Conferencia LINK 2005
UNAM -México D.F 16 -20 de mayo de 2005

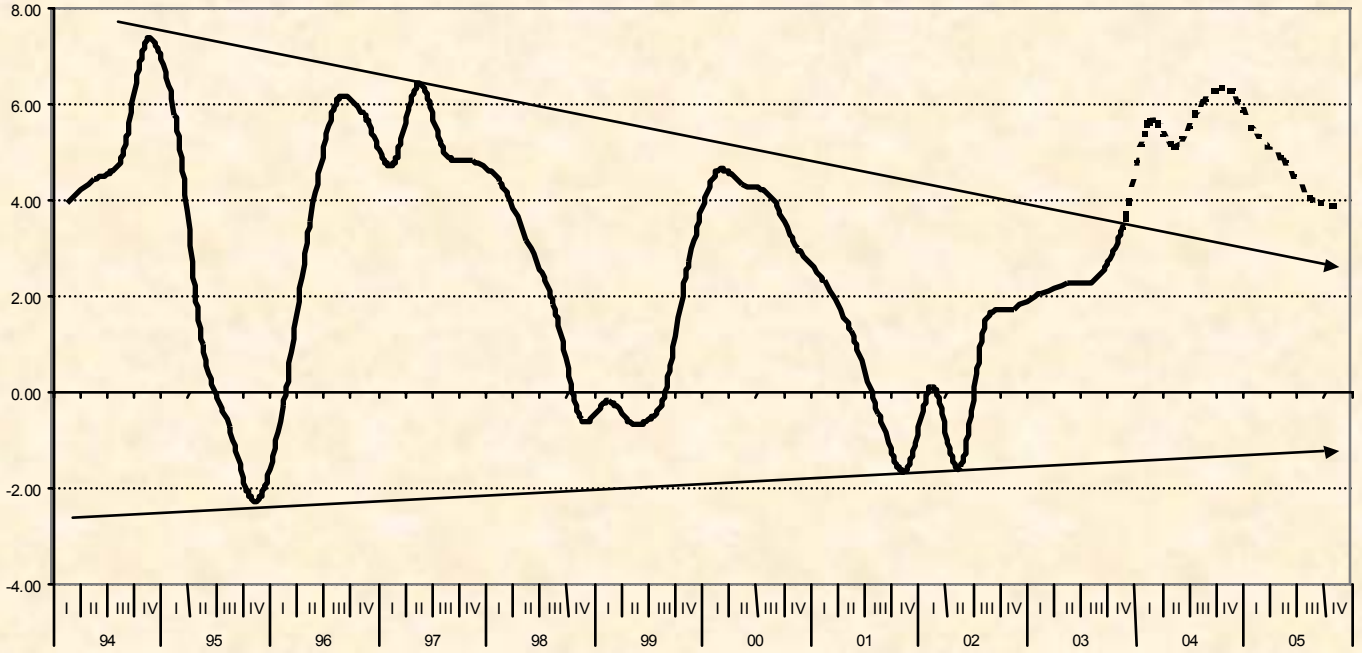
ALTERNATIVE MEASURES OF POTENCIAL ECONOMIC GROWTH AND IMPLICATIONS FOR EXTRAPOLATING TREND PATTERNS IN DEVELOPI NG COUNTRIES : THE LATIN AMERICAN EXAMPLE

Hubert Escaith, ECLAC

I. **Introduction**

Growth in the LAC region has experienced **high volatility**, which makes difficult extrapolating a tendency.
The slowing-down pattern that seemed to emerge since the 1990s broke down in 2003.

Figure 1. Latin America and the Caribbean: GDP growth rates 1994 2005,



Weighted and seasonally adjusted (y to y)

-

I. Trend patterns in the LAC region

Hodrick-Prescott still one of the most popular filtering techniques:

Min {(Yt-Y*t) 2 + l (Y*t –2Y*(t-1) + Y*t-2)2}
[1]

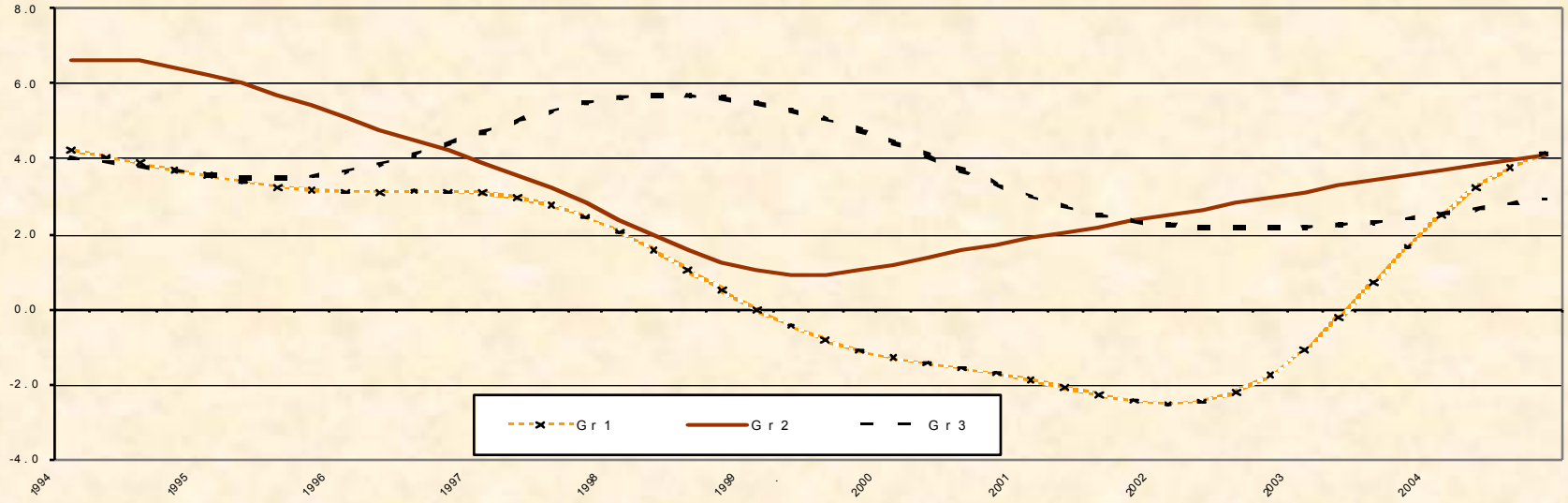
Three clusters of countries.

Group1: South American countries that entered into open crisis after 1998

Group 2: Other South American countries

Group 3: Mesoamerican countries (Mexico, Central America, Caribbean)

Figure 2. Latin America and the Caribbean, *y to y* GDP growth rates 1994-2004,
Simple average of filtered data (HP179)



I. Growth potential from the supply side

Potential GDP [Y*] is a function of the capital stock [(1-d)K(t-1)], plus investment [I(t-1)] weighted by it productivity [A(t)].
Substituting K (t-1) for Y*(t-1) :

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

A(t) can be decomposed in a constant (A0) and a marginal (A1) :

$$A(t) = A0 + A1(t-1) \qquad [3]$$

The production frontier:

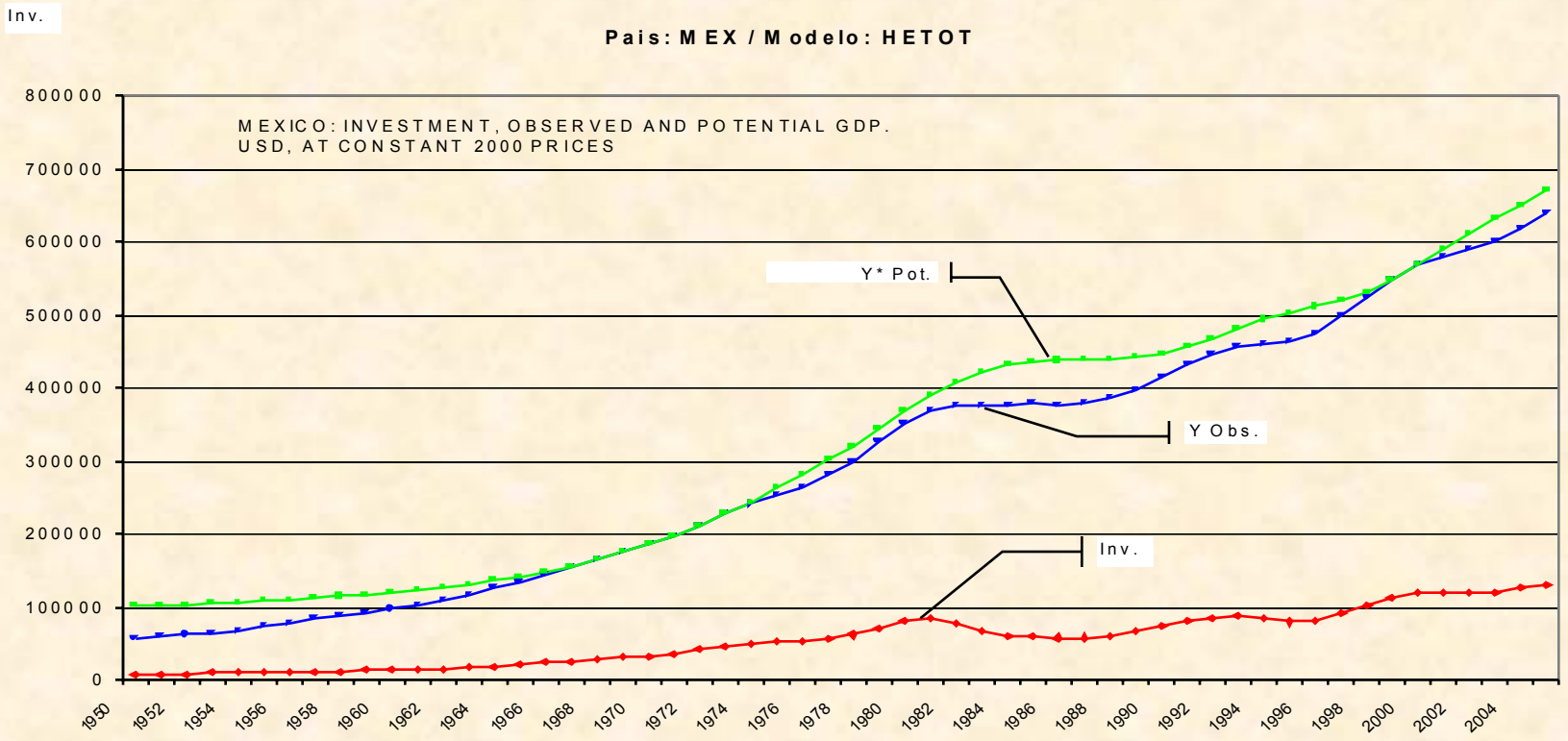
$$Min \sum_{t=0}^{T} (Y^*(t)-Y(t)) \qquad [4]$$

subject to:

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

Shortcomings: :

- Capital is the restricting factor
- Homogeneity:. Structural and institutional factors are not incorporated.
- Stability (steady state; structural transition is smooth)



But it is not always the case.

Segment the 1950-2005 period in three subsets.

- 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)

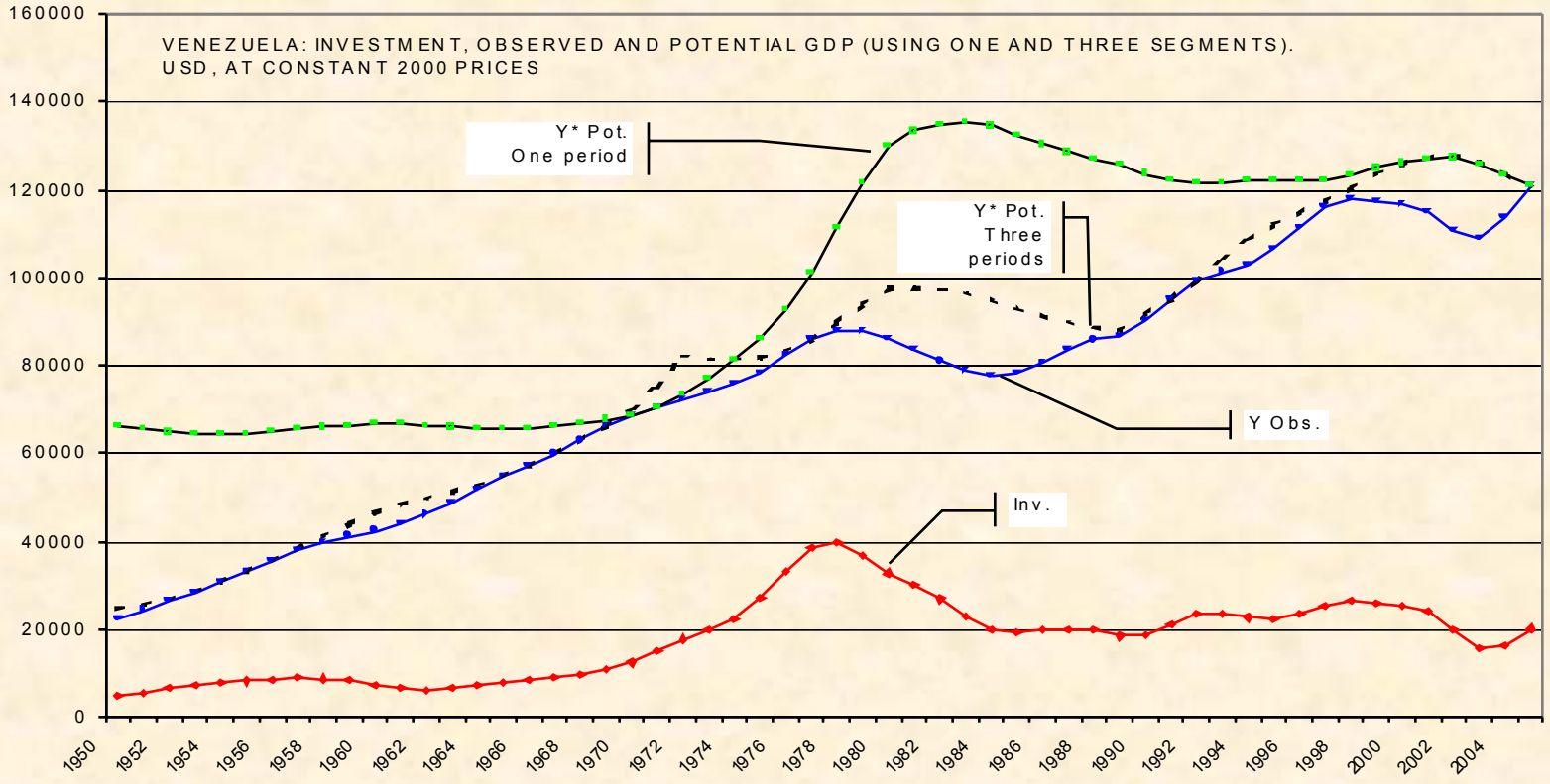


Table 1. Observed and potential growth using DEA methodology

	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	4.2	3.3	2.3	3.0	3.4	11.0	4.9	4.3
- 1998-2002	8.1	4.2	2.2	2.7	3.8	12.1	4.4	3.5
- 2003-2005	5.1	3.5	...	...	...	...	...	...
MERCOSUR and CHILE								
- 1991-1997	2.0	2.6	2.8	2.8	3.4	11.2	4.9	4.4
- 1998-2002	7.4	4.5	3.1	3.0	4.3	9.5	2.9	1.7
- 2003-2005	8.8	4.1	...	...	...	...	...	...
ANDEAN COMMUNITY								
- 1991-1997	2.4	2.7	1.5	2.6	2.9	12.2	5.7	5.7
- 1998-2002	6.8	3.9	1.6	2.5	3.3	13.4	4.4	4.3
- 2003-2005	3.0	3.7	...	...	...	...	...	...
MESOAMÉRICA								
- 1991-1997	6.8	4.0	2.5	3.4	3.8	10.1	4.5	3.4
- 1998-2002	9.3	4.2	2.1	2.7	3.8	13.0	5.4	4.2
- 2003-2005	4.1	3.1	...	...	...	...	...	...

Note: Simple average of country results. Y*(1), Y*(2) and Y*(3) are potential GDP calculated using three serializations. Depreciation factor d=5%

Efficiency of capital stock.

- 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 coefficien t for the 1973 -2005 and 1973 -1990 period

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

Figure : Marginal efficiency of capital in LAC region, several periods (d=5%)

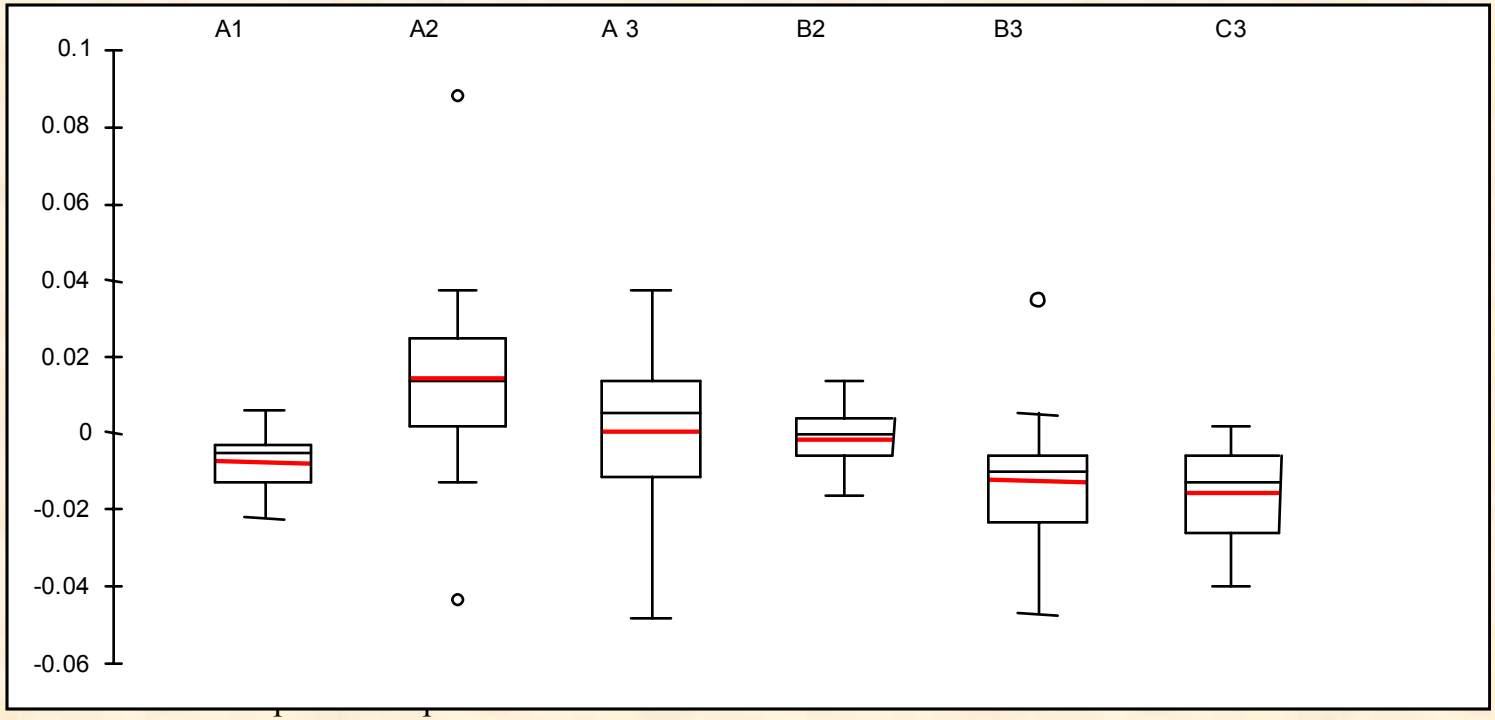
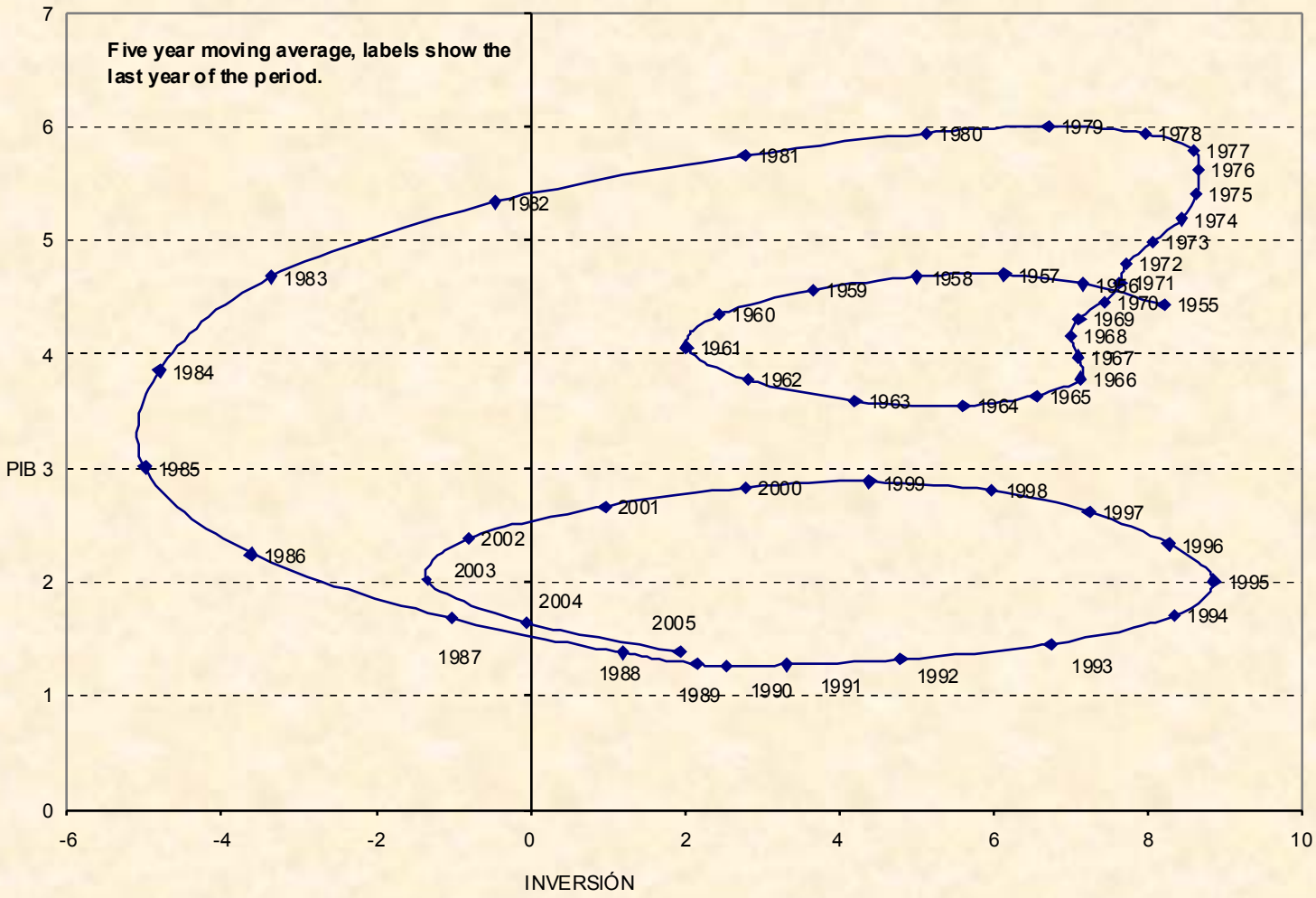


Figure : Phase diagram of marginal Capital-Potential output ratio



Notes: Five year moving average of the incremental capital-output ratio, based on observed investment and potential GDP (one single period, d=5%)

III. External sector, demand and sustainable trends

Promoting an export -led model : another objective of the st ructural reforms

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

Table : Growth simulations for 2003, following a positive external shock

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

Note: shocks are equal to one standard deviation.

Growth potential and external sustainability.

Thirwall (1979) model :

$x = \alpha_1 q + \varepsilon \ddot{y}$
$m = \alpha_2 q + \pi y$

Trade balance : $x = m$

In the long run, $q = 0$

Warranted growth rate (y^*) depends of the growth of external demand ($\ddot{y}$) and the income elasticities.

$\pi y^* \stackrel{?}{=} \varepsilon \ddot{y}$
$(y^* > \ddot{y}) \iff (\pi < \varepsilon)$.

Sustainability problem:

Income elasticity of imports (ΔM/M)/(ΔPIB/PIB) increased from 2,7 to 4,2 in 1991-2003.

But it was a transitional phenomenon

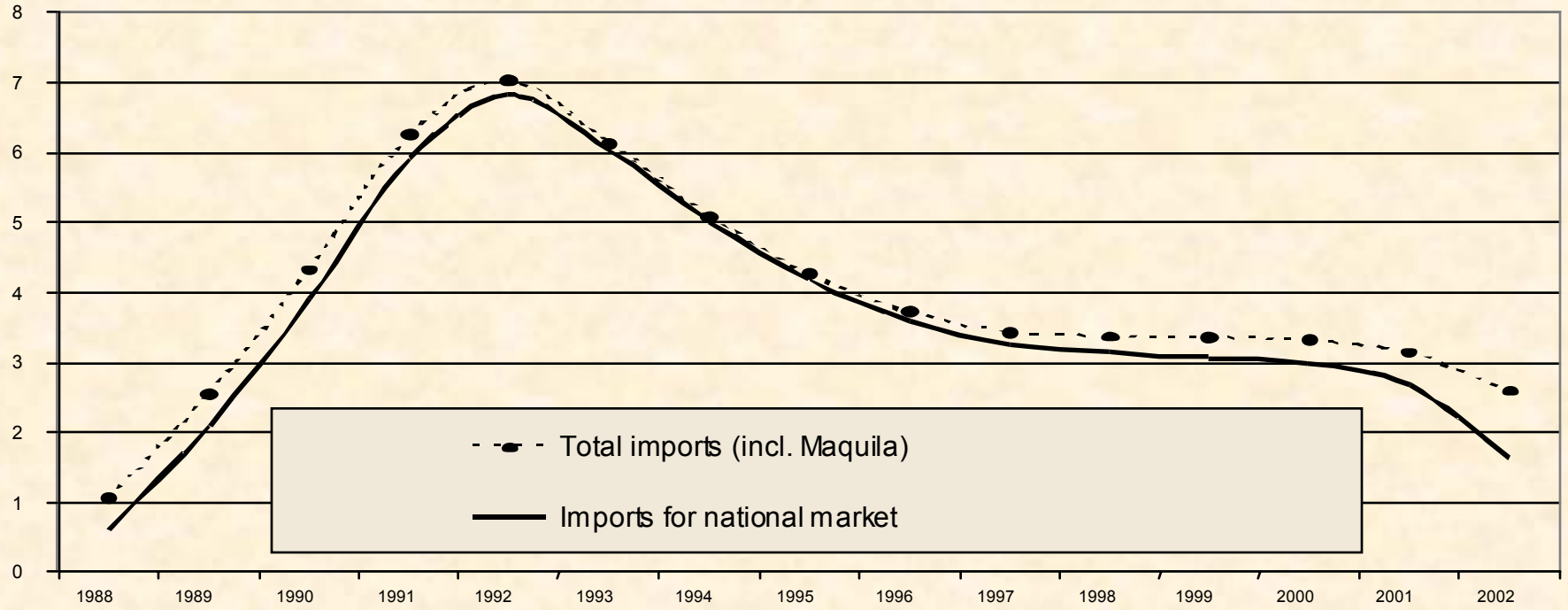


Figure : Evolution of regional income elasticity of imports, five year moving average.

Conclusions:

Potential growth is an elusive concept.

An eclectic approach allows to reduce uncertainty

From a policy oriented perspective in the Latin American case:

Potential for growth still depends upon the international situation.

Export-led growth has a stronger than expected potential
Tendency to reduction in import elasticities.

Productive capacity debilitated by years of reduced investments
Total factor productivity has not responded positively to the structural reforms.