the parameter λ, the smoother the trend and the longer the length of the underlying cycle (Maraval and del Rio, 2001).

The standard filtering of quarterly GDP series is notably inappropriate for extrapolating trend perspectives and forecast future outcomes, but is a useful tool for identifying patterns (Kaiser and Maraval, 2002). In the Latin American case, it shows the existence of three clusters of countries, when focusing on short-term cycle behaviour (low value of λ):

Group1: South American countries that entered into open crisis after 1998
Group 2: Other South American countries
Group 3: Mesoamerican countries (Mexico, Central America, Caribbean)

FIGURE 3
LATIN AMERICA AND THE CARIBBEAN, *Y TO Y* GDP GROWTH RATES 1994-2004
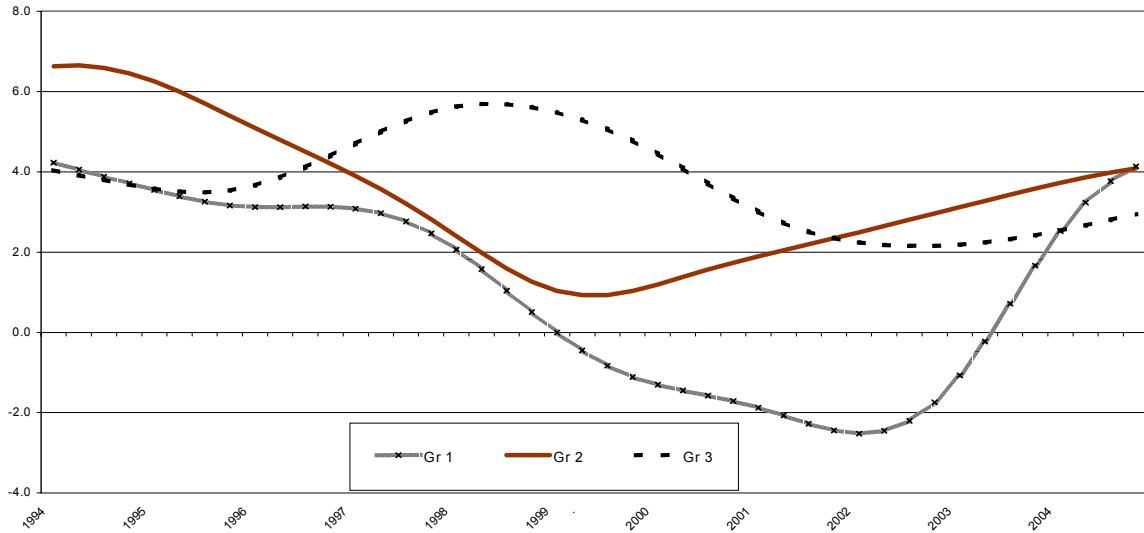
Source: Author's calculation based on data from the ECLAC Economic Projections Centre.
Note: Simple average of smoothed data (HP filter, λ =179).

Group 3, thanks to a diversified export structure, was not affected by the Asian and Russian crisis of 1997-1998. All groups suffered the 2001 world slowdown, then initiated a new phase of growth in 2003.

These filtering techniques are mainly used in short-term forecasting, when the objective is to make predictions on plausible outcomes rather than analyse the underlying causal factors at work. In the next sections, we will look at more analytical approaches, using supply-side and demand-side methodologies.
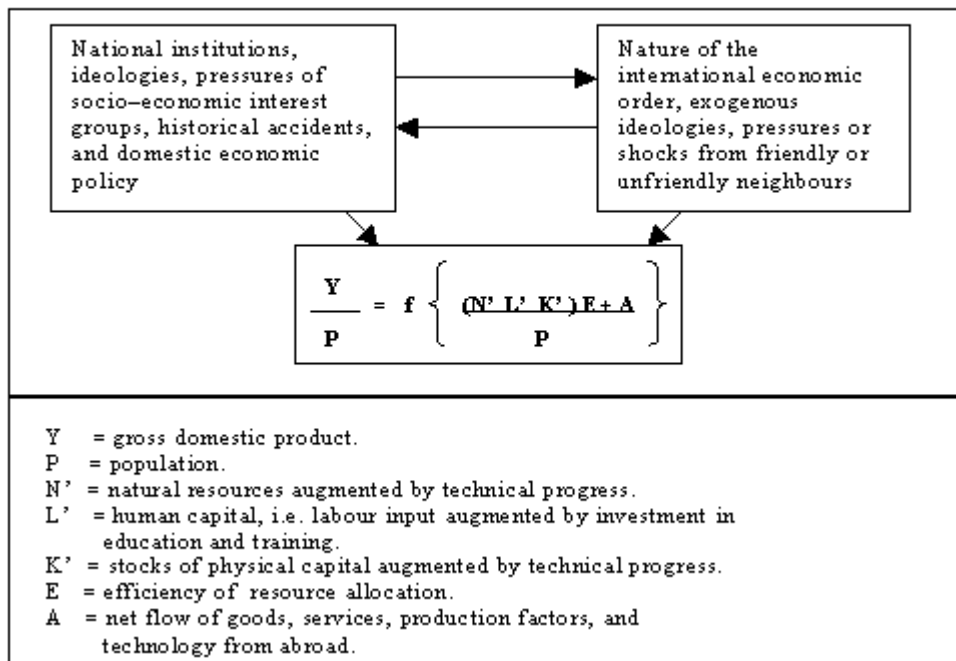
III. Growth potential from the supply side

Using Maddison (1991) classification, we can distinguish proximate causes (the measurable variables included in the production function) and ultimate ones, or environment variables (see box 1).

BOX 1

PROXIMATE AND ULTIMATE ELEMENTS EXPLAINING ECONOMIC PERFORMANCE

National institutions, ideologies, pressures of socio–economic interest groups, historical accidents, and domestic economic policy

Nature of the international economic order, exogenous ideologies, pressures or shocks from friendly or unfriendly neighbours

$$\frac{Y}{P} = f \left\{ \frac{(N'\ L'\ K')E + A}{P} \right\}$$

Y = gross domestic product.
P = population.
N' = natural resources augmented by technical progress.
L' = human capital, i.e. labour input augmented by investment in education and training.
K' = stocks of physical capital augmented by technical progress.
E = efficiency of resource allocation.
A = net flow of goods, services, production factors, and technology from abroad.

Source: Maddison (1991), and Hofman and Tapia (2003).

Standard econometrics focus on proximate causes, especially labour, capital and technology. More recent developments (Barro, 1991) give a greater importance to ultimate factors, in particular institutions and governance. Both approaches will be reviewed in the paper,

the first one being used to calculate potential outputs, the second to investigate the impact of reforms on factor productivity.

1. Standard production function approach

The basic framework to estimate a production function is the typical Cobb-Douglas function with capital and labour as factors, and constant returns to scale.

$$Y = AL^{\alpha}K^{(1-\alpha)} \qquad\qquad [2]$$

Y is the GDP, A the technical progress, L the labour inputs and K the capital stock. α represents the marginal productivity of labour (alternatively, its participation in the GDP).

Y* is the maximum output possible considering the total availability of L and K (L* and K*) as well as the situation of technical endowment. But it is not possible to observe directly L* and K*, even less so the technological endowment (A).

The traditional approach assumes that technological changes are embedded in the total factor productivity (TPF). TPF estimates are residual in nature and absorb all the measurement and specification errors. In consequence, the specification of TPF is not analytically determined and it is not possible to extrapolate in the future the behaviour of what is essentially a "residual".

Capital stocks and labour availability are estimated separately, usually from accumulated flows of net investment (ideally disaggregating by type of investment such as housing, non residential building, machinery and equipment), and demographic and labour market information (including hours worked and educational level, when the information is available).

A second problem lies with the "fixed" production function, with constant parameters for all the estimation period. To reduce the incidence of this problem in their application to LAC, Hofman and Tapia (2003) make the hypothesis that the parameter α is variable: The technological change depends on the composition of global output (share of agriculture, mining, manufactures and services in total GDP).

To estimate (2), Hofman and Tapia correct also for the underutilization of factors, using the hypothesis that years with large idle capacity are far from the production frontier. In practice, a first econometric estimation is done using a log version of (2), then dropping all the observations with a negative residual term. A second estimation is done using only the selected sample, supposed to be closer to the concept of productive frontier.

2. Alternative specification

Following the Data Envelopment Analysis suggested by Berg (1984) and using the Torello (1993) specification, we can restate the initial equation [2] from a dynamic perspective.

In a first approach, we discard the influence of labour, which is not supposed to be a limiting factor in a labour-abundant developing economy.

Considering that the supply of labour is not a binding factor, the potential GDP [Y*] is a function of the capital stock at the beginning of the previous period [(1-d)K(t-1)], plus investment during this period [I(t-1)] weighted by it productivity [A(t)]. Returning to [5], to address the limitation of fixed coefficients, in this specification productivity A(t) is not constant over the period.

On the production frontier, there is a proportional relationship between the potential output and the available stock of capital. Thus, we can substitute K (t-1) for Y*(t-1):

$$Y^*(t) = (1-d) Y^*(t-1) + A(t).I(t-1) \qquad [3]$$

Note that

$$Y^*(t-1) = (1-d) Y^*(t-2) + A(t-1).I(t-2) \qquad [4]$$

and

$$Y^*(t) = (1-d) [(1-d) Y^*(t-2) + A(t-1).I(t-2)] + A(t).I(t-1) \qquad [5]$$

We could write a recursive equation linking the present potential output to a weighted average of accumulated investment, and to the initial potential GDP. As the influence of the initial potential GDP (Y_0) is weaker the longer the time period considered we could safely approximate Y_0 using the observed GDP at t=0, and return to the original Berg (1984) notation.

We make the additional hypothesis that productivity A(t) is a lineal function of time, and can be decomposed in two factors: a constant (A0) and a marginal (A1) coefficient:

$$A(t) = A0 + A1 . (t-1) \qquad [6]$$

The optimization programme [7] calculates the production frontier:

$$Min \sum_{t=0}^{T} (\ Y^*(t)\text{-}Y(t)) \qquad [7]$$

subject to:

$$[Y^*(t) - (1-d)Y^*(t-1)] - [A0 + A1 (t-1)] I(t-1) = 0$$
$$[7.1]$$

$$Y^*(t) \geq Y(t) \qquad\qquad\qquad\qquad\qquad\qquad [7.2]$$
$$A0 \geq 0 \qquad\qquad\qquad\qquad\qquad\qquad\qquad [7.3]$$

Before looking at the results, lets stop at several shortcomings of the DEA technique in this context:

- Implicit in the formulation is that capital is the restricting factor, a standard simplification in many studies on labour abundant LDCs.

- Homogeneity of observations: the potential output depends only on aggregate accumulated investment, net of depreciation. Structural and institutional factors (the ultimate causes in Maddison words) are not incorporated.

- The observed economy should be reasonably close to its steady state. Alternatively, structural transition is smooth. As a corollary, the estimates computed at end points are quite responsive to deviations from trend. Inferences based on the envelope at the end of the estimation period may not be good predictor of long-term dynamics.

The linear programme works quite satisfactorily when the national economy has a relatively smooth historical trend in both GDP and fixed investment (see the example of Mexico, figure 4).

FIGURE 4
**MEXICO: OBSERVED AND POTENTIAL GDP, 1950-2005**
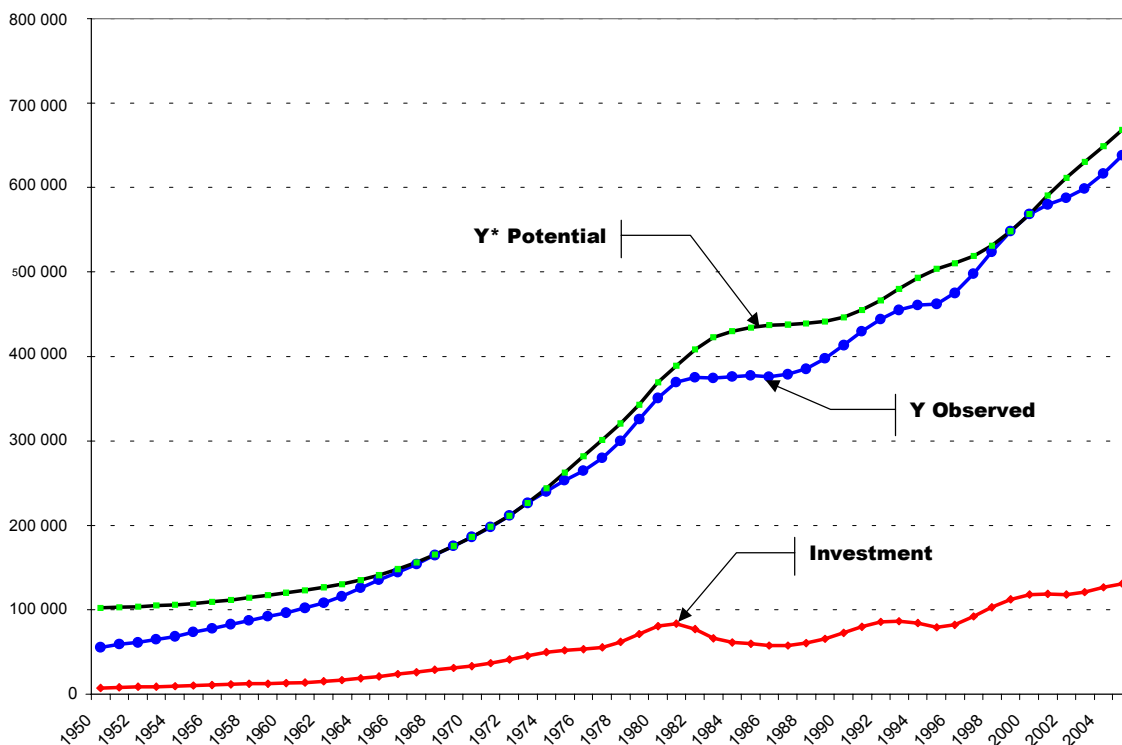
Source: Author's calculations.
Note: Million dollars, at constant 2000 prices.

But this is not always the case. For example, in Venezuela, the large increase in capital stock after 1972 was not followed by a corresponding increase in GDP, leading to a sizable divergence between observed and potential output.

The option to reduce the incidence of this problem was to segment the 1950-2005 period in three subsets, using 1972 and 1990 as limits. The dates were chosen because they correspond to structural macroeconomics breaks in the regional economic regimes (end of the Bretton-Woods agreements, normalization of capital markets after the Brady agreements). These dates correspond to the beginning and the end of two complete economic cycles, each one composed of higher than average, or boom phases (1972-1981 and 1991-1997) and lower than average or bust subperiods 1982-1990 and 1998-2002). (see figure 5)

The 2003 – 2005 correspond to a new cycle, and the basic objective of the whole exercise is to build some scenarios about its growth potential.

FIGURE 5
MEDIUM TERM GROWTH CYCLES AND NET TRANSFER OF RESOURCES, 1950-2004
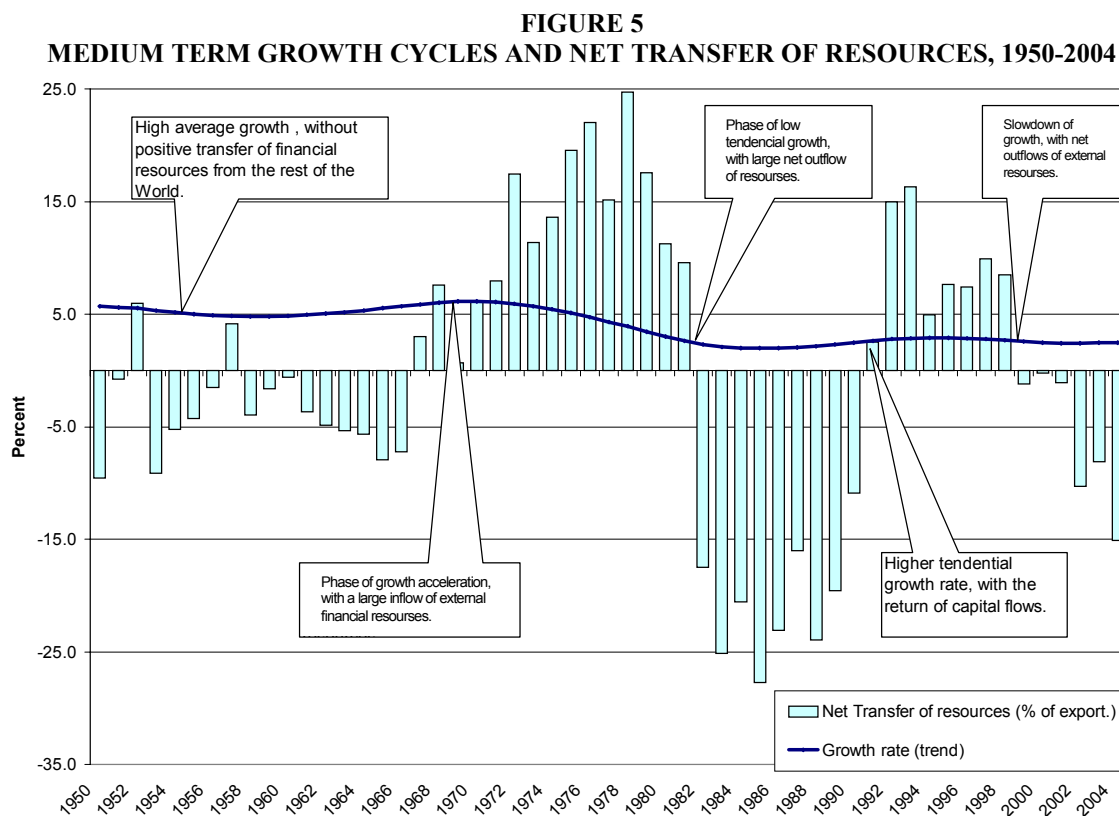
Source: Author's calculation.
Note: Year to year variation of GDP trend, after application of the HP filter, λ=100.

It should be reminded that the definition of starting and ending points of full economic cycles is extremely important when comparing historical performance, and should deserve due attention. Otherwise, misleading conclusions could be made on the relative merit of the economic policies that were implemented during the respective cycles.

In the present study, we define three growth regimes during the post WWII period, and consider the lost decade 1982-1990 as part of the "growth-cum-external debt" regime that emerged in 1973. Doing so, we choose not to follow those analysts, such as Stiglitz (2005), who advance that the debt crisis in 1982 was exogenous to the logic of the economic regime in place in the region during the 1970s, and was mainly due to the decision taken by Paul Volker to raise interest rate in the USA in order to stabilize the economy. Our present approach is more consistent with the structuralist school of Balance of Payment restrictions, following a long tradition –more recently exemplified by Thirwall (1979). This approach, which is analysed more in details in the following sections, states that external debt cannot rise indefinitely, thus current balance should be in equilibrium when taking a long-term perspective.

The rise in interest rates and the unfavourable terms of trade that characterized the early 1980s transformed the expectable down side of the economic cycle into a recessive one, but did not change the very nature of the correction process.

For each country, three sets of linear programming results were computed:

- One period covering the whole sample: 1950-2005
- Two periods 1950-1972 and 1973-2005 (pre and post Bretton Woods)
- Three periods 1950-1972, 1973-1990, 1991-2005 (pre and post Brady)

This segmentation allows for a closer fit to the observed data, as can be seen in the case of Venezuela (figure 6):

FIGURE 6
VENEZUELA. OBSERVED AND POTENTIAL GDP 1950-2005, ONE AND THREE SUBPERIODS
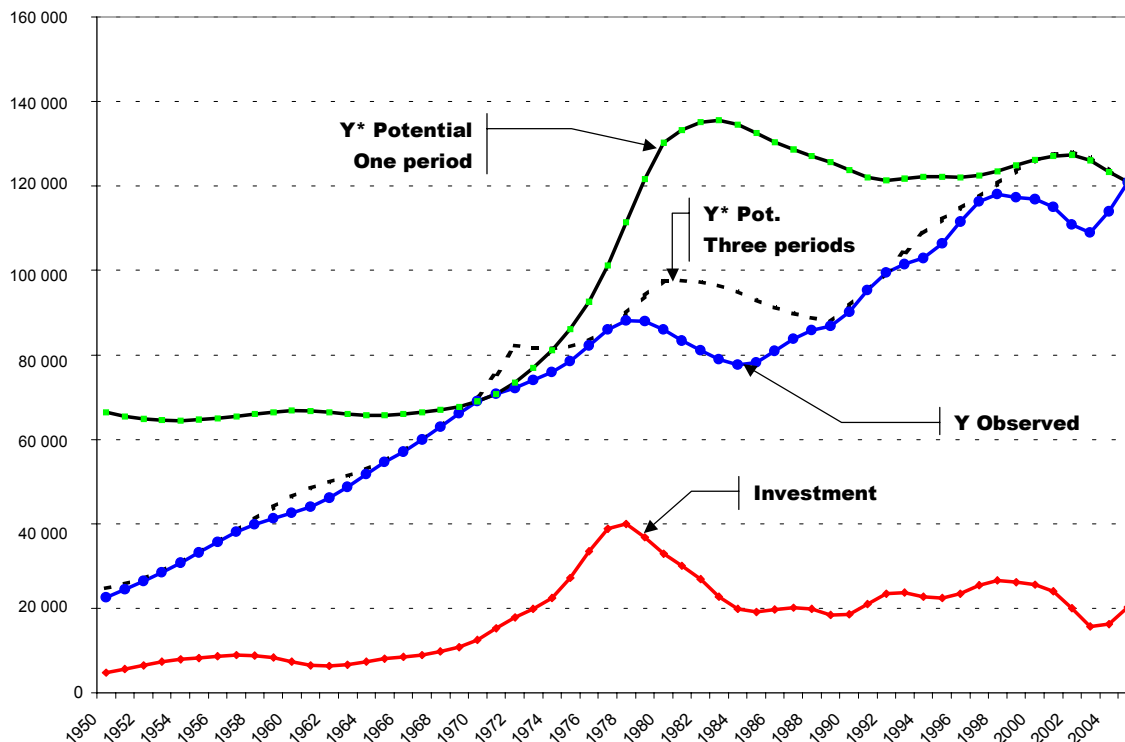
Source: Author's calculations.
Note: Million dollars, at constant 2000 prices.

Three sets of depreciation factors for the capital stock were used: 5%, 7%, and a mix of 5% up to 1980, and 7% afterwards. Results were not fundamentally affected by these options, and table 2 shows the results obtained with a uniform d=5% depreciation factor.

Due to the sensibility of the linear programming procedure to end-point estimates, it is best focusing on intermediate results in order to identify underlying tendencies. This end-point fragility of the results is due to the stress imposed on the programme to close the gap at the end of the estimation period, and the resulting (usually negative) bias that can be observed on potential growth (see the previous graph on Venezuela for an example).

TABLE 2
OBSERVED AND POTENTIAL GROWTH USING DEA METHODOLOGY

	Average annual growth rates (%, ytoy)					Output gaps: observed GDP in relation to potential outputs (%)		
	Investment	GDP	Y * (1)	Y * (2)	Y * (3)	Y * (1)	Y * (2)	Y * (3)
LAC								
- 1991-1997	8.1	4.2	2.2	2.7	3.8	12.1	4.4	3.5
- 1998-2002	-0.8	2.0	2.4	3.4	2.9	9.4	5.6	5.5
- 2003-2005	5.1	3.5	1.2	2.2	1.1	6.1	6.3	2.8
MERCOSUR and CHILE								
- 1991-1997	7.4	4.5	3.1	3.0	4.3	9.5	2.9	1.7
- 1998-2002	-5.1	0.2	2.4	2.5	2.1	13.7	7.7	8.2
- 2003-2005	8.8	4.1	0.8	1.1	0.1	11.9	6.9	4.6
ANDEAN COMMUNITY								
- 1991-1997	6.8	3.9	1.6	2.5	3.3	13.4	4.4	4.3
- 1998-2002	-3.5	1.1	1.4	2.8	2.3	10.5	7.5	7.7
- 2003-2005	3.0	3.7	0.3	1.5	0.7	4.4	5.9	3.5
MESOAMÉRICA								
- 1991-1997	9.3	4.2	2.1	2.7	3.8	13.0	5.4	4.2
- 1998-2002	3.6	3.7	3.0	4.4	3.7	5.9	3.1	2.3
- 2003-2005	4.1	3.1	1.9	3.4	2.0	3.5	6.2	1.3

Source: Author's calculations.
Note: Simple average of country results. Y*(1), Y*(2) and Y*(3) are potential GDP calculated using three serializations.
For methodological reasons, 2003-2005 results may not be robust estimates (see text). Depreciation factor d=5%.

According to the results obtained for the 1998-2002 subperiod and highlighted in the table, growth perspectives at the end of the so-called six lost years that saw a stagnation or decrease of per capita income in the LAC region, ranged from 2.4% to 3.4% (table 2). MESOAMERICA countries showed the higher growth potential (3.0% to 4.4%) according to this criterion. On the other hand, observed output gaps gave some information on the potential for catching-up, and pointed towards MERCOSUR countries as having a strong potential for technical growth (output gaps during the 1998-2002 period ranged from 7.7 to 13.7 percentage points).

3. Efficiency of capital stock

The DEA methodology allows calculating an implicit measure of total fixed investment efficiency, through the A1 coefficient in equation [3].

Based on the three sub-periods used in the model, we have the following set of measurement:

- A1: marginal coefficient for the entire 1950-2005 period.

- A2, A3 marginal coefficients for the 1950-1972 period, corresponding to two and three segmentations.

- B 2, B 3: marginal coefficient for the 1973-2005 and 1973-1990 period

- C3: marginal coefficient for the 1991-2005 post reform period (three segmentations).

The efficiency of new capital during the post-reform period (C3) corresponding to the 1990s is inferior to the other estimates (see box plot of estimated national coefficients, figure 7). This result contradicts the systemic effect that was expected from structural reforms (see Escaith and Morley 2001, for a review of the empirical literature on the impact of reform on growth in the region).

FIGURE 7
MARGINAL EFFICIENCY OF CAPITAL IN LAC REGION, SEVERAL PERIODS (D=5%)
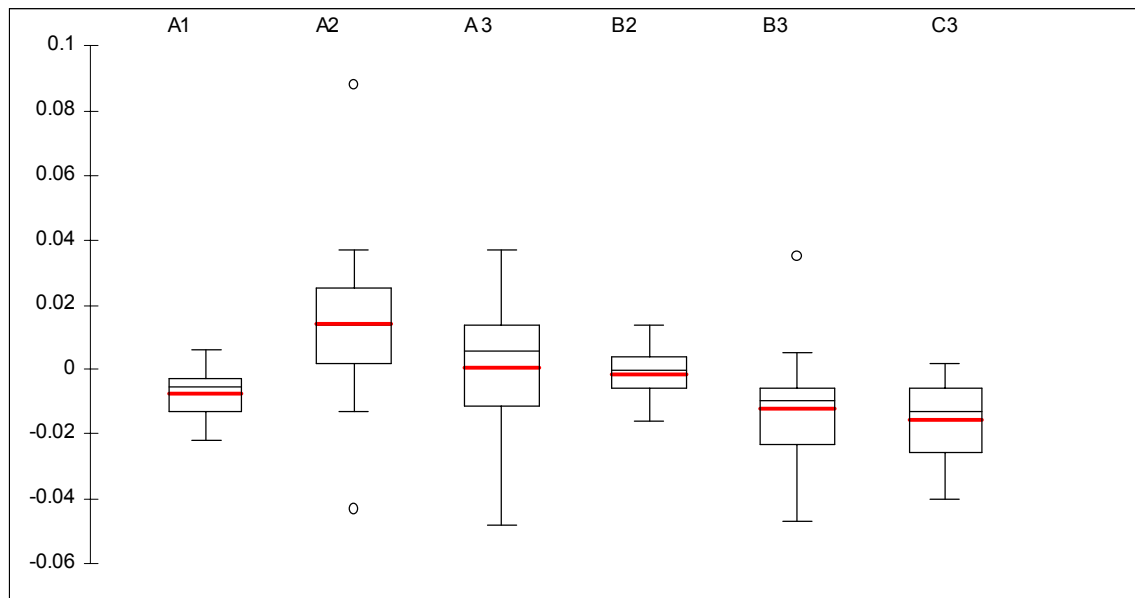
Source: Author's calculations.

A dynamic exploration of the capital/output ratio confirms the lower marginal efficiency of investment in recent periods, compared with historical data. The relationship between accumulated investment and accumulated growth of the potential GDP was calculated, using a on a five year period to capture medium term dynamic and filter-out short-term fluctuations in investment. The resulting phase diagram clearly indicates a non-linear relationship between investment and potential growth (figure 8).

FIGURE 8
PHASE DIAGRAM OF MARGINAL CAPITAL-POTENTIAL OUTPUT RATIO
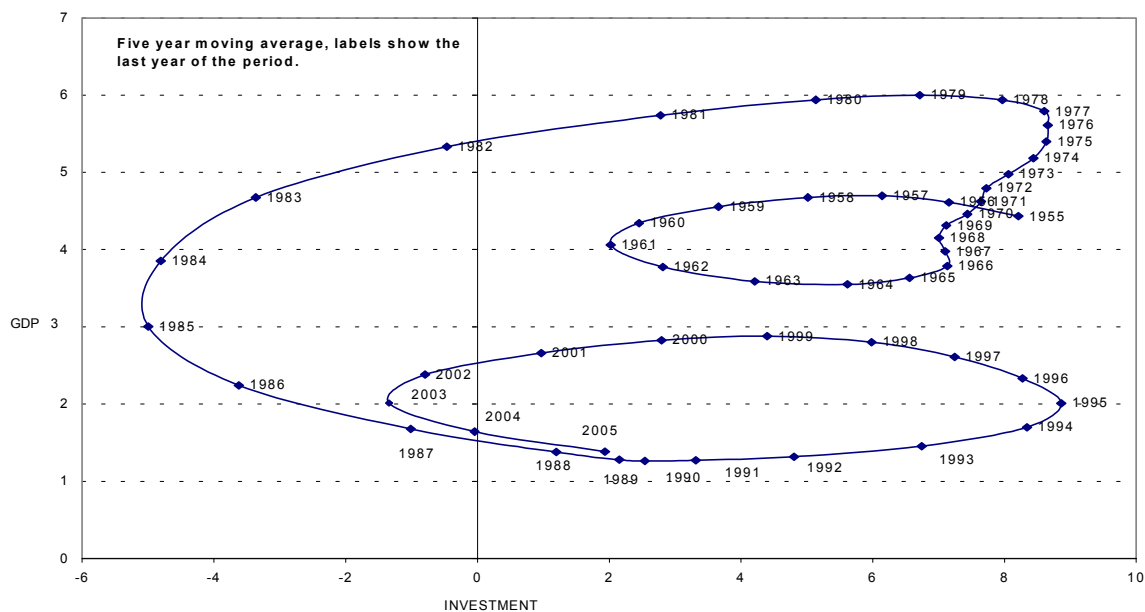
Source: Author's calculations.
Notes: Five year moving average of the incremental capital-output ratio, based on observed investment and potential GDP (one single period, d=5%).

From the mid-sixties to the second half of the 1970s, the region registered a sharp increase in the productivity of its investment, as measured by the incremental capital-output ratio. This phase corresponds to a period of rapid industrialization and structural changes in the region. The trend was reversed during the "lost decade" of the 1980s, but the renewal of growth in the 1990s was not associated with a significant recuperation of productivity.

According to the neo-classical theory, a decrease in the marginal utility of capital should be expected when the value of the stock increases (the upward trend observed for the incremental capital-output ratio in figure 9). Yet, the reforms implemented in the late 1980s and in the 1990s were supposed to improve factor productivity. Our results do not indicate such a structural rupture; the post-reform resumption of growth appears to be linked to non-structural factors.

Observed incremental capital-output ratio over the 1950-2005 period (figure 9) shows that reformers were probably right to point that the debt crisis was caused by a misallocation of resources starting in 1973. But it confirms also that the reforms were not instrumental in improving substantially the situation in the long run. This result is consistent with recent reassessments of the impacts of reforms on growth in the region (Lora and Panizza, 2003).

The adverse evolution of the incremental capital-output ratio has important implications for growth perspective. Lower total factor productivity, added to lower investment ratio, results – at least according to the neo-classic model–, in lower potential growth for the LAC region.

FIGURE 9
OBSERVED INCREMENTAL CAPITAL OUTPUT RATIO, 1950-2005 (FIVE YEAR PERIOD)
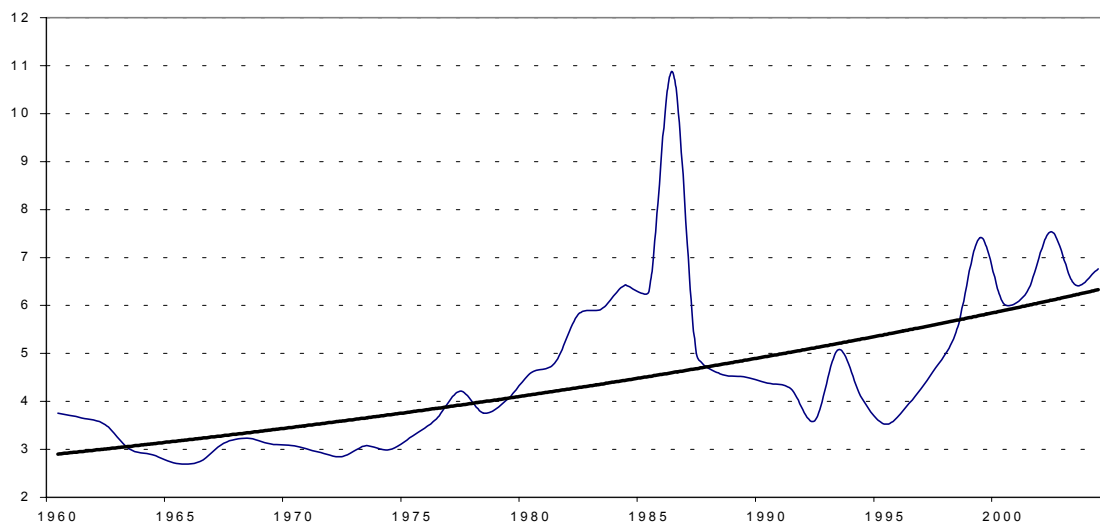
Source: Author's calculations.
Note: an increase indicates a drop in the marginal efficiency of investment.

4. Incorporating labour

Equation [2] may be simplified, by dividing both right and left hand sides by L, the labour input. Considering GDP and Capital stock per active person, one obtains:

$$Y/L = A(K/L)^{(1-\alpha)} \qquad\qquad [8]$$

The same reasoning applies to equation [3], which allows to use the same DEA methodology, and to apply the program [7] to per capita values of Y and K.

In this framework, any extrapolation of growth should now take into consideration the autonomous dynamic of the active population. Two forces are in action here. One originates in the demographic factors governing population growth; the other is related to the social behaviour that affects the rate of participation into the work force. The 1980s saw an increase in the ratio of the active population to the total population thanks to the time lag between birth and entry in the active population, on one hand, and the increased participation of women in the labour market, on the other. Under both influences, the annual growth rate of the active population raised to more that 3% during this period.

In 2005, the tendency is less than one percentage point below this peak, at 2%. Thus, low investment per worker (see figure 10), lower marginal productivity of the capital, and reduced increase in the active population affect the potential output that can be extrapolated in the future.

FIGURE 10
EVOLUTION OF FIXED INVESTMENT AND GDP PER ACTIVE PERSON, 1950-2005(P)
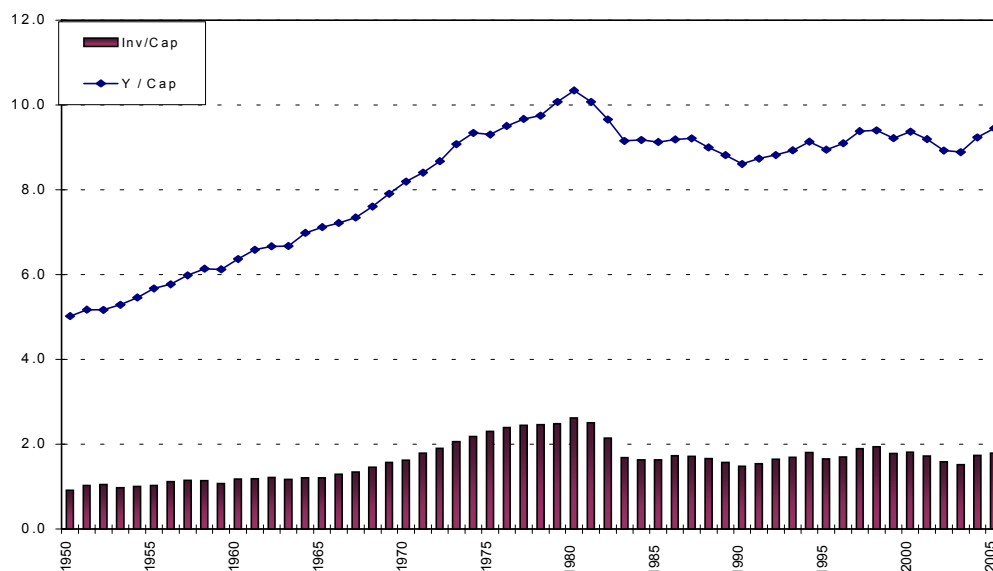
Source: Author's calculation based on ECLAC and ILO data.
Note: Thousands of dollars, at 2000 prices.

Results in table 4 were obtained using a mix of depreciation rates (5% up to 1980, 7% subsequently). They indicate that the perspective for GDP per worker, a proxy for real income, is not optimistic if we base our extrapolation on the 1998-2002 results (remember that 2003-2005 data may not lead to robust results).

TABLE 4
OBSERVED AND POTENTIAL GROWTH PER WORKER, USING DEA METHODOLOGY

	Average annual growth rates (%, ytoy)				Output gaps: observed GDP in relation to potential outputs (%)		
	Investment	GDP	Y*(1)	Y*(2)	Y*(3)	Y*(1)	Y*(2)	Y*(3)
LAC								
- 1991-1997	4.8	1.2	-0.7	0.2	1.1	10.7	3.5	2.8
- 1998-2002	-3.3	-0.7	-0.1	1.3	0.2	8.5	7.2	5.5
- 2003-2005	2.3	1.0	-1.0	0.3	-1.5	6.7	10.2	3.1
MERCOSUR and CHILE								
- 1991-1997	5.2	2.3	0.9	1.4	2.1	6.7	2.3	1.7
- 1998-2002	-6.9	-1.7	0.8	1.4	0.2	12.0	11.0	8.2
- 2003-2005	6.9	2.3	-0.6	0.0	-1.8	11.5	12.6	4.6
ANDEAN COMMUNITY								
- 1991-1997	2.6	0.7	-1.9	-0.2	0.8	14.9	2.6	1.6
- 1998-2002	-6.1	-2.1	-1.9	0.6	-0.6	10.5	9.8	7.2
- 2003-2005	-1.0	0.8	-2.7	-0.7	-2.3	4.9	12.4	4.3
MESOAMÉRICA								
- 1991-1997	6.0	1.0	-0.9	-0.4	0.7	10.6	4.7	4.2
- 1998-2002	0.6	0.8	0.5	1.6	0.7	5.0	3.2	2.7
- 2003-2005	1.4	0.4	-0.1	1.1	-0.7	4.9	7.3	1.4

Source: Author's calculations.
Note: Simple average of country results. Y*(1), Y*(2) and Y*(3) are potential GDP calculated using three different decomposition of the 1950-2005 time series. Depreciation factor d=5% up to 1980, 7% afterward.

Indeed, the phase diagram linking investment and potential output per worker shows that the indicator for year 2005 is still in the Southwest quadrant (see figure 11). This is quite a negative outcome for both investment and income per capita.

Nevertheless, a simple extrapolation of the recent trend indicates that the perspectives are more positive, at least for shifting to the Southeast quadrant. A move to the Northeast quadrant, a more desirable situation that provides a basis for increasing both employment and real wages, is nevertheless uncertain in the near future.

It should be noted here that using aggregate data instead of sectorial ones is a serious limitation when analyzing productivity per unit of labour. It is probable that the phase of fast productivity change in the 1960s and 1970s was associated to a massive transfer of workers from traditional agricultural activities to more productive industries, a structural change that obviously cannot be replicated in the 2000s. This structural change, that was present in the LAC region during the 1960s and 1970s, is also probably behind the rapid catching-up experimented recently by several low-income and fast-growing Asian economies, such as China and Vietnam.

It would be therefore extremely interesting to discriminate between within-sector and between-sector productivity gains. Unfortunately, sectorial analysis along the present lines of research is limited by the lack of disaggregated data on labour and capital. Filling this research gap is one of the ECLAC programme of research in growth accounting.

FIGURE 11
PHASE DIAGRAM OF MARGINAL CAPITAL-POTENTIAL OUTPUT RATIO PER WORKER
(SIMPLE AVERAGE OF NATIONAL RESULTS)
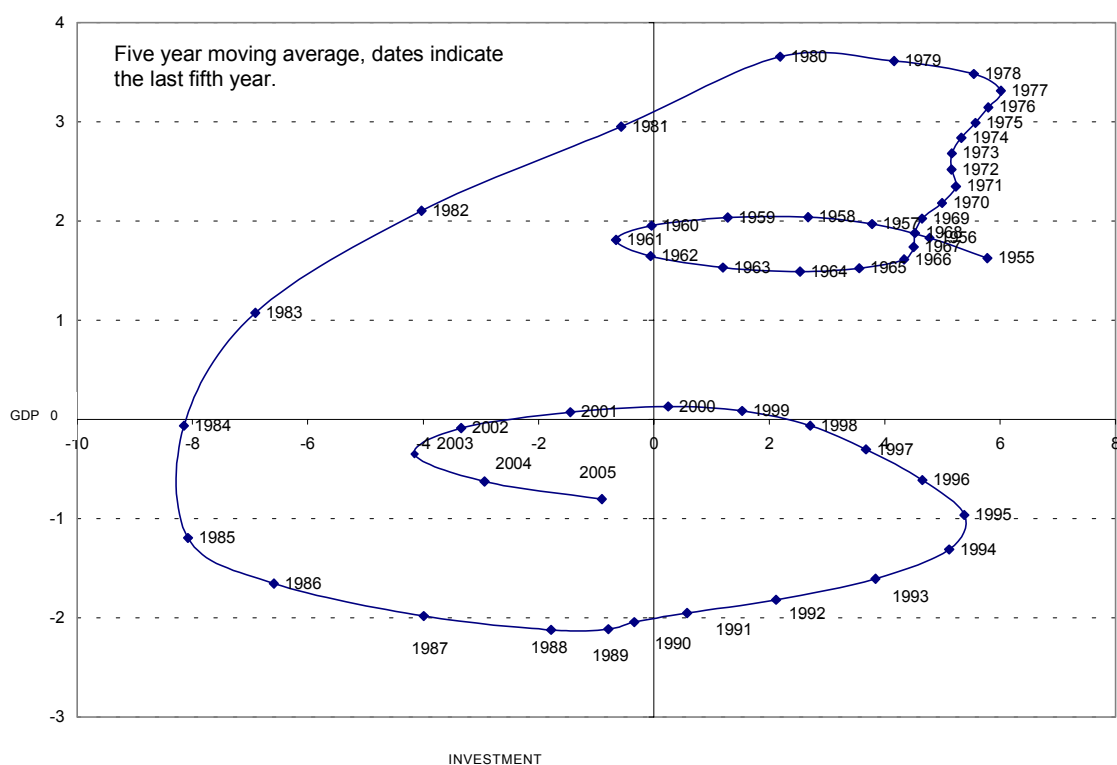
Source: Author's calculations.
Notes: Five year moving average of the incremental capital-output ratio per worker, based on observed investment and potential GDP (one single period, d=5% up to 1980, 7% afterward).

5. Intermediate conclusion: Impact of reforms on total factor productivity

Box 1 indicated that ultimate factors are also important in determining potential output. The debt crisis of 1982 fuelled an intense theoretical –and ideological– debate in the region about the necessity to reform the previous economic model and correct resource allocation. The objective of structural reforms was, inter alia, to improve the ultimate factors in the region, increasing the efficiency of investment and boosting growth potential.

Escaith and Morley (2001) look into the empirical evidences, using the following theoretical model.

$$dY = f(Y_0, Y^*) \qquad\qquad [9]$$

$$Y^* = g(Z) \qquad\qquad [10]$$

Where Y_0 is the initial GDP, Z is a set of proximate and ultimate variables, including reform indexes.

We have here an example of reconciliation between the study of potential GDP and of expectable growth rate under optimum condition: The larger the distance between Y_0 and Y^*, the higher the potential growth rate.

As in previous approaches, the potential output Y^* is not observable directly. To obtain an estimable model, Y^* is approximated by a set of structural and institutional variables ($SR_{i,t}$, $OE_{i,t}$ and $ZV_{i,t}$) which makes up the economic environment.

Such variables are indexes measuring the extent of reforms, the rate of investment, the fertility rate (e.g., high rate of population growth diverts part of the investment away from increasing the stock of working capital per worker), macroeconomic policy variables, etc.

· **The statistical model** is based on the following regression equation:

$$d\hat{Y}_{i,t} = a\, Y^0{}_{i,t} + \beta\, SR_{i,t} + \delta\, OE_{i,t} + \gamma\, ZV_{i,t} + u_{it} \qquad\qquad [11]$$

where

$d\hat{Y}_{i,t}$: average growth rate of per capita GDP for country "i" and period "t";

$Y^0{}_{i,t}$: per capita GDP at the beginning of the period

$SR_{i,t}$: structural reform indexes

$OE_{i,t}$: macroeconomic policy variables

$ZV_{i,t}$: other environment and behavioural variables

As it is standard in panel models, the residual term was further decomposed.
$$u_{it} = \mu_i + \nu_t + \varepsilon_{i,t}$$

μ_i ; ν_t : respectively country-specific and time-specific variables
$\varepsilon_{i,t}$: residuals

The model presents several deficiencies, both theoretical and empirical. The exact list of variables on the right-hand side of the equation is unknown (not only Y^* is not observable, but we face uncertainty about the variable that determine it). In the absence of any indication of the "true" model, the coefficients obtained for a specific "explanatory" variable may vary widely when using alternative specifications or estimation procedures. As a matter of fact, most quantifications of the contribution of specific variables found in the literature must be considered at best only as broad estimates, because practically no variable has been found robust to alternative specifications (Sala-i-Martin, 1997). The individual significance of a particular

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variable in a regression may depend on the inclusion or exclusion of other variables. Additionally, panel techniques may exacerbate the difficulty of discriminating between short-term and long-term impacts of control variables (Pritchett, 2000).

One option used by empirical research in this case is to try a large number of possible alternative determinants of Y*, on the basis that in this case, too many variables is better than too few: While including redundant variables has a cost in terms of efficiency and model stability, the omitted variable problem has more serious negative consequences on the statistical properties of the econometric model and the inferences that can be drawn from it. The strategy adopted was the "general to specific" approach, in order to select the statistically relevant variables. It was backed-up by a systematic sensibility analysis of the robustness of resulting models to avoid discarding relevant variables in the process and detect spurious correlations.

The estimation procedure used panel-data, pooling 17 Latin American and Caribbean countries, from 1970 to 1996.

In line with the literature, the data indicate that physical and human capital investments raise the expected growth rate. Furthermore there is evidence of a positive feedback between the level of education of labour and capital formation (growth rate is higher for a given level of capital formation the better educated is the population). The results obtained by Escaith and Morley indicates that the reform indexes themselves did not seem to have much effect on the growth rate, but that the speed of reform mattered. A strong and consistent result from their analysis is that the more rapid the process of reform, the slower the growth rate, once controlling for other variables.

The apparently innocuous phrase "controlling for other variables" (macroeconomic stability, quality of human capital, etc.) is important when assessing the ultimate impact of reforms on growth. The paper states in particular that the main effect of reforms was to make credible and sustainable the stabilization programmes implemented to combat high inflation and fiscal imbalances. The results strongly support the positive contribution of macroeconomic policy variables and prudent policy management to economic growth. Other things equal, countries grow faster when they have low fiscal deficits and stable real exchange rates. The stronger emphasis in human capital investment (education) in the post-reform period had also a positive impact on growth.

Nevertheless, from our present perspective of the ultimate impact of structural reform on factor productivity and potential output, Escaith and Morley's paper confirms what was apparent in the evolution of the marginal efficiency of capital: TFP did not increase significantly as a result of reforms, contrary to what was expected. It even decreased, as was confirmed by recent growth accounting investigations (Solimano and Soto, 2005).

Many specialists hoped also that the end of financial repression and the financial deepening that came with structural reforms would strengthen the role of the banking sector in selecting the most efficient and sustainable projects at micro level, contributing to a higher total factor productivity at macro level. In Escaith and Morley's results, the related indicators are positively, but only weakly, related to growth.

When concluding the review of the supply side investigations into the perspective for potential output in the LAC region, a rather pessimistic pattern seems to emerge in the first half of the 2000s: investment coefficients are very low, the growth rate of active population is slowing down and total factor productivity is decreasing. The reform packages that were implemented since the late 1980s to improve resource allocation did not have the expected long-lasting structural impact.

IV. External sector, demand and sustainable growth

The Keynesian school contests the results of the neo-classical approach, arguing that investment and total factor productivity –central to the supply-side approaches– are in fact endogenous to growth (following the Verdoorn's Law, which was further developed by Kaldor). The autonomous factor determining growth is effective demand. In the specific case of developing economies, according to the Harrodian tradition, the effective demand originates in the Rest of the World (exports).

Indeed, promoting an export-led model was another objective of the structural reforms implemented in the region after the debt crisis of 1982. When looking back in history, since 1985, the growth rate of exports has been increasing. But growth did not respond accordingly, and at first view, the reforms seem to have failed again in this particular objective. At the end of the 1991-2003 economic cycle, the growth of imports almost compensated for the rise in exports (table 4). Moreover, recurrent balance-of-payment problems were still one of the major causes of real volatility in the LAC region.

TABLE 4
TOTAL SUPPLY AND EXTERNAL DEMAND LAC REGION, 1991-2003 CYCLE

	Average growth 1991-2003
1. Global supply	3.0%
- GDP	2.4%
- Imports (goods and services)	6.6%
2. Export (goods and services)	7.5%

Source: ECLAC, Statistical Yearbook of Latin America and the Caribbean, 2005.
Note: Weighted averages.

1. The potential for export-led growth

To measure the impact of external demand (exports) on the potential growth of the region, the following statistical model was estimated:

$$dY_{it} = \alpha\, dX_{i,t} + \beta\, RPI\, i,t + \delta\, TRN_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t}$$
[12]

with:

$dY_{i,t}$: annual growth rate of GDP, country "i" at year "t";

$dX_{i,t}$: annual growth rate of exports volume, country "i" at time "t";

$RPI_{i,t}$: Effect of the change in trade prices, as percent of total exports.

$TRN_{i,t}$: Net transfer of resources from the rest of the world,

μ_i ; ν_t : fixed effects and trend variables.

$\varepsilon_{i,t}$: residuals

Estimation was done using panel data on a total of 18 countries for the 1989-2002 period. A sub set of regional regressions was also computed, and the estimated coefficients were used to run a simulation model. See Escaith (2003 and 2004) for details.

Based on the results obtained, a set of simulations was prepared according to two scenarios: (1) a positive shock of one standard deviation in export volume and relative prices; (2) same scenario, plus a positive shock of one standard deviation in net transfer of resources. The simulation of positive shocks should be interpreted as a normalization of the external context, which was particularly adverse to LAC countries during the 1998-2002 period.

A word of caution should be said here on the probability of a simultaneous positive external shock. Due to the heterogeneity of LAC trade structure, a positive shock for one subregion (e.g., mineral and oil prices in 2003-2005) may well translate in a negative one for others. Table 5 shows the results obtained under this "normalization scenario".

TABLE 5
GROWTH SIMULATIONS FOR 2003, FOLLOWING A POSITIVE EXTERNAL SHOCK

Simple average of countries	Simulation 1 Positive trade shock	Simulation 2 Positive trade and financial shocks
Total LAC region	3.5	5.6
Mercosur+Chile	3.2	4.9
Andean Community	3.3	4.9
Mesoamerica	3.9	6.6

Source: Author´s calculatıon.
Note: Shocks are equal to one standard deviation of the respective exogenous variables.

Table 5 indicates that, at the end of the 1991-2003 cycle, the potential for growth based on a normalization of the external context was more optimistic for the region that what an inward-looking analysis of the production factors may have indicated. Even without such a positive shock, corresponding to a correction of the 1998-2001 negative external context, the growth perspective for the region was 2.9%. With a double positive shock on the external trade and financial fronts, the region could expect to achieve a 5.6% annual growth rate. Thanks to its greater openness, the Mesoamerican subregion was expected to benefit more from a positive external shock, with a potential growth of 6.6%.

The situation observed since 2003 differs qualitatively with the positive scenario defined in table 4. Indeed, there was a positive trade shock at regional level: after a decrease in the relative trade prices in 2001 and 2002 (the $RPI_{i,t}$ variable in equation 15). Since 2003 we observe a faster increase of the export prices relative to imports, nevertheless, this benefits only the countries exporting minerals, oil and gas. Central American and Caribbean countries (except Trinidad and Tobago) did not experience such a bonanza, and observed a deterioration of their trade balance in 2004. Net transfer of resources from the rest of the world (variable $TRN_{i,t}$) has been negligible or negative since 1998. It worsened to a net outflow representing 4% of regional GDP in 2004, from 2% in 2003 (see figure 5 in the preceding section).

Thus, the high growth rate observed in 2004 (6%) does not respond totally to the optimistic scenario outlined in table 4. Part of it was due to a closure of the output gap in the countries belonging to the group 1 identified at the beginning of the paper (see figure 1) and a strong but selective positive trade impulse. The Mesoamerican subregion did not benefit from this particular pattern, at the difference of what happened in South America.

Perspectives for 2005 indicate a normalization of the trade scenario (with the big exception of oil prices), and a return of external capital. But doubts remain about the sustainability of this export-led growth, due to (1) the high import elasticity observed in the

region during the 1990s, and (2) the perverse effects of high capital inflows on economic fundamentals. Indeed, for small open developing economies, sustainability is central to the concept of growth potential, when considered from a Keynesian perspective. To simplify, we may say that sustainable and potential growth are mirror concepts from the demand and supply perspectives.

2. Growth potential and external sustainability

The theoretical model used here is derived from Thirwall (1979). Exports are a function of the external demand (approximated by the GDP of the rest of the world) and the real exchange rate. Imports are a function of internal demand (approximated by the GDP) and the real exchange rate.

All variables are in growth rate.

$$x = \alpha_1 q + \varepsilon \ddot{y} \tag{13}$$

$$m = \alpha_2 q + \pi y \tag{14}$$

(x) and (m) are exports and imports of goods and services, (y) is the GDP of the developing country; (q) is the real exchange rate, ($\ddot{y}$) is the GDP of the Rest of the World.

Parameters (α_1) and (α_2) represent price elasticities, (ε) and (π) are income elasticities.

Sustainability requires the trade balance to be equilibrated in the long run (x = m). In other words, even if a country can transitorily have a trade deficit and run into external debt, this debt must be reimbursed at a later time, which means that the country will have to generate a trade surplus that will compensate for the previous deficit.

Under free trade conditions and in absence of transaction costs, in the long run exchange rates are determined by the convergence towards purchasing power parity and q=0.

After this simplification, the warranted growth rate (y*) depends of the growth of external demand ($\ddot{y}$) and the respective income elasticities.

$$\pi y^* = \varepsilon \ddot{y} \tag{15}$$

For small and open developing countries, ($\ddot{y}$) is fundamentally determined by OECD countries, and independent of y*.

The model provides a "sustainability condition" for income convergence (y* > $\ddot{y}$): import elasticity should be lower in the developing country than in the developed ones ($\pi < \varepsilon$).

From a classical perspective, the demand for the developing country' exports depends ultimately on its comparative advantage. In situation of free trade and absence of transaction costs, the comparative advantages will define the pattern of specialization of the trading partners. But the pattern of specialization may induce an economy to specialize in the production of an inferior good (a good is called inferior when its consumption increases only slowly when income raises). In this case, the elasticity of exports (ε) is low, and the developing countries that specialize in this type of inferior goods, and cannot increase their market shares at the expense of other producers, are stuck into an underdevelopment trap. In our model, because elasticity of exports (ε) is low, there is no income convergence (y* $\leq$ $\ddot{y}$).

Prebish's analysis of the relation Centre-Periphery was based in good part on the argument that while industrialized countries specialized in high-technology and high demand-elasticity goods, the developing countries were specializing in the production of goods intensive in natural resources, which demand was growing only slowly. The appropriate strategy for the open developing economies, according to this structuralist perspective, is to industrialize by

incorporating technology and shifting the domestic production pattern towards higher demands goods. The effect would be to increase (ε) and allow for faster income convergence ($y^* \gg \ddot{y}$).

The analysis of (ε) at macroeconomic level is more likely to be done from a supply side perspective (incorporation of technical progress and TFP), as well as from a mesoeconomic and sectorial policy perspective. The economics of transition from static comparative advantage to dynamic ones is still the major issue orienting the work of ECLAC today (see CEPAL, 2004).

Nevertheless, as is usual in economics, the analytical frontiers are largely arbitrary. For example, Escaith (2003) modify the technological gap model of Cimoli and Correa (2002) to show that technology affects both the demand and supply sides of the equilibrium condition [15].

Starting with the model in equation [16] and [17], Escaith (2003) develops the Cimoli and Correa (2002) technological gap multiplier concept (ψ), as a factor that affects also demand for imports, especially of superior goods (p. 45). The resulting model is:

$$x = \alpha_1 q + \psi \varepsilon \ddot{y} \qquad\qquad [16]$$

$$m = \alpha_2 q + \psi^{-1} \pi y \qquad\qquad [17]$$

$$q=0 \Rightarrow \pi y^* = \psi^2 \varepsilon \ddot{y} \qquad\qquad [18]$$

The same technological content that allows producing competitively for the international market, permits also offering superior goods for the domestic market. Technology should be understood here not only in terms of innovation and better production techniques, but also organization and marketing. Those superior goods and services are generally non-essential products, with a high-income elasticity of demand according to Engel's Law (e.g., electronics, communications, culture and leisure).

Conversely, the failure of the national firms to satisfy domestic consumers who are increasingly sophisticated, means that domestic production will not be able to benefit from the most dynamic segment of the internal demand. This Engel's Law effect would be more pronounced, the more unequal the income distribution, due to the stronger incidence of higher incomes' in national consumption. But the analysis of causes and consequences of the distributional aspects of economic growth, quite a transcendental and important issue in LAC, is not the subject of this already too long essay.

The technological gap multiplier (ψ) is a positive function of the productivity growth rate in the home country, and a negative one of the growth rate at the technological frontier (OECD or newly industrialized countries). A proper reduction of the technological gap between the home country and the frontier can lead to a virtuous path of sustainable growth. This class of models crosses several economic schools, with significant differences in the modeling of ψ. In neo-classic theory, (ψ) is exogenous. In a multicountry Shumpeterian approach, (ψ) is correlated with research and development and with investment, and is partially endogenous. In this context, appropriate policies can raise productivity and per capita income relative to other countries (see Howitt, 2000).

In Latin America, as stated by Cimoli and Correa (2002), there was only a weak progress made in reducing the gap. This trend in the region reflects the fact that the labour intensive and engineering intensive firms that are the media for implementing an increase in the technological gap multiplier have suffered most from trade liberalization. This situation is rooted in the characteristics of the specialization pattern that emerged in the 1990s, and addressing it requires promoting an active sectorial and mesoeconomic programme (ECLAC, 2004).

In the following section, the accent will be put on import elasticity (π), as it relates more closely to demand oriented macroeconomic factors.

3. Demand for imports: structural and transitory factors

In Latin America, the apparent income elasticity of imports $(\Delta M/M)/(\Delta PIB/PIB)$ increased dramatically during the 1990s.

While the 1980-2003 average is $\pi = 2.7$, it goes up to 4.2 for the sub-period 1991 y 2003. But a more detailed observation (figure 12) indicates that this was probably a transitional phenomenon, due to an overshooting of imports after several years of restrictions during the 1980s, an excess of external capital inflows and an overvaluation of the currencies during most part of the 1990s.

The process of trade liberation was another factor that probably was instrumental in increasing π. Opening the economies to external competition affected goods markets, both final (consumption and capital) and intermediate. Consumers and firms seized the opportunity of a wider choice of products to diversify their purchases. In this process, a greater share of the domestic market went to more competitive imported products.

This demand switching effect was complemented by more structural a change, the so-called "constructive-destruction" process of structural reforms, when non-competitive branches went out of business and new activities appeared. Provided that positive effective protection was widespread across the sectors, opening the borders resulted in the progressive disappearance or restructuring of many sectors of activities, while production concentrated in those sectors that were competitive internationally, or were naturally protected from external competition (e.g., producing non tradable). As a result, the input-output matrix that emerges from the restructuring of the national productive system is sparser. In the process, import elasticity increased while domestic suppliers were gradually replaced by imports.

Once transition is over, the post-reform income elasticity of imports should decrease, and stabilize at a higher or lower level than its pre-reform level. The latter depends –extending Engel's Law to intermediate and investment goods, and discarding exchange rate misalignments– on the specialization of the sectors that were strengthened or that emerged as a result of opening the economy. Figures 12 shows that the observed increase in import elasticity was indeed a transitional effect in Latin America, and that the elasticity for imports destined to the domestic market decreased more rapidly than that for total imports.

A brief note is needed on the negative values that can be observed for 2003. They correspond to abnormal situations (outliers) that occur when an economy suffers a balance of payment crisis and reduces drastically its imports (as was the case in Mercosur between 1999 and 2003). Slightly positive GDP growth over a five-year period may coincide with sharp reductions in imports, leading to high negative elasticities.

As we shall see later in this section, the statistical evidence for the region tends also to indicate a lower elasticity for the most open economies. This can be intuitively inferred from the curve representing the median values of country elasticities, figure 12. The median value is more representative of the behaviour of the smaller economies, which are in general much more open to trade than the larger economies. This median value was consistently below the total regional value, except during the "sexenio perdido" which saw the collapse of imports from some large economies (especially Argentina) due to balance of payment crisis.

FIGURE 12
EVOLUTION OF REGIONAL INCOME ELASTICITY OF IMPORTS, 1988-2005
(FIVE YEAR MOVING AVERAGE)
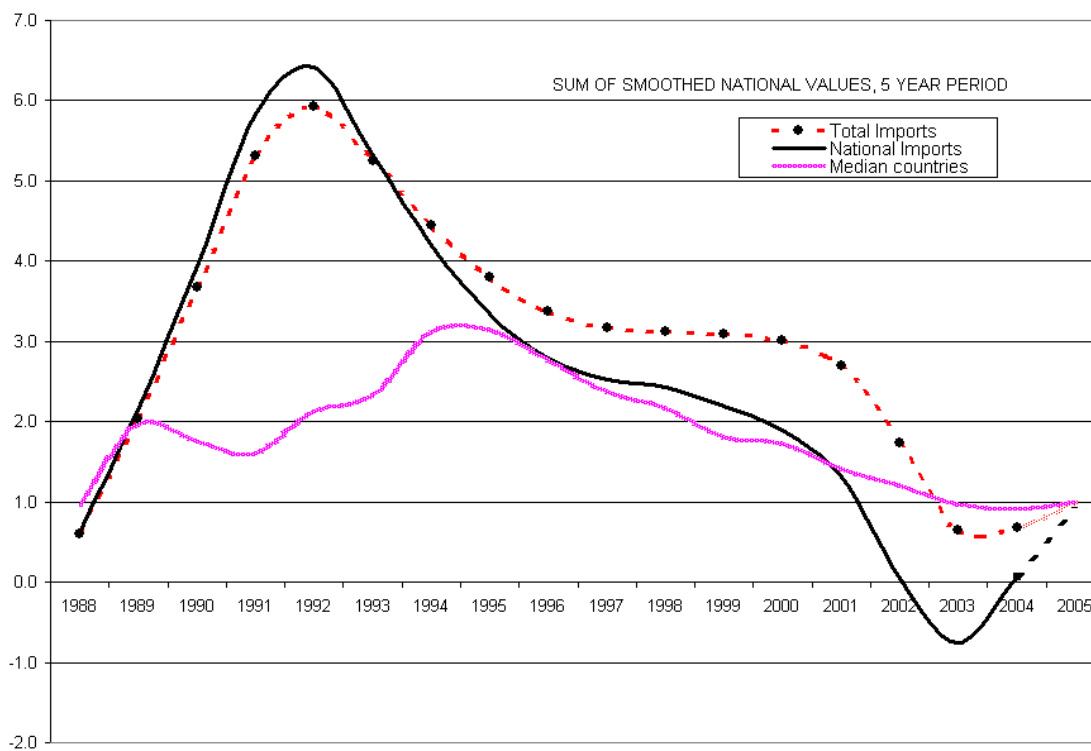
Source: Author's calculation, on the basis of ECLAC data and 2005 estimations.

The figure shows also that import-elasticity is affected by short-term factors, that could be linked with the phase of the economic cycle (as may be the case for the 1999-2002 slow down, and the recuperation afterwards) or other macroeconomic variables. In order to analyse the macroeconomic factors affecting import elasticity, the following model was estimated:

$$dM_{it} = \phi dM_{i,t}-1 + \alpha\, dY_{i,t} + \beta\, dTRN_{i,t} + \delta\, dX_{it} + \gamma\, dRPI_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t} \qquad [19]$$

$dM_{i,t}$: annual growth rate of exports volume, country "i" at time "t";

(other variables are identical to previous equations)

Results obtained are detailed in Escaith (2003), table 10. We present here the main conclusions.

Trend variable (ν_t) is positive, but not significant from a statistical perspective, indicating that the observed increase in the import propensity is probably transitory and cannot be linked to a structural trend. The country specific fixed effects (μ_i) are not dependent on the average import coefficient (Mi/Yi). Thus, the higher trade openness that resulted from structural reforms did not apparently led to higher import elasticity. Indeed, over the 1989-2002 period, Mesoamerica – which is the most open region– has a semi-elasticity of only 1.7, compared to 2.4 for the regional average.

Imports react positively to net transfers (dTRN $_{i,t}$) and the relative trade prices (dRPI $_{i,t}$). Two factors may be at work here. First, a net inflow of resources from the rest of the world and better terms of trade increase the disposable national income, which leads to higher demand for

imports. Second, higher inflows of hard currency from trade and financial channels tend to appreciate the real exchange rate, shifting internal demand towards tradable goods.

Including the variation of real exchange rate in equation [19] confirms this hypothesis. The coefficient is negative and highly significant, which means that when the real exchange rate decrease (i.e., the national currency appreciates) imports increase.

Interestingly, the Mesoamerican sub region is the only one that does not show a significant impact of real exchange rate using this specification. This may obviously arise from an inadequate specification of the regression equation, but also could be explained by structural changes at work.

The high share of imports that are related to export activities, thanks to the diversification process that took place in the 1990s in this sub region, make total imports less responsive to exchange rate fluctuations. Indeed, the parameter (δ) associated to exports (dX_{it}) is higher and more significant in this sub region than in other part of the region. A structural factor may be at work here, with the emergence of a dynamic maquiladora sector that reacts positively to devaluations, thus increasing demand for imported inputs.

Another factor present in this sub region is the rising importance of expatriate workers remittances as a determinant of national income in many of its smaller economies. The purchasing power, in terms of tradable goods, of this additional income, which is generated out of the country, is not affected by exchange rate fluctuations.

V.   Conclusions

Potential domestic product and potential growth are elusive concepts. Both are unobservable and subject to strong theoretical controversies. The option used in this document was to use an eclectic approach, comparing the predictions of antagonist theoretical analysis. By doing so, the objectives were (1) to offer a didactic review of selected methodologies used by the profession, and (2) to reduce methodological uncertainty, or at least to isolate some building blocks, for extrapolating the reactivation tendencies observed in the Latin American region after the 1998-2003 downward phase of the economic cycle that initiated in 1991.

From a policy oriented perspective, such an eclectic approach allows to identify critical factors limiting growth prospects. In the Latin American case, the potential for growth still depends upon the international situation. The analysis showed that export-led growth should have in the future a stronger than expected potential, due to a tendency to reduction in import elasticities.

Even if the potential for export-led growth seems higher than what is commonly stated by critics of the post-reform economic model, these reforms did not have the expected beneficial effect on the supply side of the economy. Productive capacity has been debilitated by years of reduced investments, and total factor productivity has not responded positively to the structural reforms. As a result, the region may not be in a position to seize the opportunities offered by external markets, while competition from other emerging economies is getting stronger.

From the macro-economic perspective, the paper investigated the long-term conditions of external sustainability. The results obtained from the empirical investigation point, inter alia, at the role of exchange rate in determining short-term competitiveness. On the supply side, structural policies should look at strengthening this external competitiveness by increasing the rate of incorporation of technical progress, particularly in the tradable sectors.

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