Can Latin America Fly?
Revising its engines of growth

Hubert Escaith

The views expressed in this document, which has been reproduced without formal editing, are those of the authors and do not necessarily reflect the views of the Organization.

Contents

List of tables

List of figures

List of boxes

4

Summary[1]

This document analyses the past dynamics and the potential of economic growth in Latin America, using alternative methodological perspectives. Applying them to the regional situation at the end of the 1990-2002 economic cycle, the respective methods are used to review the medium term determinants of growth in the region. This is achieved 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 Payments constraints and the sustainability of the export-led model. Productive capacity in the early years of the 2000 has been debilitated by years of reduced investments, and total factor productivity has not responded positively to the reforms. The observed structural changes in the labour markets point also to an inefficient allocation of the labour force. This negative trend puts an additional constraint on the supply-side forces which, from this perspective, lowers the growth potential of the region. At first glance, it appears that structural reforms did not have the expected beneficial effect on the supply side of the economy, and the diagnostic that concludes the first part of the study is low spirited. When turning to the demand side, the potential for export-led growth appears higher than may have been expected, thanks to a regression-

to-trend of the high import elasticity observed during the 1990s. This increases the efficiency of the demand-driven model, and strengthens its macroeconomic sustainability. 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. 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.

I.   Introduction

"Nous nous représentons l'avenir comme un reflet du présent projeté dans un espace vide, tandis qu'il est le résultat souvent tout prochain des causes qui nous échappent pour la plupart". M. Proust "La Prisonnière"

Can Latin America Fly? This rather provocative title reflects a peculiar state of uncertainty that is pervasive in the region since the beginning of the century. For the last 20 years, growth has been very volatile; lately, the region has been falling behind more dynamic developing regions. The structural and macroeconomic reforms implemented in many Latin American countries during the 1990s, opening their economies in an attempt of reproducing the Asian and Chilean "miracles", has not led to the anticipated results. It is true that inflation is now under control, thanks to greater fiscal and monetary discipline. But growth remains volatile; several balance of payment crisis hit the region and the social conditions –particularly income distribution– did not improve dramatically.

This uncertainty affects not only the economic circles, but permeates also the political life. As a result, the public media in the region have turned successively their attention to alternative schools of thoughts, offering "new" approaches: the neo-liberals, the neo-structuralists, and now the neo-populists. Even the traditional temples of a development orthodoxy based on the hard pillars of the neo-classic growth equation (efficient investment and flexible labour) are now looking for "soft" solutions, advancing lack of governance and deficit in institutional environment to explain the Latin American lower-growth specificities.

In view of this profusion of "neo"–logisms and post-modernisms, the present essay certainly lacks originality and takes us a few steps backwards. The following pages use time-tested approaches to revise the state of what have traditionally been considered the engines of growth, adopting an eclectic view-point. After reviewing in this introduction the historical and contemporaneous trends, the analysis starts with the supply-side proximate engines of growth: capital and labour. Some more modern (ultimate) ingredients are added when institutional factors and the impact of structural reforms are analyzed. The second part of the analysis deals with the demand-side of the growth equation, in particular the potential of the export-led model. True to this (Post) Keynesian approach, the conditions of macro-economic sustainability are assessed. For the lector patient enough to follow us across these multiple conceptual and empirical digressions, a conclusion synthesizes the main results.

1.   Long term perspectives and short-term uncertainties

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.

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 1950-2006 *(1950=100)*
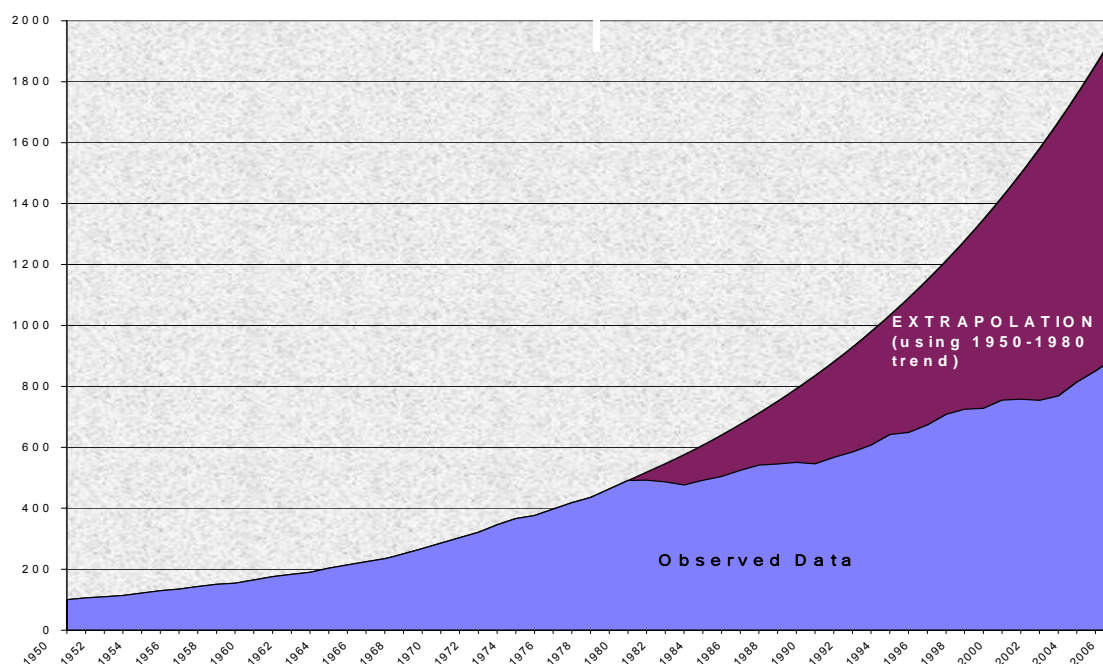
Source: Author's calculation based on ECLAC data.

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.

The region was an outstanding performer before the Second World War, when its rate of growth was among the highest ones, and superior to the world average. After WWII, Latin America was a rather poor performer, if we take the 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 active export-led model, were able to achieve much higher growth rates.

Indeed, the so-called "Asian Miracle" was one of the reasons Latin America 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 asserting the potential of such an export-led model for boosting growth potential in the region.

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.

The strength of Latin American recuperation in the post-reform era was concentrated in the first half of the 1990 decade, and decreased after 1995 (figure 2). In addition, regional growth experienced high volatility 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 "quinquenio" broke down-down in 2003.[2] Indeed, the average annual growth in Latin America during 2003-2006 was close to 4.5%, a trend that was supposed to continue in 2007, according to ECLAC projections.

---

[2] As the new growth cycle emerged in the second half of 2003, many authors extend the "quinquenio" to a "sexenio" and refer to 1998-2003 as the recessive part of the cycle (Escaith, 2004).

Figure 2
LATIN AMERICA:QUARTERLY GDP : ANNUAL GROWTH RATES 1994-2007
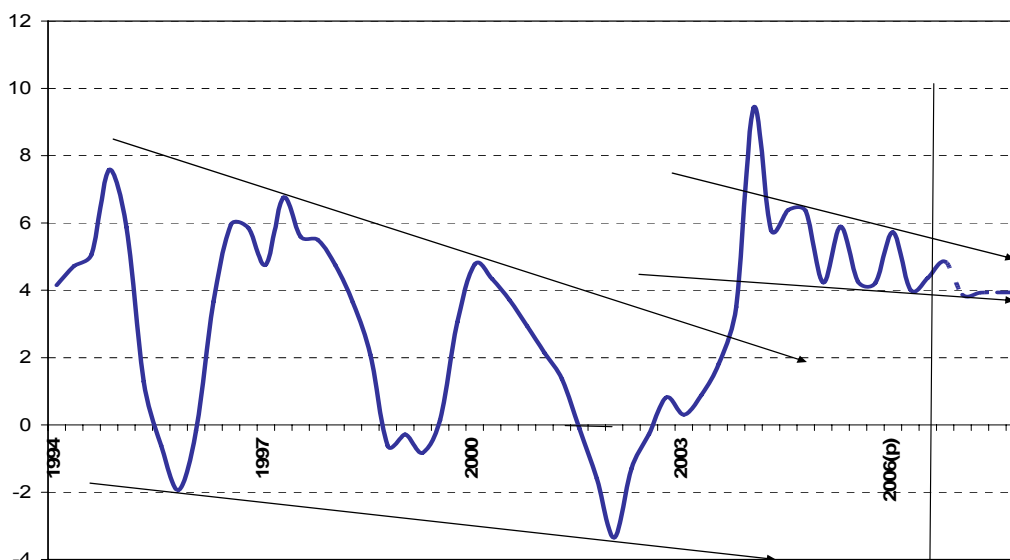
Source: Based on ECLAC, Division of Statistics and Economic Projections.
Note: Weighted and seasonally adjusted data. 2006-III, 2006-IV and 2007 data are projections.

This welcome break in the slow-down process poses a new problem for the forecaster. As can be seen in figure 2, two distinct regional patterns emerge from the data: the first one of volatile and decreasing growth rates, the second more stable and providing higher growth. But this recent high growth is partially technical, and explained by the recovery in Venezuela and Argentina after the 2001-2002 crisis. These recuperation processes cannot last forever and are expected to reach their limits when actual GDP goes back to its potential and bottle-necks start to slow-down growth.

The new growth cycle took place also in a favourable international environment, with the domestic demand in the USA attracting high level of Latin American exports and increasing demand from China and India boosting the international process of commodities to record-hights. Yet it is well known that the behaviour of commodity markets is strongly cyclical, and the favourable international situation may not last forever.

Thus, once these short term considerations are discounted, the question remains: What is the potential for economic growth we can extrapolate for the region in the medium term?

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 in an intent to reduce 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 ones on the other.

The concept of potential output (in level) is 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 a growth rate between these two points.

11

2.   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 techniques to calculate a trend (Y^*_t) out of observed data (Y_t):

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

The parameter λ shifts the balance between (i) having an accurate picture of the reality, corresponding to a low value for $(Y_t - Y^*_t)^2$, 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 (Argentina, Paraguay, Uruguay and Venezuela)
Group 2: Other South American countries
Group 3: Mesoamerican countries (Mexico, Central America, Caribbean)

Figure 3
LATIN AMERICA: TRENDS IN ANNUAL GROWTH RATES 1991-2006
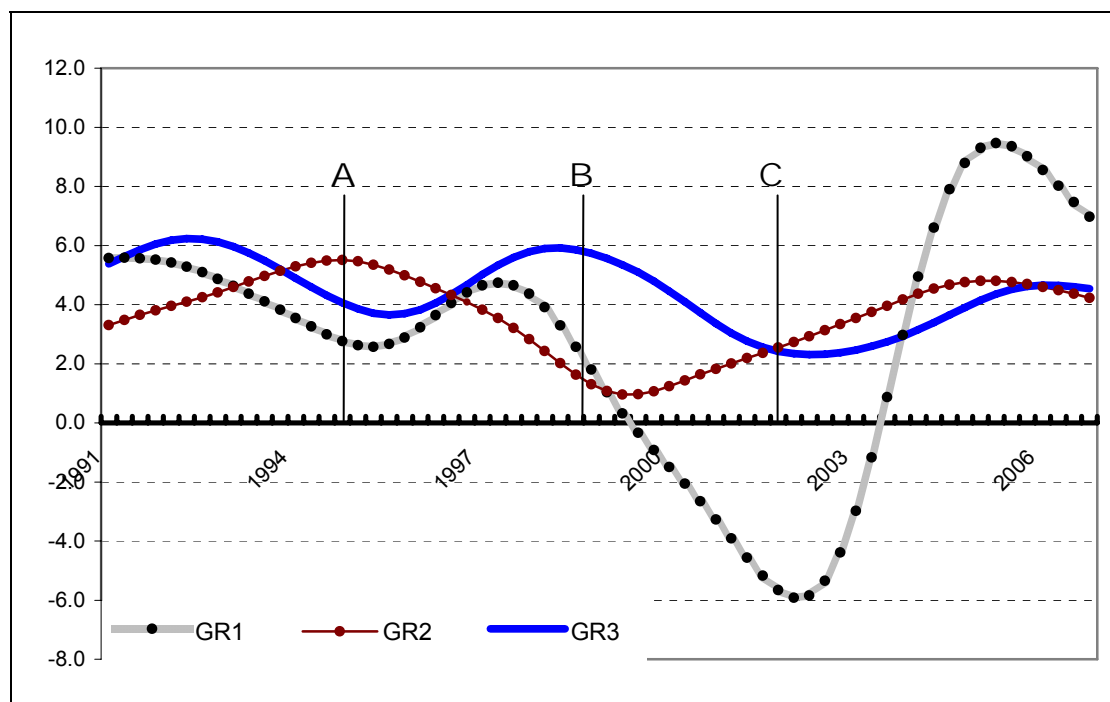
Source: Author's imputations and calculations, based on data from the ECLAC Economic Projections Centre.

Note: Simple average of smoothed Quarterly GDP data (HP filter λ =179). Milestones: **A**: Devaluation of the Mexican Peso; **B**: Financial crisis in Russia and speculation against Brazilian Real; **C**: Inconvertibility of the Argentinean Peso.

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, and then initiated a new phase of growth in 2003. The first group, which was particularly debilitated by the adverse international environment that followed the Russian crisis of 1998 and hit by a series of crisis that culminated by the inconvertibility of the Argentinean Peso then its devaluation, bounced back and started a strong recovery.

The HP filter is a particular case of more general signal-extraction techniques (see box 1). These filtering techniques are mainly used in short-term forecasting, when the objective is to make predictions on plausible outcomes rather than analyzing the underlying causal factors at work. The following sections will investigate more analytical approaches, using supply-side (section II of the document) and demand-side methodologies (section III of the document) to measure the growth potential and weaknesses and extrapolate what could be the medium-term tendency of the new economic cycle that initiated during 2003.

Box 1
SIGNAL EXTRACTION IN ECONOMIC TIME SERIES[3]

For a general review of signal extraction in economic time series, it is convenient to analyze the series (y_t) as the sum of a tendency (μ_t) called the "trend" and a stationary component (γ_t), called the "cycle":

$$y_t = \mu_t + \gamma_t \qquad \text{[B1. 1]}$$

Various methodologies are available to undertake the decomposition, starting with moving averages up to complex data generator processes base incorporating a series of simpler time series processes. One of the most popular filters, as mentioned in the text, is the Hodrick-Prescott (HP) filter. Equation [1] can be written, according to our more general notation, as:

$$\text{Min} \sum_{t=1}^{T} \left\{ (y_t - \mu_t)^2 + \lambda \left[(\mu_{t+1} - \mu_t) - (\mu_t - \mu_{t-1}) \right]^2 \right\} \qquad \text{[B1.2]}$$

λ is the smoothing parameter, when it tends to 0, the trend (μ_t) tends to the observed series (y_t). The cycle (γ_t) is obtained as a residual, with a mean and variance of (0, σ_γ).

It can be demonstrated (Gomez, 1999) that Hodrick-Prescott is a particular case of a general family of models dealing with non-observable components, which can be modeled as a stochastic process:

$$\mu_t = \mu_{t-1} + \delta_{t-1}$$
$$\delta_t = \delta_{t-1} + \zeta_t \qquad \text{[B1.3]}$$

With δ_t is the bias in the tendency component, and ζ_t is a normally distributed variable with variance σ_ζ .

As a matter of facts, the HP filter is obtained by imposing the restriction $\sigma_\gamma / \sigma_\zeta = \lambda$

The system [A.1] and [A.3] defines a state-space model. It is possible to estimate the unobserved components (μ_t and δ_t), and the parameters (σ_γ and σ_ζ) using the Kalman filter.

The Kalman filter has a series of analytical advantages for our purpose. Under certain hypothesis, it is possible to estimate a generalized version of the HP filter without making a priori restrictions on the value of λ . Additionally, the Kalman filter can be used to extrapolate tendencies outside the sample of observed realizations, something which should not be done with the HP filter. In this case, the Kalman filter generates linear projections that are optimal considering (or conditional to) the behaviour of the trend component.

---

[3] I thank Francisco Villarreal for his comments on signal extraction and the Kalman filter.

II.   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 2).

Box 2
**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, producion 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. Investment, capital and potential product

A. 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.

$$Y_t = Ae^t\, L_t^{\alpha} K_t^{(1-\alpha)} \qquad\qquad\qquad [2]$$

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), and t the time index.

Y_t^* is the maximum output possible considering the total availability of L and K (L* and K*) as well as the situation of technical endowment at time t. 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". Abramovitz (1993) calls it a grab-bag which provides some sort of measure of our ignorance about the proper appreciation of the joint and independent action of the main sources of growth.

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.

B. Alternative specification

A short-cut alternative to the estimation of the production function and its arguments is to assume that, when at full long-term potential, GDP in each country has a constant capital-output ratio. This is also a standard hypothesis when economies are at their steady-state regime (King and Levine, 1994). If capital-output ratio is constant, steady-state estimates of capital stock are derived from the evolution of output using the relation:

$$dK_t/K_t = dY_t^*/Y_t^* \qquad\qquad\qquad [3]$$

We can then restate the initial equation [2] from a dynamic perspective, and substitute K_t for Y_t^*.

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. Additionally, we make the hypothesis that technical progress $A(t)$ is incorporated through investment according to a putty-clay mechanism, using a linear specification. Therefore, the incremental capital-output ratio will capture the effect of technology and changes in total factor productivity.

The resolution of the problem is done following the Data Envelopment Analysis suggested by Berg (1984) and using the Torello (1993) specification. If we consider 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 $[A(t)]$.

The steady-state analogy indicates that 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 $Y^*_{(t-1)}$:

$$Y^*_t = (1-d)\ Y^*_{(t-1)} + A(t).I_{(t-1)} \qquad\qquad [4]$$

Note that

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

and

$$Y^*_t = (1-d)\ [(1-d)\ Y^*_{(t-2)} + A(t-1).I_{(t-2)}] + A(t).I_{(t-1)} \qquad\qquad [6]$$

We make the additional hypothesis that productivity $A(t)$ is a lineal function of time, and can be decomposed in two factors, a constant (A_0) and a marginal (A_1) coefficient:

$$A(t) = A_0 + A_1 \ . \ (t-1) \qquad\qquad [7]$$

We could write a recursive equation linking the present potential output to a weighted average of accumulated investment, and to the initial potential GDP.

$$Y^*_t = (1-d)^t Y_0^* + A_0 \sum_{p=0}^{t-1}(1-d)^{(t-1-p)}I_p + A_1 \sum_{p=0}^{t-1}(1-d)^{(t-1-p)}pI_p \qquad [8]$$

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 (Y_0) and find the original Berg (1984) notation.[4]

The optimization programme [9] calculates the production frontier:

$$Min \sum_{t=0}^{T}(\ Y^*(t)\text{-}Y(t)) \qquad\qquad [9]$$

subject to:

$$[Y^*(t) - (1-d)Y^*(t-1)] - [A_0 + A_1\ (t-1)]\ I(t-1) = 0 \qquad\qquad [9.1]$$

$$Y^*(t) \geq Y(t) \qquad\qquad [9.2]$$

$$A_0 \geq 0 \qquad\qquad [9.3]$$

Before looking at the results, let's recall some shortcomings our approach in this context:

- Capital is the only restricting factor, a standard simplification in many studies on labour abundant LDCs.

---

[4] I thank Andrés Schuschny for verifying the existence of a recursive solution of the Berg program.

- The potential output depends only on aggregate accumulated investment, net of depreciation. Structural and institutional factors (the ultimate causes in Maddison's words) are not incorporated. Therefore, A1 may capture not only the effect of technology, but also other contextual variables affecting economic growth.

- The observed economy should be reasonably close to its steady state. As the equation is in difference, a weaker condition demands be that when economies are not on steady-state growth, the transition path should be smooth.

- As in many non parametric techniques, 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, as can be observed in figure 4.

Figure 4
MEXICO: OBSERVED AND POTENTIAL GDP, 1950-2005
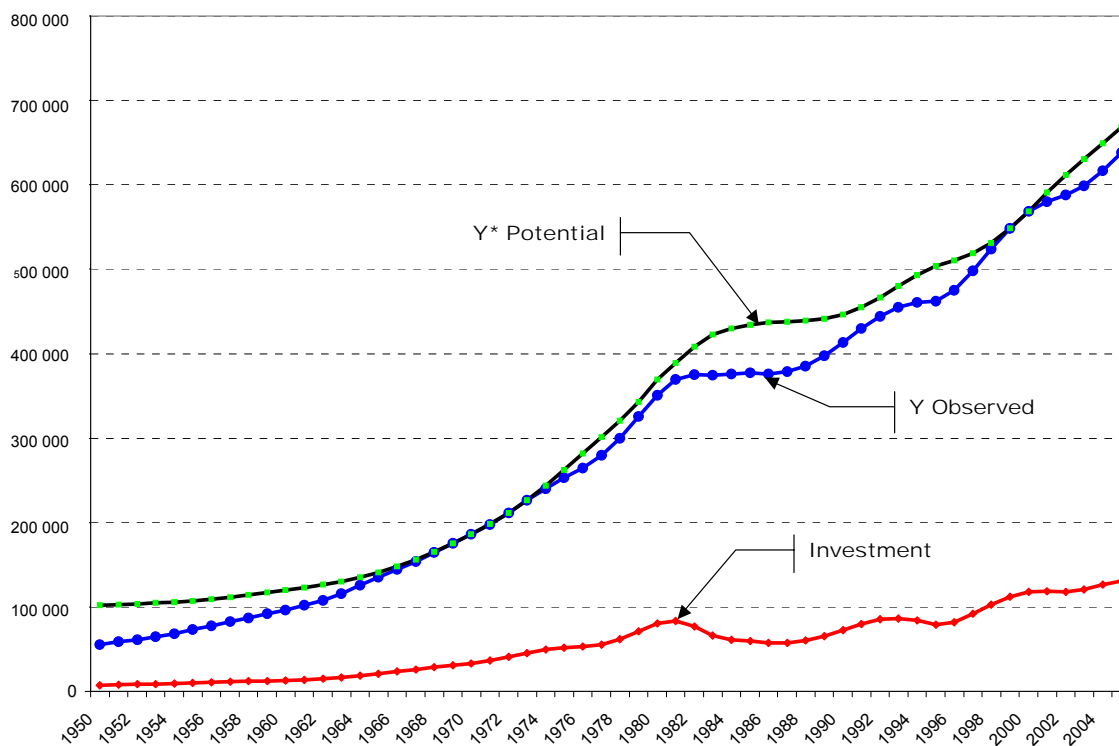
Source: Author's calculations.

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 for reducing 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). As analyzed in Box 3, 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). The 2003 – 2006 period corresponds to the beginning of a new cycle (see figure 5).

Box 3
GROWTH CYCLES IN LATIN AMERICA, 1950-2005

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 are easily made on the relative merits of the economic policies that were implemented during the respective cycles.

In the present study, we define four growth regimes during the post WWII period based on figure 5. The first period of sustainable growth without external disequilibria can be considered as the "golden years" because it was not followed by a recession, at the contrary of the following two cycles.

The 1972-1990 and 1991-2002 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, respectively) and lower than average or bust subperiods (1982-1990 and 1998-2002).

The year 2003 corresponds to the beginning of a new economic cycle, which was still in it first phase at the time of writing this report (2006). At the difference of the previous two cycles, this one was not dependent on large inflows of foreign capital. The objective of the document is precisely to build and contrast scenarios about its growth potential from a medium term perspective.

It should be noted that we consider the lost decade 1982-1990 as part of the "growth-cum-external debt" regime that emerged in 1973. Doing so, we choose to follow Syrquin (1986) rather than 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 raise of interest rate in the USA.

Our approach is also more consistent with the structuralist school of Balance of Payment restrictions, following a long tradition –more recently exemplified by Thirwall (1979) and Bacha (1993). This approach, which is analysed more in details in the following sections, states that external debt cannot rise indefinitely, and developing countries are facing financial constraints. Thus current balance should be in equilibrium when taking a long-term perspective. Indeed, 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.

Source: Elaboration of author.

MEDIUM TERM GROWTH CYCLES AND EXTERNAL FACTORS, 1950-2006
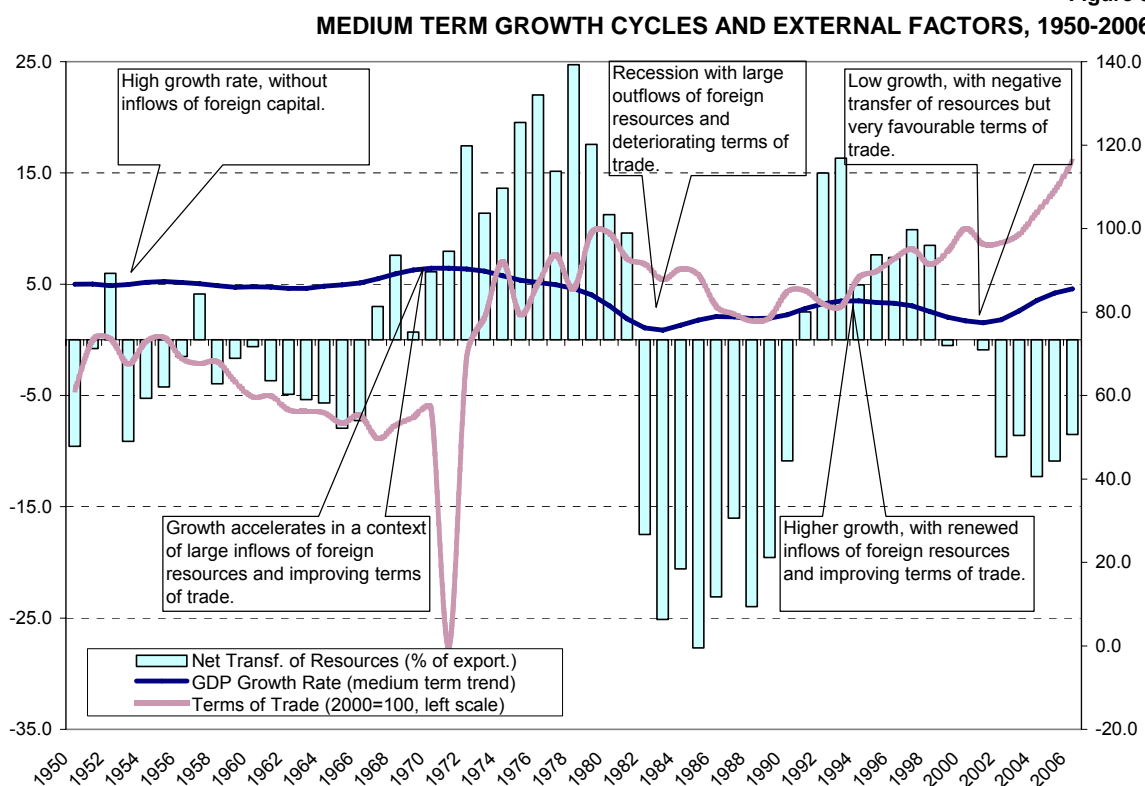
Source: Author's calculation.

Note: Medium term growth corresponds to annual variation of GDP trend, after application of an HP filter. The value of λ=6.5 was chosen according to the Ravn and Uhlig criterion.

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
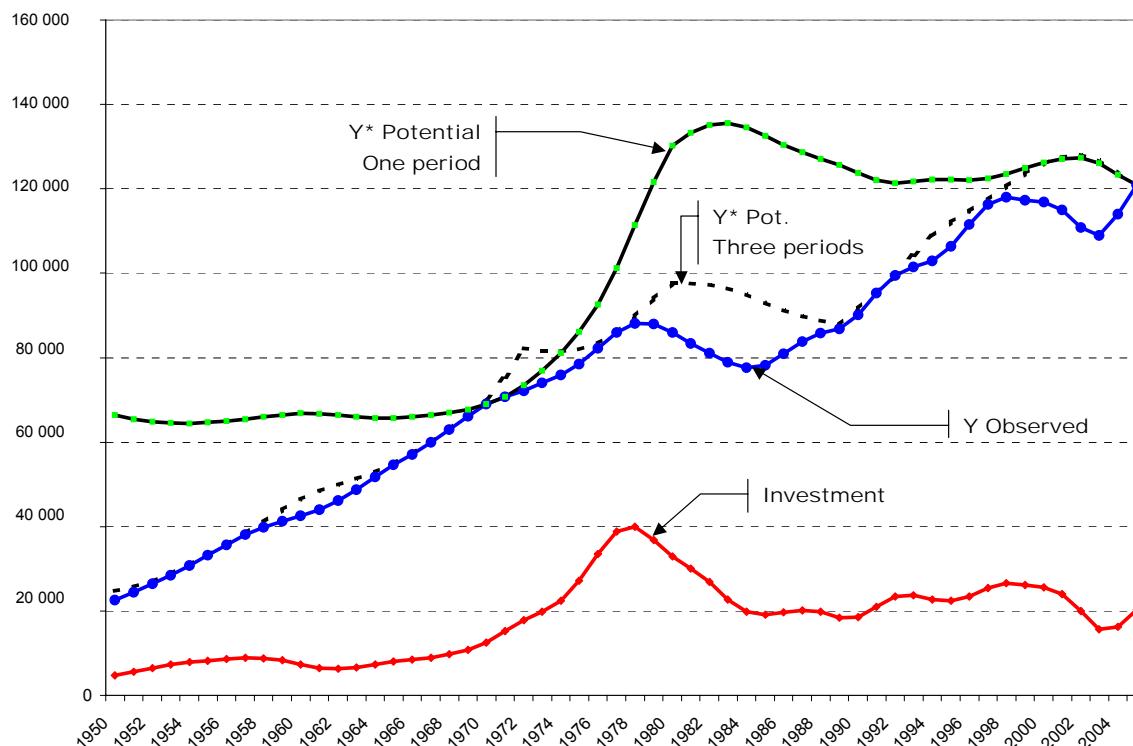
Source: Author's calculations.Note: Million dollars, at constant 2000 prices.

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).

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 "*quinquenio perdido*" 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 give some information on the potential for catching-up, and points towards MERCOSUR countries as having a strong potential for technical growth after 2003 (output gaps during the 1998-2002 period ranged from 7.7 to 13.7 percentage points).

C. 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 sets 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).

To provide an idea of the evolution of the investment efficiency through the economic cycles, A2 compares to B2, and A3 to B3. The box plot of estimated national coefficients (figure 7) shows that, as a general tendency, this efficiency has been decreasing.[5] The efficiency of new capital during the post-reform period (C3) corresponding to the 1990s is inferior to the other

---

[5] The box plot shows that A2 and A3 observations are more scattered.

estimates. 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).

MARGINAL EFFICIENCY OF CAPITAL IN LATIN AMERICA, SEVERAL PERIODS
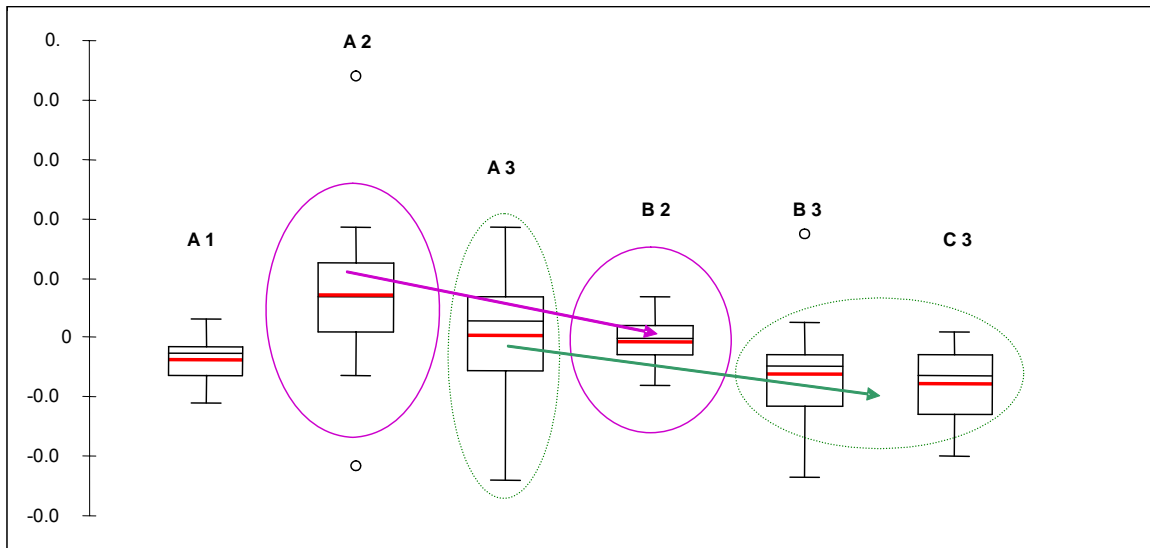
Source: Author's calculations.

Note: Box plots of national estimates. The coefficients were obtained using a uniform 5% rate of depreciation for the capital stock.

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).

PHASE DIAGRAM OF MARGINAL CAPITAL-POTENTIAL OUTPUT RATIO
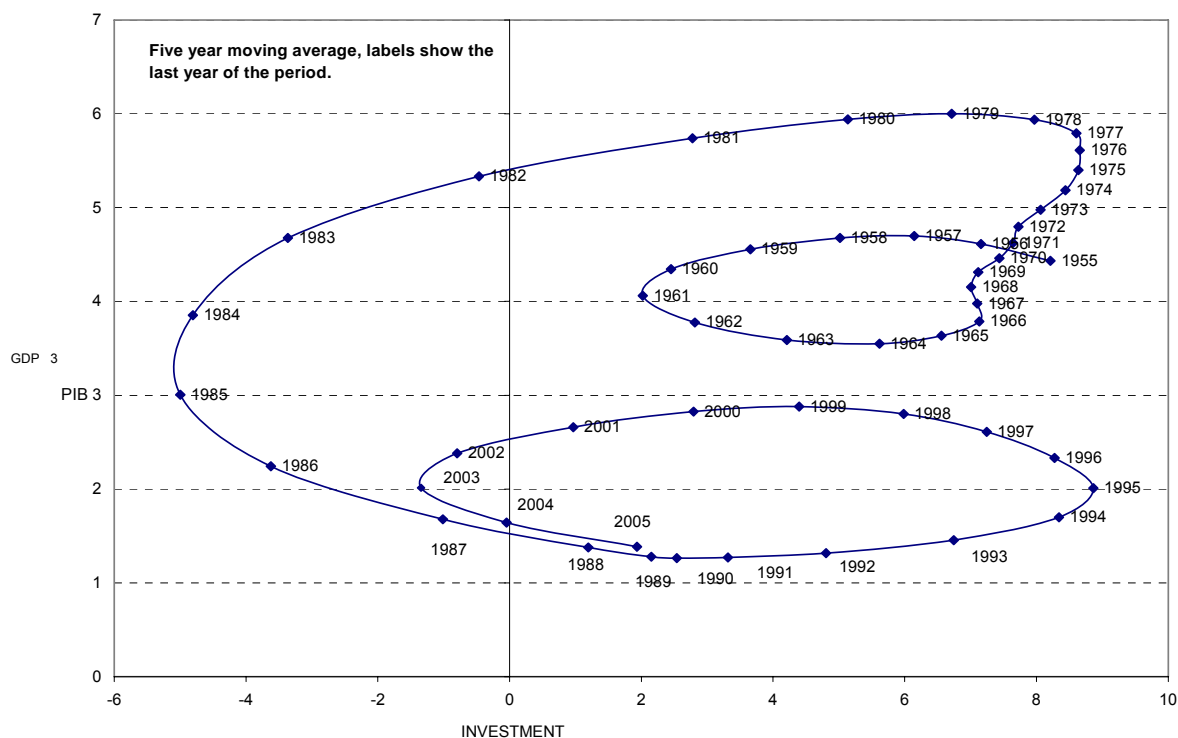
Source: Author's calculations.

Notes: Incremental capital-output ratio, based on a simple average of national observed investments and changes in potential GDP (computed using one single period, d=5%), over rolling five-year periods.

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. A lower total factor productivity, added to a reduced investment ratio, result –at least according to the neo-classic model–, in lower growth potential for the LAC region.

24

Figure 9
OBSERVED INCREMENTAL CAPITAL OUTPUT RATIO, 1950-2005
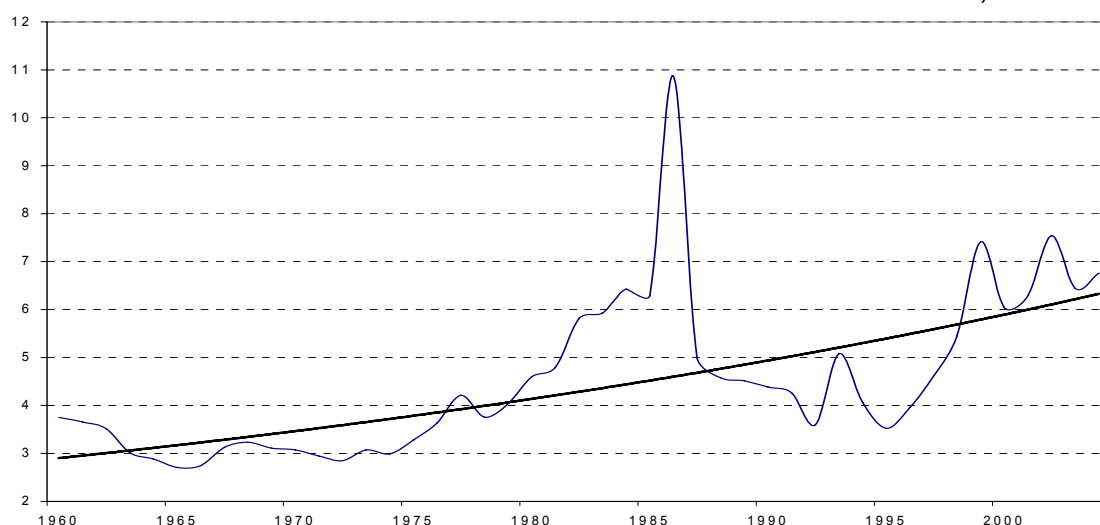
Source: Author's calculations.

Note: ICOR were calculated for rolling 5-year periods, the date indicates the last year. An increase of the ICOR indicates a drop in the marginal efficiency of investment.

2. Incorporating labour

The section will analyze labour productivity from two angles. The first will follow the Solow equation framework that was used up to now in the document. The second option will build on sectoral models à la Lewis to deepen the analysis using a shift-share approach.

A. Labour in a one-sector economy

The Solow 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:

$$Y/L = A(K/L)^{(1-\alpha)} \qquad\qquad [10]$$

The same reasoning applies to equation [4]. Dividing by the active population allows to use the same DEA methodology and to apply the program [9] to per capita values of Y and K.

In this new 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)
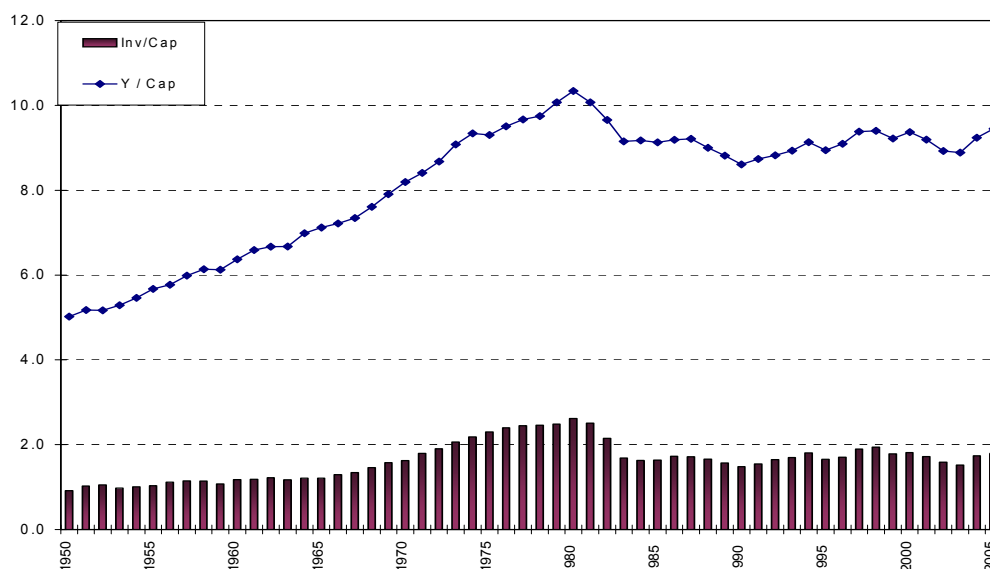
Source: Author's calculation based on ECLAC and ILO data.
Note: Thousands of dollars, at 2000 prices.

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 (%)					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 changes in 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, even if output gaps indicate that there is a short-term potential for technical recuperation. Closing the gap should allow for short-term recovery of growth rates (see Table 4 again).

A simple extrapolation of the recent trend indicates that the perspectives of supply side dynamics 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 is we restrain the analysis to the evolution of internal production factors (remember that the Solow equation is based on the exogenous nature of productivity, and does not consider the demand-sided effects. The second part of the study will be devoted to these aspects, revising the influence of the external conditions).

Figure 11
PHASE DIAGRAM OF MARGINAL CAPITAL-POTENTIAL OUTPUT RATIO PER WORKER

Source: Author's calculations.

Notes: Five year moving average of the incremental capital-output ratio per worker, based on observed investment and potential GDP computed using one single period (d=5% up to 1980, 7% afterward).
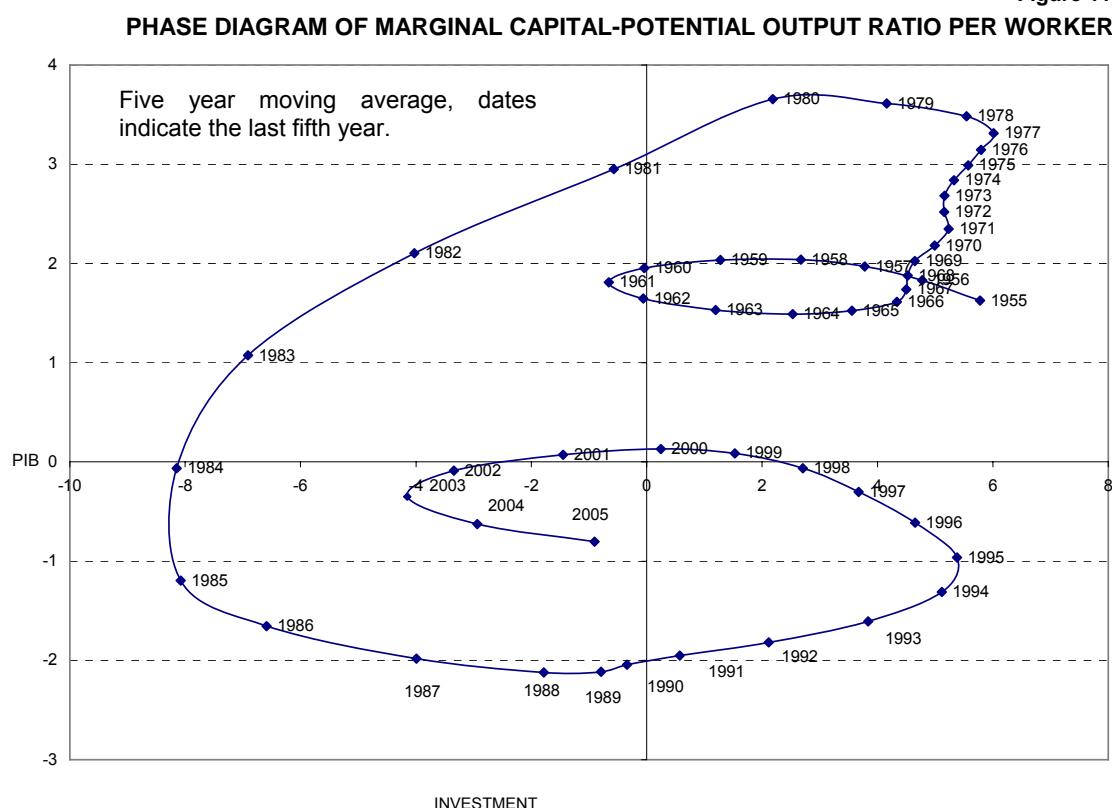
B.   Labour in a multi-sector model

Using aggregate data instead of sectorial ones is a serious limitation when analizing productivity, as there are larges differences between sectors of activity. Indeed, development economists in the 1950s put an emphasis on the structural change that came with the transition from traditional to modern economies, and their impact on factor productivity. Among them Lewis was one of the pioneers, and this Caribbean economist received the Nobel price in 1979 for this insight.

This school of thought may provide an explanation to the drop in total factor productivity that appeared in the previous section. It is possible 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. It would be therefore extremely interesting to discriminate between within-sector and between-sector productivity gains. Unfortunately, in most countries of the region, sectorial analysis using production functions is limited by the lack of disaggregated data on capital and labour.

Yet, it was possible, using De Vries and Hofman (2005), to construct a data base on labour force according to the nine sectors of the National Accounts for nine Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Venezuela. Initial data cover the whole 1950-2003 period, but due to some additional adjustments and imputations, the resulting period of analysis is reduced to 1960-2003.

The methodology for disaggregating the dynamics of labour productivity follows the Fabricant formula. If there are only two productive sectors:

$$Y = Y_1 + Y_2 \qquad\qquad [11]$$
with:
Y = total GDP
Y_1 = Added Value for sector 1
Y_2 = Added Value for sector 2
L is total labour force, which can be written as:
$$L = L_1 + L_2 \qquad\qquad [12]$$
Thus, at any time t=T:
$$P^T = Y^T/L^T = [Y_1^T/L_1^T . L_1^T/L^T] + [Y_2^T/L_2^T . L_2^T/L^T] \qquad\qquad [13]$$
Equation [13] can be written as:
$$P^T = P_1^T S_1^T + P_2^T S_2^T \qquad\qquad [14]$$
with:
P_i^T: Added Value per unit of labour in sector i=1,2 for t=T
S_i^T: Share of sector i (i=1,2) in total labour force for t=T.

The Fabricant formula divides the change in labour productivity in two components: a change in sectorial productivity P_i and a change in labour shares S_i:

$$(P^T - P^0) = [(P_1^T - P_1^0). S_1^T + (P_2^T - P_2^0). S_2^T] + [(S_1^T - S_1^0). P_1^0 + (S_2^T - S_2^0). P_2^0] \qquad [15]$$

The Fabricant formula can be generalized to n sectors of activity. Using each pair of extreme observations as weights for the discrete variations, we obtain:

$$(P^T - P^0) = \sum_{i=1}^{n} [(P_i^T - P_i^0). (S_i^0 + S_i^T)/2] + \sum_{i=1}^{n} [(S_i^T - S_i^0). (P_i^0 + P_i^T)/2] \qquad [16]$$

Applying the de-aggregation on a rolling 5-year period and averaging the results obtained for the nine countries give the results shown in figure 12.

It is clear that intra-sector productivity is very pro-cyclical. Economic cycles at macro-level being generally related to shocks in demand rather than shocks in technology,[6] this observation justify by itself the necessity to analyze potential growth not only from the supply side, as we are doing now, but also by integrating elements of demand. This will be the subject of the second part of this essay. The empirical analysis of the cyclical behaviour of productivity is a subject-matter by itself, and has provided the profession with a number of economic "laws" such as the Fabricant, the Okun or the Verdoorn laws (see Scott, 1989, for a revision).

---

[6] The New-Classics contest this generally accepted position, and developed models showing the theoretical possibility of cyclical behaviour based on supply impulses.

Discounting the cyclical aspects, it is clear that intra-sector productivity decreased well before the 1982 crisis, indicating that the import-substitution models that fuelled the 1950s and 1960s expansion reached their limit much before the "lost decade".

Contrary to what resulted from the analysis done on investment, intra-sector labour productivity reacted very favourably to the structural reforms and at its 1997 peak, reached values comparable to the "golden era" period of the 1960s and early 1970s. But the incremental investment efficiency which was the object of the previous analysis dealt with potential output, and was therefore less sensible to cyclical effects. Indeed, intra-sector labour productivity fell sharply after the Asian-Russian crisis of 1997-1998.

Figure 12
LATIN AMERICA: LABOUR PRODUCTIVITY DESAGGREGATION, 1960 – 2003
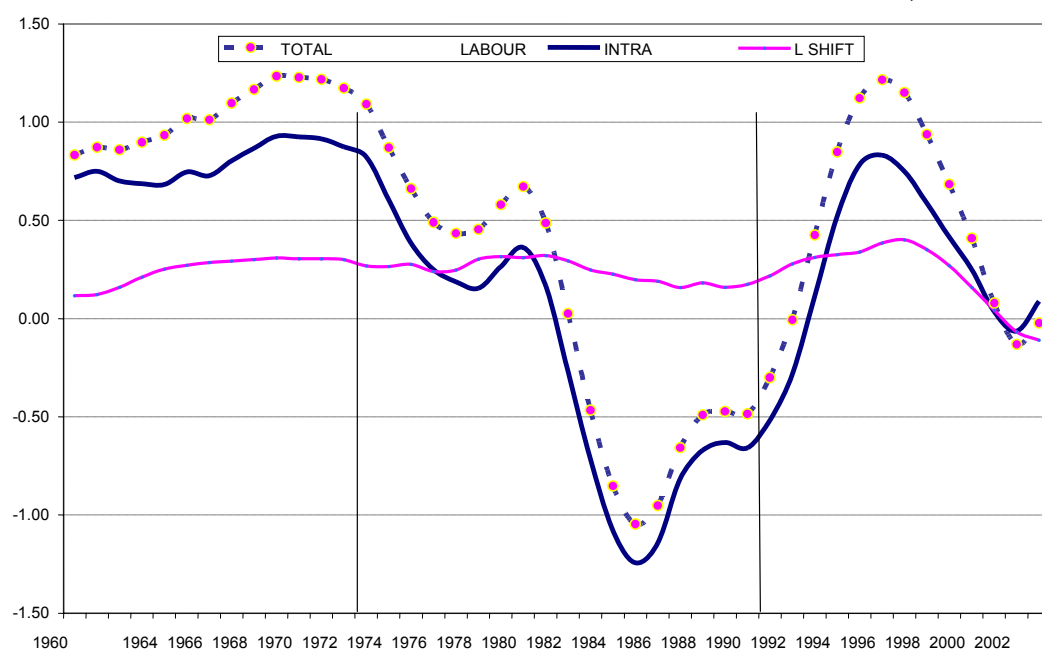
Source: Author's calculations.

Notes: Simple average of countries. Labour productivity, in dollar at constant 2000 prices, is calculated on 5-year rolling periods, and disaggregated into variations due to intrasectorial gains and variations due to labour shifts.

Much less cyclical are the structural contributions, which are captured through the labour-shift effect. In average, they represent 50% of total labour productivity increases, and remained significant during 40 years. According to the dualist theory, these effects should appear only during the transition period, from one homogeneous type of society (the "traditional" one) to a new, but also homogeneous, modern economy.

Does the fact that labour-shift became nil at the beginning of the 2000s the sign that transition has ended in Latin America?

To answer this question, we analyze the sectorial dynamics, aggregating the nine original sectors in three groups. These groups were selected according to their market or capital intensive specificities. The sector producing goods (Agriculture, mining and manufacture) represents the tradable sector. They are those that were particularly concerned by the structural reforms of the mid-1980s. The second group is composed of sectors that are providing structural services and are usually intensive in capital (construction, transport and communication, utilities). The last group is composed of commercial and financial services, as well as public administration. The results are presented in table 5.

ANNUAL CHANGES IN LABOUR PRODUCTIVITY: SHIFT-SHARE ANALYSIS BY ECONOMIC CYCLE, 1960-2003

1. Total sample and full economic cycles											
	1960-2003			1960-1972			1973-1990			1991-2003		
Latin America	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
- Goods	10	45	-35	98	121	-22	-28	12	-40	36	91	-55
- Infrastructure	22	13	9	39	23	16	2	-2	4	40	29	11
- Other Services	58	-11	69	98	31	67	-7	-90	82	56	-23	80
2. Economic cycles: boom phases											
	1960-1972			1973-1981			1991-1997					
Latin America	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**			
- Goods	98	121	-22	-1	61	-62	64	117	-53			
- Infrastructure	39	23	16	27	10	17	67	44	23			
- Other Services	98	31	67	75	-35	110	120	7	113			
3. Economic cycles: bust phases											
	1982-1990			1998-2003								
Latin America	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**						
- Goods	-58	-33	-26	8	78	-70						
- Infrastructure	-24	-18	-6	16	22	-6						
- Other Services	-91	-168	77	-9	-67	58						

Source: Author's calculations.

Notes: (1): Labour productivity, dollar at constant 2000 prices. (2) Variation due to intrasectorial gains. (3) Variation due to labour shifts.

The results contrast not only the specificities of each sector in terms of the sources of labour productivity, but also their cyclical behaviour.

Two groups, goods producers and other commercial services, show pro-cyclical behaviour. But they are very symmetrical as far as the source of labour productivity are concerned. The tradable sectors have gained productivity thanks to an increase in intra-sector efficiency, generating more and more added value per worker. It was still the case during the recessive phase of the 1991-2003 cycle, as can be seen in panel 3 of the table. But, contrary to the observations of Fabricant and others in the industrialized countries (Scott, 1989), the increase in productivity was not accompanied by job creation. It appears that most of the investment in these sectors was to gain competitiveness in the face of external competitors, but not to increase capacity. In fact, these sectors lost relevance in terms of the share of labour, as exemplified by the negative signs affecting labour-shifts.

Thus, while the expected outcome of trade openness in the 1990s was the development of labour intensive manufacture, the reverse has been observed. The answer to the apparent puzzle may actually be related to the region's specific relative factor abundance and their complementarities. In an international context, Latin America is comparatively rich in natural resources, which attracts investments and appreciate the real exchange rate. By the time of trade liberalization, on the other hand, other developing countries with large pools of unskilled labour force and lower wages, such as China and India, were already emerging in the world trade scene. These effects put a cap to the development of internationally competitive labour-intensive industries in Latin America and forced a pattern of specialization based on higher-skilled labour (Perry and Olarreaga, 2006).

The sectors of services, at the contrary, created many jobs; but at the cost of a decreasing added value per job. The fall in added value was particularly acute and generalized in the bust phase of the cycle (table 5, panel 3). Indeed, these sectors act as if they were absorbing the exceeding labour force, rather than reacting to an increased demand. It is particularly true for the activities of

wholesale and retail trade, restaurant and hotel during the "*sexenio perdido*" of 1998-2003. This should be correlated with an increase in unemployment in the formal sector and the expansion of the informal sector in Latin America during this period (Weller, 2004 and Cimoli et al., 2006).

The infrastructure services are much less cyclical and behave as complements of the long term modernization process, slowly creating more jobs of increasing value added.[7]

Translating the sectorial results obtained on labour productivity to the diagnostic reached for investment, the observed regularities seem to point towards a truncated industrialization process in the region. The sectors of greater dynamisms in terms of job creation are those of services, but the tertiary sector is not acting as complement to industrialization (the so-called "post-industrialization" phase of mature economies) but as its substitute. Unless there is a significant investment for capacity creation in manufacturing and other high added value sectors, growth in labour productivity and GDP per capita will stagnate.

3. Impact of reforms on total factor productivity

Box 2 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 (reducing protectionism, privatizations, etc.) 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.

$$dY = f(Y_0, Y^*) \qquad\qquad\qquad [17]$$

$$Y^* = g(Z) \qquad\qquad\qquad [18]$$

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 the reconciliation of level and growth analysis mentioned in our introduction: The larger the distance between the level of 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:

$$d\hat{Y}_{i,t} = a\, Y^0_{i,t} + \beta\, SR_{i,t} + \delta\, OE_{i,t} + \gamma\, ZV_{i,t} + u_{it} \qquad\qquad [19]$$

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

---

[7] This is particularly true of transport and communication, and utility services. The sector of construction is more heterogeneous, and its activity is pro cyclcical.

$OE_{i,t}$: 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 list of variables 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. The individual significance of a particular variable in a regression may depend on the inclusion or exclusion of other variables. 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). 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.

Following this strategy, the method adopted in Escaith and Morley 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, they obtained results showing that physical and human capital investments raised the expected growth rate, with 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 reform indexes themselves did not seem to have much effect on the growth rate. 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.

Recent sectorial and micro-level analysis tend to confirm that the effect of reforms on efficiency is heterogeneous. After reviewing a large number of studies Estuche, Perelman and Trujillo (2005) conclude: "In transport, private operators have tended to perform better than public operators in developing countries. For utilities, it seems that in general [private or public] ownership often does not matter as much as sometimes argued…. A second lesson is that incentives work.

Indeed, across sectors, private operators functioning in a competitive environment … tend to catch up faster than public operators."

Nevertheless, from our present perspective on 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). The recuperation of labour productivity in the early 1990s was also short-lived, and negative structural factors started to undermine its potential in the early-2000s. Our own sectorial review of labour productivity confirms that the bulk of job creation was in low added value and non-tradable sectors. International conditions and currency overvaluation in the 1990s may have played a role: the emergence of larger and more competitive industries in Asia put a cap to the capacity of expanding productive capacity in the Latin American manufacture sectors.

We saw also from the multi-sector decomposition used to analyze labour productivity that specifying a macro-function to understand the evolution of factor productivity has many short-comings. Selected sectorial indicators were introduced in the empiric investigation on the impact of reforms, in particular to observe the impact of financial intermediation. Many specialists hoped 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 and its labour productivity are slowing down, while 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. Nevertheless, many results revealed also that the evolution of supply-side factors was probably telling only one part of the story, and perhaps not the most important one. The second part of the study will revise the regional engines of growth from the demand side perspective.

III. 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 6). Moreover, recurrent balance-of-payment problems were still one of the major causes of real volatility in the LAC region.

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

In order to measure the potential impact of external demand (exports) on growth of the region at the beginning of the new economic cycle which emerged during 2003, the following statistical model was estimated for the 1989-2002 period:

$$dY_{it} = \alpha \, dX_{i,t} + \beta \, RPI \, i,t + \delta \, TRN_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t} \qquad [20]$$

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 Latin American countries. The 1989-2002 period is used to capture the new institutional and international environment that was prevalent in the 1990s. The results obtained should give an indication of the growth potential at the beginning of the new cycle that initiated in 2003, if (and it is a big if) structural parameters do not change. 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 following 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. The results will be compared to the observations available from 2003 to 2006.

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 into a negative one for others. Table 6 shows the results obtained under this "normalization scenario".

Table 7

**GROWTH SIMULATIONS AT THE END OF 1990-2002 CYCLE,
FOLLOWING A POSITIVE EXTERNAL SHOCK**

Simple average of countries	Simulation 1 Positive trade shock	Simulation 2 Positive trade and financial shocks	Observed annual growth, 2003-2006
Total LAC region	3.5	5.6	4.7
Mercosur+Chile	3.2	4.9	5.4
Andean Community	3.3	4.9	5.0
Mesoamerica	3.9	6.6	3.9

Source: ECLAC data and author's calculation.

Note: Shocks are equal to one standard deviation of the respective exogenous variables.

Table 6 indicates that, at the end of the 1991-2002 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 in the preceding sections. A simple positive shock on terms of trade would have increased growth expectations to 3.5%. 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%.

These positive shocks included in the simulation correspond to an expected correction of the 1998-2002 negative external context. The situation observed between 2003 and 2006 (4th column of table 7) differs quantitatively and qualitatively with the positive scenario defined (2nd and 3rd columns of table 6). As expected, the gross domestic product (GDP) of countries in Latin America and the Caribbean started to recover in 2003, increased by almost 6% in 2004, and grow by an average of 4.5% in 2005 and 2006. The new growth cycle has been fuelled by a strong domestic demand, but principally by an external sector that was driven by a dynamic US economy and the emerging Asian economies. At the time of writing the report, the region's average growth rate was expected to fall slightly in 2007 by approximately half a percentage point, chiefly because Argentina and Venezuela had completed their recovery (Economic Projections Centre, ECLAC, 2006).

But from an analytical perspective the regional and international situation in 2003-2006 differed markedly from the two scenarios that were built at the end of the 1991-2002 cycle. Indeed, considering the regional average, there was a positive trade shock (the RPI $_{i,t}$ variable in equation 15) after a decrease in the relative trade prices in 2001 and 2002. We observe since 2003 a faster increase of the export prices relative to imports. Nevertheless, as can be seen in figure 13, these benefited only the countries exporting minerals, oil and gas.

For oil exporting countries, their terms of trade in 2006 are 60% higher than their historical average. For other South American countries, rich in natural resources, year 2003 sharply reversed the unfavourable trend that was perceptible since 1990, and they are now in a better situation than their historical average, albeit by a much smaller margin (7%) than oil exporters.

Central American and Caribbean countries (except Trinidad and Tobago, to be classified as a "gas and oil exporting country") did not experience such a bonanza, and observed a deterioration of their terms of trade since 2000. In 2006, the negative gap with the 1960-2006 average was 13%. But if the Caribbean countries and Central America saw their terms of trade deteriorate, they did benefit from remittances sent by emigrant workers, as did Mexico. For example, in Central America, the remittances raised from 1.4 to 2.0 billons dollars from 2003 to 2005. For these small economies, this amounts to an average 45% of total exports earnings.

Figure 13
LATIN AMERICA AND THE CARIBBEAN: TERMS OF TRADE INDEXES, 1960-2006
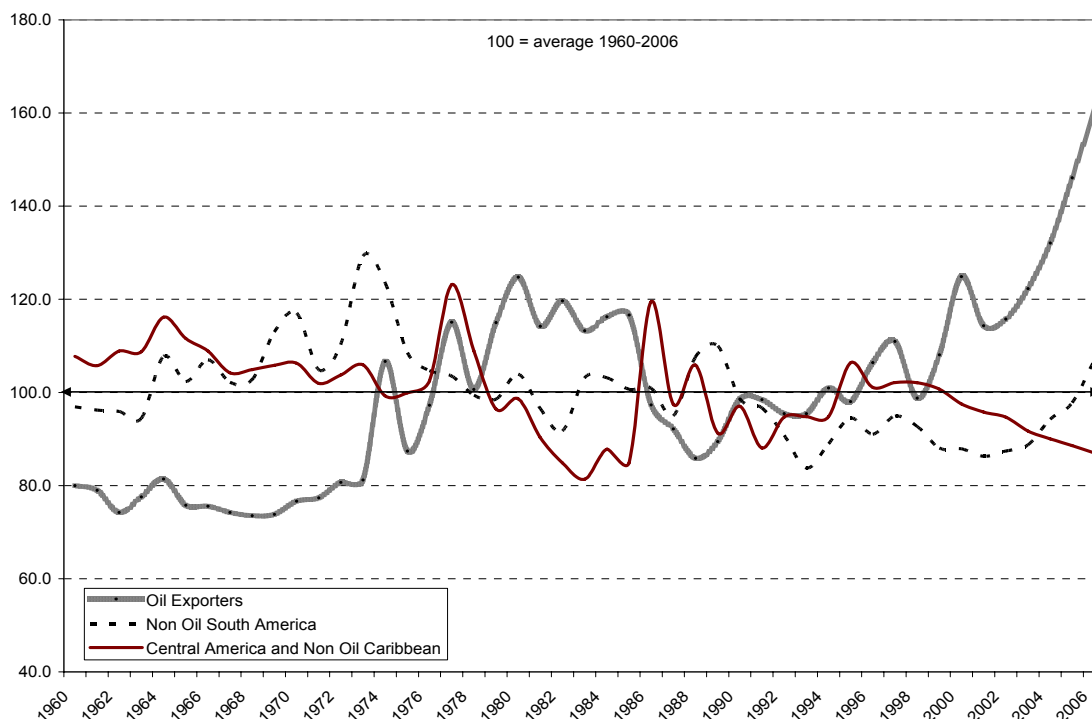
Source: Based on ECLAC data.

Note: Single average of country indexes, 100=average 1960-2006.

On the other hand, net transfers of financial resources from the rest of the world (variable TRN i,t) did not recover and remained at best negligible or, more often, negative since 1998. They worsened to a net outflow representing 10% of regional exports from 2003 to 2006, a marked increased from the 2% observed in 2003 (see figure 5 in the preceding section). It is the first time since 1973 that a period of high growth is not associated with a net inflow of foreign capital.

Thus, the high growth rate observed since 2003 (4.7% in average of the sampled countries) does not respond totally to the optimistic scenario outlined in table 7, the positive trade shock was higher than expected, as was the negative financial shock. Part of the performance 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 3) and a strong but selective positive trade impulse. Thus, the Southern American countries grew at an average of 5.2%, two percentage points higher than what was expected from the scenario 1.

The Mesoamerican subregion, which did not benefit from a positive shock in its terms of trade, was nonetheless able to attain the growth rate predicted in the scenario 1 (3.9%). It should be noted that this result does not depend of the inclusion in this group of Mexico, an oil exporting country which benefited from better terms of trade.

The new growth cycle that initiated in 2003 seems to be stronger than expected, and the higher demand for primary goods originating from Asia is there to last. But, when looking at what happened for the two previous economic cycles, doubts remain about the sustainability of this export-led growth. Growth reversion in the previous cases were based on the fragile balance of

payment situation that developed due to (1) the high import elasticity, especially during the 1990s, and (2) the perverse effects of high capital inflows on economic fundamentals.

The previous growth cycles reached their climax and initiated a fall-down when external constraints started to bite. For the present cycle, one may question if oil and mineral prices can remain at their historical peaks for a long period of time, allowing countries of the region to run trade surpluses.

Indeed, for small open developing economies, external 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 to investigate empirically the conditions of external sustainability 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.

$$x = \alpha_1 q + \varepsilon \ddot{y} \qquad\qquad\qquad [21]$$

$$m = \alpha_2 q + \pi y \qquad\qquad\qquad [22]$$

(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.

$$\pi y^* = \varepsilon \ddot{y} \qquad\qquad\qquad [23]$$

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 ($\pi < \varepsilon$).

A. Trade multiplier and technological gap

From a classical perspective, the demand for the developing country' exports depends ultimately on its comparative advantage. In a situation of free trade and absence of transaction costs, they 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* ≤ ÿ).

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* >> ÿ). 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).

Starting with the model in equation [21] and [22], Escaith (2003) develops the Cimoli and Correa (2002) technological multiplier concept (ψ), as a factor that affects also demand for imports, especially of superior goods. The resulting model is:

$$x = \alpha_1 q + \psi \varepsilon \ddot{y} \qquad\qquad [24]$$

$$m = \alpha_2 q + \psi^{-1} \pi y \qquad\qquad [25]$$

$$q = 0 \Rightarrow \pi y^* = \psi^2 \varepsilon \ddot{y} \qquad\qquad [26]$$

In a globalized world where consumption patterns tend to converge, 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. For example, market segmentation that allowed differentiating the Jamaican coffee from its competitors and demand a higher price for it in the US market should be considered as an innovation. 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.

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 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).

Nevertheless, as is usual in economics, the analytical frontiers are largely arbitrary. The technological gap affects both the demand and supply sides of the growth equations. While a large technological gap may reduce the attractiveness or competitiveness of domestic production, it increases the potential for a faster transfer of technology (see box 4).

Box 4
THE CONTRASTING EFFECTS OF TECHNOLOGICAL GAP ON SUPPLY AND DEMAND

From the demand side, the technological 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.

But from a supply side perspective, the situation is reversed: the larger the gap, the stronger the catching-up potential! Indeed, equation [2] can be written as:

$$Y_t = Ae^{-\psi} K_t^{\alpha}(L_t)^{\tilde{i}-\alpha}$$
[B4.1]

Contrary to what happens in the demand-sided equations [24] and [25], in the case of the production function [27], the larger the technological gap (i.e., the smaller the technological multiplier ψ) the stronger is growth potential due to faster transfer of technology. Thus, the same gap that accelerates the transfer of technology and boost production may reduce the demand for the resulting output, putting the catching-up process in jeopardy. Intuitively, if the gap is too large, then the country is in a poverty trap due to demand constraints. Albeit from a different theoretical perspective, we recognize here the dialectical relation between catching-up and falling-behind of Abramovitz (1986).

As we see, 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).

B. Demand for imports: structural and transitory factors

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

In Latin America, the apparent income elasticity of imports ($\Delta M/M)/(\Delta PIB/PIB$) increased dramatically during the 1990s. Weighting discrete variations ($\Delta M = M_t - M_o$) and ($\Delta PIB = PIB_t - PIB_o$) by the sum of the initial and final observations, $[\Delta M/(M_o+M_t))/(\Delta PIB/(PIB_o+PIB_t)]$, the 1980-2003 average is $\pi = 1.9$; it goes up to 2.7 for the sub-period 1991-2003.

Figure 14

SHORT TERM REGIONAL INCOME ELASTICITY OF IMPORTS, 1989-2007

(five year moving average)
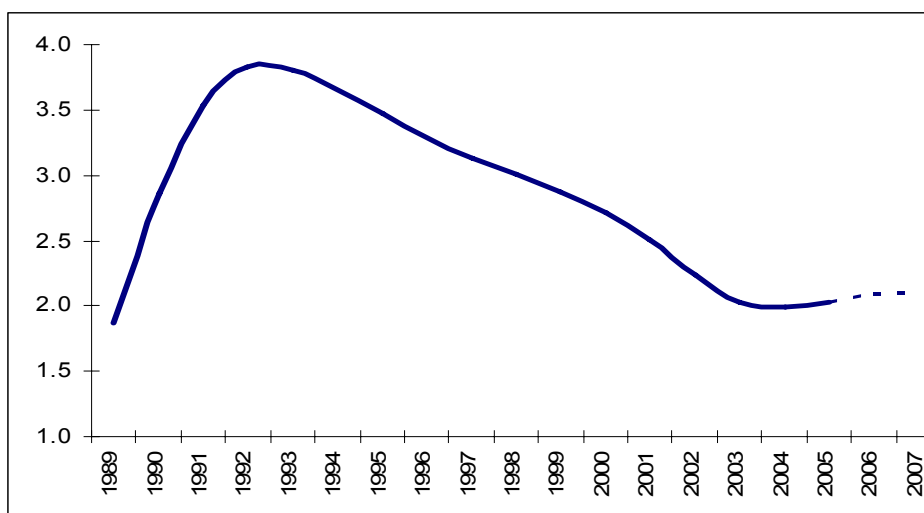
Source: Author's calculation, on the basis of ECLAC data and 2007 estimations filtered using HP.

A more detailed observation (figure 14) indicates that this probably was 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.

Escaith (2003) shows also that it is now inappropriate to explain imports only by domestic demand, as the process of export diversification towards manufactured products that took place in several countries during the 1990s is intensive on imported inputs. When separating both type of imports, it shows that the elasticity for imports destined to the domestic market decreased more rapidly than that for total 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. Taking a longer-run perspective show indeed a significant positive trend, as apparent

42

elasticities computed on 10 year rolling periods were systematically lower than 1.5 between 1960-1990, and higher than 2 after 1991 (figure 15).

Figure 15
LONG TERM REGIONAL INCOME ELASTICITY OF IMPORTS, 1975-2007
(ten year moving average)
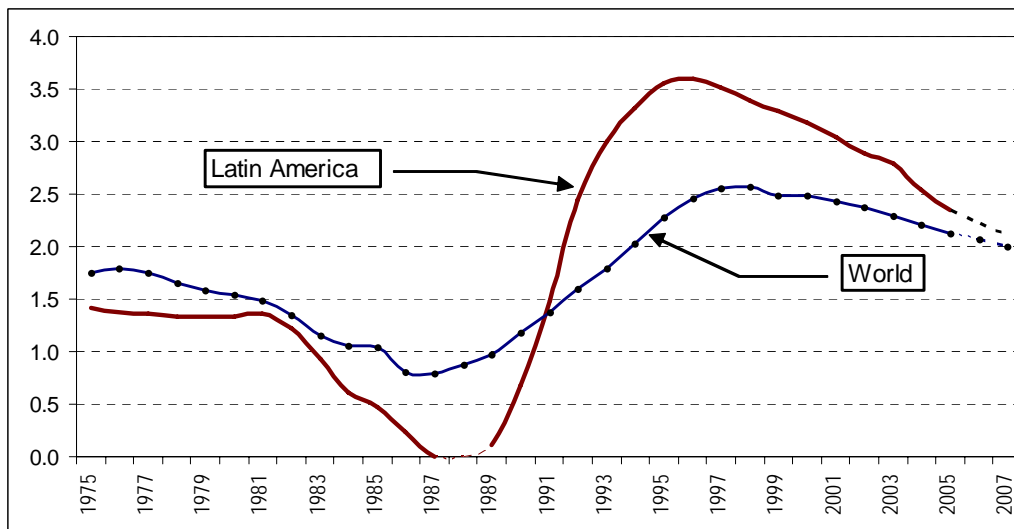
Source: Author's calculation on the basis of ECLAC data and 2007 extrapolations.

Machinea and Vera (2006) replicate this finding using a different methodology (rolling panel regressions), and reach similar conclusions (elasticity was 1.32 in the first sub-period and 2.25 in the second). This structural break of import elasticity at the beginning of the 1990s may explain the positive trend observed in Mexico (Moreno-Brid, 1999) and in Central America (Moreno-Brid and Lopez, 1999). This behaviour of import elasticities, nevertheless, is not proper to Latin America countries, as international trade increased much faster than global GDP in the last 50 years.

The statistical evidence for the region tends also to indicate a lower elasticity for the most open economies. The median value of income elasticity is systematically lower than the weighted average value, excepted during the "*quinquenio perdido*" which saw the collapse of imports from some large economies (especially Argentina) due to balance of payment crisis (Escaith, 2003). This 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.

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:

$$dM_{it} = \phi dM_{i,t}\text{-}1 + \alpha\, dY_{i,t} + \beta\, dTRN_{i,t} + \delta\, dX_{it} + \gamma\, dRPI_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t} \qquad [27]$$

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

(other variables are identical to previous equations)

Albeit this statistic specification is inspired by the Thirlwall model, it does not constraint changes in real exchange rate to zero, and recognize that imports are not only geared by domestic

demand (Y) but also by the external demand (exports). Changes in real exchange rate are supposed to be induced by terms of trade (RPI) and net transfer of resources (TRN). The results obtained using panel regression on a sample of 17 Latin American countries for the 1989-2002 period are detailed in Escaith (2003), table 10. We present here the main conclusions.

Trend variable (v_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, at least during the sampled period. 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 [27] 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 factors.

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 shift 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.

IV. 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 1998-2002 downward phase of the economic cycle that initiated in 1991.

In the first part, supply side factors, ranging from investment and productive capital to labour productivity and total factor productivity were analyzed. The study confirmed the generally accepted perception that total factor productivity has been decreasing in the region, and that the structural reforms implemented since the 1980s did not improve substantially this situation. This reduced efficiency of production factors in terms of growth, allied to reduced investment ratios and lower growth rate of economic active population, put a cap on the future potential GDPs that could be extrapolated from the recent trends.

Productive structure showed a bias away from high value activities and towards lower paid service activities. The study demonstrates that in the early XXI century, most Latin American economies are still "labour surplus" economies, in the sense of the Lewis' model. The growth of the tertiary sector during the 1990s and early 2000s has been mainly fuelled by an increase in informal employment. Services sectors in Latin America are shown to play a role of substitute to failed industrialization, instead of the complementary role they have in Asia.

Lon run growth perspectives at the end of the so-called 1998-2002 "*quinqueño perdido*" ranged from 2.4% to 3.4% for the region according to the supply side analysis. Mexico and Central America countries showed the higher growth potential (3.0% to 4.4%) according to this criterion. In the short term, MERCOSUR countries benefited from a stronger growth potential due to technical considerations. Their output gaps during the 1998-2002 period ranged from 7.7 to 13.7 percentage points, indicating significant room for catching-up growth, mainly due to an expected recovery from the 2001-2002 economic crisis. Indeed, the observed growth during the 2003-2006 period showed that the stronger performers were those countries, like Argentina and Venezuela, that were recovering from crisis.

The second part of the analysis analyzed the potential growth from the demand side perspective. Following the Harrodian approach and the structuralist tradition, emphasis was put on the external sector, from the dual perspective of export-led growth and balance of payment constraints. The potential for export-led growth appears higher than may have been expected from the experience of the 1990s. This positive outcome is the result of a regression-to-trend of the high import elasticity observed during the 1990-1997 period. This lower import elasticity increases the efficiency of the demand-driven model. By reducing the probability of balance of payment crisis, it strengthens its macroeconomic sustainability.

Growth scenario based on this export-led perspective indicated that the medium term potential ranged from 3.5% to 5.6% for the region. Once again, Mexico and Central America were slightly better placed than South America according to this perspective, due to their higher degree of openness and lower import elasticity.

The international situation that developed after 2003 did not coincide fully to the model expectations. It is true that the new growth cycle has been fuelled principally by an external sector that was driven by a dynamic US economy and the emerging Asian economies. Yet the recuperation in terms of trade benefited only Southern American countries and Mexico, and the net transfer of external resources remained strongly negative at regional level. But if the Caribbean countries and Central America saw their terms of trade deteriorate, they did benefit from remittances sent by emigrant workers. These remittances, averaging 45% of total export earnings, have the same impact on national income than higher prices of export commodities and large inflows of foreign capital.

Either thanks to terms of trade or remittances, the reactivation of growth took place in a context of current account surplus. All but one Latin American countries increased their foreign reserves in 2005. As was the case in the 1990s with the inflow of foreign capital, the region risks once again loosing external competitiveness due to over-valuating exchange rates.

From a policy oriented perspective, the eclectic approach used in the document permits identifying a set of critical factors limiting growth prospects. Even if the potential for export-led growth seems higher than what is commonly stated by critics of the post-reform economic model, 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 new economic policies. 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.

In conclusion, the region can probably fly at the 6% growth rate that is required to reduce poverty significantly in many of the Latin American countries. But sustaining this growth rate means inverting more that the region does presently (between 24 and 27 percent of its GDP, according to ECLAC 2006, against an average of 21% during the last ten years), and must adopt contra-cyclical macroeconomic policies to avoid the boom and bust patterns that plagued its recent history.

Bibliography

Abramovitz, Moses (1993) "The Search for the Sources of Growth: Areas of Ignorance, Old and New "The Journal of Economic History, Vol. 53 No 2, June.

_____(1986) "catching up, forging ahead and falling behind" Journal of Economic History, No 46, June pp. 385-406.

Bacha, Edmar (1993), "Savings and investment requirements for the resumption of growth in Latin America", BID, Washington, D.C.

Barro, Robert (1991), "Economic growth in a cross section of countries", Quarterly Journal of Economics" 106, N° 2, pp. 407-433.

Berg, Sigbjorn A. (1984), "Estimation of Production Capacities in a Putty-Clay Production Model: Norwegian Manufacturing Industries, 1962-81", Scandinavian Journal of Economics 86(3), pp 379-384.

CEPAL (2006) "Estudio Económico de América Latina y el Caribe 2005-2006", August.

_____(2004) "Desarrollo productivo en economías abiertas", junio.

_____(2003) "Globalización y desarrollo: una reflexión desde América Latina y el Caribe". Coedición del Banco Mundial y Alfaomega, Colombia.

Cimoli, Mario y Nelson Correa (2002) "Trade Openness and Technological Gaps in Latin America: A Low Growth Trap" Laboratory of Economics and Management Working Paper Series No14, Pisa.

Cimoli Mario, Annalisa Primi y Maurizio Pugno (2006) "Un modelo de bajo crecimiento: la informalidad como restricción estructural" Revista de la CEPAL Nº 88 Abril, pp. 89-107.

De Vries, Gaaitzen J. y André A. Hofman (2005) Sectoral Database for Latin America Sources and Methods, mimeo División de Estadística y Proyecciones Económicas de CEPAL, febrero.

Escaith, Hubert (2004) "El crecimiento económico en las Américas latinas: más allá del sexenio perdido." Problemas del desarrollo, Vol 35, No 139 UNAM, pp. 13-43.

_____(2003) "Tendencias y extrapolaciones del crecimiento en América Latina y el Caribe." Serie Estudios estadísticos y prospectivos No23, CEPAL, diciembre.

Escaith, Hubert y Samuel Morley (2001), "El efecto de las reformas estructurales en el crecimiento económico de la América Latina y el Caribe: Una estimación empírica", El Trimestre Económico, N° 68, pp. 469-513.

Estuche, Antonio, Sergio Perelman and Lourdes Trujillo (2005) "Infrastructure Performance and Reform in Developing and Transition Economies: Evidence from a Survey of Productivity Measures" World Bank Policy Research Working Paper 3514, February

Gómez, Víctor (1999) "Three equivalent methods for filtering finite non-stationary time series", Journal of Business and Economic Statistics, Vol. 17 (1), pp. 109 - 116

Herrero Revuelta, Julio y Jesús Santamaría Fidalgo (2003,) "El papel del endeudamiento exterior en el crecimiento económico de los países subdesarrollados: la inevitabilidad de la deuda externa", Investigación Económica UNAM, Vol LXII 244, abril-junio, pp. 93-118.

Hofman, André (2000), "Economic Growth and Performance in Latin America" CEPAL, serie Reformas económicas No 54.

Hofman, André and Heriberto Tapia (2003) "Potential output in Latin America: a standard approach for the 1950-2002 period" Serie Estudios estadísticos y prospectivos No25, CEPAL

Howitt, Peter (2000) "Endogenous Growth and Cross-Country Income Differences", The American Economic Review, Sept. 90 4, pp. 829-846.

Kaiser, Regina y Agustín Maravall (2002), "A Complete Model-Based Interpretation of the Hodrick-Prescott Filter: Spuriousness Reconsidered", mimeo Banco de España, marzo.

King, Robert and Ross Levine (1994) "Capital fundamentalism, economic development and economic growth" Carnegie Rochester Conference Series on Public Policy 40, pp. 259-292.

Lora, Eduardo y Ugo Panizza (2003), "Examen des réformes structurelles en Amérique latine" Revue Problèmes d'Amérique latine, No 48, pp. 107-134.

Maddison, Angus (2003), "The World Historical Statistics", Development Centre Studies, OECD
_____(1991), "Dynamic Forces in Capitalist Development. A Long-run Comparative View", OUP, Oxford.

Machinea, José Luis and Cecilia Vera (2006) "Trade, direct investment and production policies" Informes y estudios especiales ECLAC series No 16, May.

Maravall, Agustín y Ana del Río (2001) "Time Aggregation And The Hodrick-Prescott Filter" Banco de España — Servicio de Estudios Documento de Trabajo n.º 0108, Marzo.

Mc.Combie Johnet, Maurizio Pugno y Bruno Soro (2002) "Productivity growth and Economic performance: Essays on Verdoorn's Law", Palgrave Macmillan.

Moreno-Brid, J. C. (1999), 'Mexico's Economic Growth and the Balance of Payments Constraint: a Cointegration Analysis', International Review of Applied Economics, 13 (2), pp. 149-159.

Moreno-Brid, J.C. and Pérez, E. (1999), 'Balance of Payments Constrained Growth in Central America', Journal of Post Keynesian Economics, 22 (1), pp.131-147.

Perry, Guillermo y Marcelo Olarreaga (2006) "Trade Liberalization, Inequality and Poverty Reduction in Latin America". Paper presented at ABCDE, San Petersburgo, Enero.

Pritchett, Lant (2000) "Understanding Patterns of Economic Growth: Searching for Hills among Plateaus, Mountains and Plains" World Bank Economic Review, Vol 14 No2, May. pp.221250.

Sala-i- Martin Xavier (1997) "I Just Ran Two Million Regression" The American Economic Review (May) pp. 178-183.

Scott, Maurice Fitzgerald (1989) "A New View of Economic growth" Clarendon Press Oxford.

Solimano, Andrés y Raimundo Soto (2005) "Latin American Economic Growth in the Late 20th Century: Evidence and Interpretation", CEPAL serie Macroeconomia del desarrollo No 33.

Stiglitz Joseph (2005) "Le cap des réformes. Vers un nouveau programme pour l'Amérique latine" Revista de la CEPAL, numéro spécial, June 2005, pp.35-70.

Syrquin, Moshé (1986) "Growth and Structural Change in Latin America since 1960: A Comparative Analysis". Economic Development and Cultural Change Vol 34 No3, pp 433-454

Thirwall, A.P (1979), "The Balance of Payments Constraint as an Explanation of International Growth rate Differences", Quarterly Review, Banca Nazionale di Lavoro, Vol 32, No 128.

Weller, Jürgen (2004) "El empleo terciario en América Latina: entre la modernidad y la sobrevivencia". Revista de la CEPAL, n. 84, diciembre, pp. 159-176.

Serie

CEPAL estudios estadísticos y prospectivos

Issues published

1. Hacia un sistema integrado de encuestas de hogares en los países de América Latina, Juan Carlos Feres y Fernando Medina (LC/L.1476-P), N° venta: S.01.II.G.7, (US$ 10.00), enero, 2001. www

2. Ingresos y gastos de consumo de los hogares en el marco del SCN y en encuestas a hogares, Heber Camelo (LC/L.1477-P), N° venta: S.01.II.G.8, (US$ 10.00), enero, 2001. www

3. Propuesta de un cuestionario para captar los ingresos corrientes de los hogares en el marco del SCN 1993, Jorge Carvajal (LC/L.1478-P), N° venta: S.01.II.G.9, (US$ 10.00), enero, 2001. www

4. Enfoques para la medición de la pobreza. Breve revisión de la literatura, Juan Carlos Feres y Xavier Mancero (LC/L.1479-P), N° venta: S.01.II.G.10, (US$ 10.00), enero, 2001. www

5. Proyecciones latinoamericanas 2000-2001, Alfredo Calcagno, Sandra Manuelito y Gunilla Ryd (LC/L.1480-P), N° venta: S.01.II.G.11, (US$ 10.00), enero, 2001. www

6. La vulnerabilidad social y sus desafíos, una mirada desde América Latina, Roberto Pizarro (LC/L. 1490-P), N° venta: S.01.II.G.30, (US$ 10.00), febrero, 2001. www

7. El método de las necesidades básicas insatisfechas (NBI) y sus aplicaciones en América Latina, Juan Carlos Feres y Xavier Mancero (LC/L. 1491-P), N° venta: S.01.II.G.31 (US$ 10.00), febrero, 2001. www

8. Escalas de equivalencia: reseña de conceptos y métodos, Xavier Mancero (LC/L.1492-P), N° venta: S.01.II.G.32, (US$ 10.00), marzo, 2001. www

9. Consideraciones sobre el índice de Gini para medir la concentración del ingreso, Fernando Medina (LC/L.1493-P), N° venta: S.01.II.G.33, (US$ 10.00), marzo, 2001. www

10. Los desafíos del Mercosur ante la devaluación de la moneda brasileña, Arturo O'Connell (LC/L.1498-P), N° venta: S.01.II.G.40, (US$ 10.00), febrero, 2001. www

11. La medición del desarrollo humano: elementos de un debate, Xavier Mancero (LC/L.1548-P), N° venta: S.01.II.G.61, (US$ 10.00), marzo, 2001. www

12. Países industrializados: resumen de las proyecciones 2000-2001, Gunilla Ryd (LC/L.1519-P), N° venta S.01.II.G.62, (US$ 10.00), marzo, 2001. www

13. Perspectivas de América Latina en el nuevo contexto internacional 2001, Centro de Proyecciones Económicas, (LC/L.1554-P), N° venta S.01.II.G.99, (US$ 10.00), mayo, 2001. www

14. La pobreza en Chile en el año 2000, Juan Carlos Feres (LC/L.1551-P), N° venta S.01.II.G.92, (US$ 10.00), mayo, 2001. www

15. La convertibilidad argentina: ¿un antecedente relevante para la dolarización de Ecuador?, Alfredo Calcagno y Sandra Manuelito (LC/L.1559-P), N° venta S.01.II.G.104, (US$ 10.00), junio, 2001. www

16. Proyecciones latinoamericanas 2001-2002, Alfredo Calcagno, Sandra Manuelito y Gunilla Ryd (LC/L.1688-P), N° venta: S.02.II.G.3, (US$ 10.00), enero, 2002. www

17. Países industrializados: resumen de las proyecciones 2001-2002, Gunilla Ryd (LC/L.1702-P), N° venta S.02.II.G.13, (US$ 10.00), febrero, 2002. www

18. Países industrializados: un análisis comparativo de las proyecciones 2002-2003, Gunilla Ryd (LC/L.1868-P), N° venta S.03.II.G.39, (US$ 10.00), marzo, 2003. www

19. Proyecciones de América Latina y el Caribe, 2003, Centro de Proyecciones Económicas (CPE), (LC/L.1886-P), N° venta S.03.II.G.52, (US$ 10.00), abril, 2003. www

20. Reseña de programas sociales para la superación de la pobreza, Marcia Pardo (LC/L.1906-P), N° venta S.03.II.G.64, (US$ 10.00), mayo, 2003. www

21. Registros Administrativos, calidad de los datos y credibilidad pública: presentación y debate de los temas sustantivos de la segunda reunión de la Conferencia Estadística de las Américas de la CEPAL, Graciela Echegoyen (comp), (LC/L.2007-P), N° venta S.03.II.G.168, (US$ 10.00), noviembre, 2003. www

22. Apertura y cambio estructural de la economía brasileña, Alejandro Vargas, (LC/L.2024-P), N° venta S.03.II.G.188, (US$ 10.00), noviembre, 2003. www

23. Tendencias y extrapolación del crecimiento en América Latina y el Caribe, Hubert Escaith, (LC/L.2031-P), N° venta S.03.II.G.193, (US$ 10.00), noviembre, 2003. www

24. El desarrollo económico de América Latina entre dos épocas de globalización-una agenda de investigación, Albert Carreras, André A. Hofman, Xavier Tafunell y César Yánez, (LC/L.2033-P), N° venta S.03.II.G.197, (US$ 10.00), noviembre, 2003. www

25. Potential output in Latin America: a standard approach for the 1950-2002 period, André A. Hofman, Heriberto Tapia, (LC/L.-2042P), Sales Number E.03.II.G.205, (US$ 10.00), noviembre, 2003. www

26. Estados Unidos: ¿Una nueva economía, o más de lo mismo?, Gunilla Ryd (LC/L.2043-P), N° venta S.03.II.G.202, (US$ 10.00), diciembre, 2003. www

27. Proyecciones de América Latina y el Caribe, 2004, Centro de Proyecciones Económicas, (LC/L.2144-P), N° venta S.04.II.G.72, (US$ 10.00), mayo, 2004. www

28. Un enfoque contable y estructural al crecimiento y la acumulación en Brasil y México, (1983-2000), Martín Puchet, Manuel García (LC/L.2188-P), N° venta S.04.II.G.116, (US$ 10.00), septiembre, 2004. www

29. Crecimiento económico, creación y erosión de empleo: un análisis intersectorial, Gabriel Gutiérrez (LC/L.2199-P), N° venta S.04.II.G.125, (US$ 10.00), octubre, 2004. www

30. Cuentas ambientales: conceptos, metodologías y avances en los países de América Latina y el Caribe, Farid Isa, Marcelo Ortúzar y Rayén Quiroga, (LC/L.2229-P), N° de venta: S.04.II.G.151, (US$ 10.00), enero, 2005. www

31. Metodología de proyecciones económicas para América Latina, Centro de Proyecciones Económicas, (LC/L.2296-P), N° venta S.05.II.G.44, (US$ 10.00), abril, 2005. www

32. América Latina y el Caribe: proyecciones 2005, Centro de Proyecciones Económicas (CPE), (LC/L.2297-P), N° venta S.05.II.G.45, (US$ 10.00), abril, 2005. www

33. El acuerdo de libre comercio Mercosur-CAN: una evaluación cuantitativa, Daniel Berrettoni y Martín Cicowiez (LC/L.2310-P), N de venta S.05.II.G.59, (US$ 10.00), abril, 2005. www

34. Indicadores sociales en América Latina y el Caribe, Simone Cecchini, (LC/L.2383-P), N° de venta S.05.II.G.127, (US$ 10.00), septiembre, 2005. www

35. Propuesta metodológica para el desarrollo y la elaboración de estadísticas ambientales en países de América Latina y el Caribe, Dharmo Rojas, (LC/L.2398-P), N° de venta S.05.II.G.143, (US$ 10.00), septiembre, 2005. www

36. Demanda de exportaciones e importaciones de bienes y servicios para Argentina y Chile, Claudio Aravena, in press.

37. Tópicos sobre el Modelo de Insumo-Producto: teoría y aplicaciones, Andrés Ricardo Schuschny, (LC/L.2444-P, N° de venta S.05.II.G.191, (US$ 10.00), diciembre 2005. www

38. Elementos teóricos del ajuste estacional de series económicas utilizando X-12-ARIMA y TRAMO-SEATS, Francisco Villarreal (LC/L.2457-P), N° de venta S.05.II.G.203, (US$ 10.00), diciembre 2005. www

39. El seguimiento de los objetivos de desarrollo del milenio: oportunidades y retos para los Sistemas nacionales de estadística, José L. Cervera Ferri, (LC/L.2458-P), N° de venta S.05.II.G.204, (US$ 10.00), diciembre, 2005 www

40. Oportunidades digitales, equidad y pobreza en América Latina: ¿Qué podemos aprender de la evidencia empírica?, Simone Cecchini, (LC/L.2459-P), N° de venta S.05.II.G.206, (US$ 10.00), septiembre, 2005. www

41. Propuesta para un compendio Latinoamericano de indicadores sociales, en prensa.

42. Latin America and the Caribbean. Projections 2006-2007. Economic Projections Centre, (LC/L.2528-P), Sales Number E.06.II.G.55, (US$ 10.00), June, 2006. www

43. La medición de los objetivos de desarrollo del Milenio en las áreas urbanas de América Latina, Simona Cecchini, Jorge Rodríguez, Daniela Simioni, (LC/L.2537-P); N° de venta S.06.II.G.64, (US$ 10.00), junio, 2006. **www**

44. Importaciones y modernización económica en América Latina durante la primera mitad del siglo XX. Las claves de un programa de investigación, Albert Carreras, Mauricio Folchi, André Hofman, Mar Rubio, Xavier Tafunell, César Yánez, (LC/L.2583-P) N° de venta S.06.II.G.113.-, (US$ 10.00), septiembre, 2006. En prensa.

45. Can Latin America Fly? Revising its engines of growth, Hubert Escaith (LC/L.2605-P), Sales No. E.06.II.G.125, (US$ 10.00), September, 2006. **www**

- Readers wishing to obtain the listed issues can do so by writing to: Distribution Unit, ECLAC, Casilla 179-D, Santiago, Chile, Fax (562) 210 2069, E-mail: publications@cepal.org.

www These publications are also available on the Internet: http://www.eclac.org/ and http://www.cepal.org

Name: ....

Activity: ....

Address: ....

Postal code, city, country:...

Tel.: .... Fax: .... E.mail: ....