
macroeconomía del desarrollo

Economic growth in Latin America and the Caribbean: growth transitions rather than steady states

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Abstract

Recent evidence on economic growth indicates that growth fluctuations at frequencies of a decade or so are at the centre of the Latin American countries' growth story. In this context, investment has played an important role as a source of growth, while national saving has been the main source of investment financing. Foreign saving has played a secondary role and has generally been substituted for national saving, rather than augmenting the total amount of savings available in Latin America. The high volatility and vulnerability to external swings exhibited by foreign capital have made foreign saving an unstable source of investment financing. This study on Latin America helps to provide a statistical framework for analysing the growth story of Latin America. Transitions affecting per capita GDP growth, investment and national and foreign savings rates are identified, as are common and country-specific transitions, based on comparisons of a sample group of eight Latin American countries with the Latin American and Caribbean region as a whole for the period 1960-2005.

This research also helps to demonstrate that some growth episodes are not well captured by standard growth theories and econometric work developed and based on different economic contexts and time periods. The study confirms some general conclusions reached in the literature but provides evidence that raises doubts about others. Although growth needs to be sustained by higher investment rates, an initial impulse from investment is not required in order for growth to accelerate. It is not always the case that growth accelerations are accompanied by rising national savings rates; the latter may also decline. Foreign saving does not, in most cases, add to total saving (equal to investment), and the crowding out of national saving by foreign saving seems to be positively biased (being stronger when foreign saving is rising).

I. Introduction

Recent evidence on economic growth indicates that growth fluctuations at frequencies of a decade or so are at the centre of the Latin American countries' growth story. Growth in Latin America in particular and in developing countries in general is an irregular and highly volatile process in which a given country may experience several different growth transitions or growth spells (accelerations and decelerations). Steady growth around a well-defined, stable trend is clearly not a good description of the actual growth experience of Latin American countries. In this context, investment has played an important role as a source of growth, while national saving has been the main source of investment financing. Foreign saving has played a secondary role and has generally been substituted for national saving, rather than augmenting the total amount of savings available in Latin America. The high volatility and vulnerability to external swings exhibited by foreign capital have made foreign saving an unstable source of investment financing.

This study on Latin America helps to provide a statistical framework for analysing the growth story of Latin America, which is a story of frequent growth transitions rather than steady growth around a long-run trend. The focus here is on growth transitions and on the role played by investment and by national and foreign saving during growth transitions. Transitions affecting investment and national and foreign savings rates are identified, as are common and country-specific transitions, based on comparisons of a sample group of eight Latin American countries with the Latin American and Caribbean region as a whole for the period 1960-2005. The Hodrick-Prescott

(HP) filter was used to identify acceleration, deceleration and stable episodes for four data series and for each of the selected countries and the entire Latin American and Caribbean region.

Growth transitions in the region were compared with transitions in the United States, in 15 high-income countries of the Organisation for Economic Co-operation and Development (OECD) and in the East Asia and Pacific region. The United States, as the largest single developed economy, has historically had the closest economic links with Latin America and the Caribbean, while the richer OECD countries have also maintained important trade and financial ties with the Latin America and the Caribbean region. The East Asia and Pacific region, in turn, has become a standard of reference for Latin America and the Caribbean in terms of economic growth and development.

Measured probabilities were derived for leads and lags in investment, national saving and foreign saving in terms of growth transitions, leads and lags in national and foreign saving in terms of investment, and leads and lags in foreign saving in terms of national saving. Measured probabilities for common and country-specific transitions (before and after the 1990s) were also derived. Granger causality tests were applied to all the various pairwise combinations for the series of per capita GDP growth, investment rates, national savings rates and foreign savings rates for the Latin American and Caribbean region in the aggregate and for the eight individual countries making up the sample used for this study.

This research also helps to demonstrate that some growth episodes are not well captured by standard growth theories and econometric work developed and based on different economic contexts and time periods.¹ Key observations are provided about growth transitions and the differential behaviour of investment, national saving and foreign saving during growth transitions in Latin America. The study confirms some general conclusions reached in the literature but provides evidence that raises doubts about others.

¹ For further discussion of the foundations for the case approach to economic growth and to economic policy in general, see Easterly (2001 and 2006) and Stiglitz (2003 and 2006).

II. Growth transitions: background

Empirical work on economic growth has been strongly influenced by the Solow supply-driven model (1950s), which was developed to explain growth in the United States in the first half of the twentieth century. Under this model, the long-run (steady-state) growth of per capita income is determined by the rate of technological change. Subsequent econometric analysis based on large panels of data across time and countries (Barro, 1991) and the endogenous growth models developed since the mid-1980s (Lucas, 1988; and Romer, 1986) assign a crucial role to investment in explaining long-run growth as a vehicle for technological progress.

The recent literature on economic growth has gone beyond standard theories and econometric approaches to focus on understanding growth transitions and case-by-case differences in growth experiences. This work has gained momentum amid the disappointing experiences of some Latin American countries that have followed macroeconomic policy advice that draws heavily on generalizations and simplifications of standard theories and econometric results (see Easterly, 2001 and 2006; Rodrik, 2005b; and Stiglitz, 2003 and 2006).

The empirical relevance of *growth transitions* is highlighted by the fact that a typical developing country tends to shift between different growth regimes over time rather than growing steadily around a stable trend, which is more typical of developed economies. Growth in Latin America is characterized by high volatility and a low correlation between current and past growth rates (low time persistence) (see Hakura, 2007; Sahay and Goyal, 2006; and Solimano and Gutiérrez, 2006).

The literature on growth transitions has sought to explain how some key economic policies and structures may influence the duration of growth spells (Berg, Ostry and Zettelmeyer, 2006). Hausmann, Pritchett and Rodrik (2004), who examine the relationship between growth acceleration episodes and key binding constraints affecting economic growth, argue (2004) have proposed a framework for identifying key binding constraints related to investment and saving that growth accelerations are fairly frequent events. Hausmann, Rodrik and Velasco (2005) argue that these differences can contribute to a more effective formulation of pro-growth policy priorities (see also Rodrik, 2004 and 2005a). In this context, investment, saving and growth will be stimulated as new opportunities open up.

This research is in line with the recent literature focusing on growth transitions. Such transitions (including growth accelerations, growth decelerations and episodes of stable growth rates) are examined in terms of their relationships with investment, national saving and foreign saving, as well as co-movements in common and country-specific transitions.

III. Methodological approach

The study is based on data on per capita GDP growth, investment and national and foreign savings rates for eight selected countries: Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru. The sample contains large, medium-sized and small economies that are representative of the diversity found in Latin America. The selection of countries took into account the availability and reliability of data on growth, investment and saving.

Data were compiled for four series corresponding to the entire Latin American and the Caribbean region for purposes of comparison with the selected countries. Data on per capita GDP growth for the United States, 15 high-income OECD economies, and the East Asia and Pacific region were used to compare these countries' and groupings' trends and co-movements with those of Latin America and the Caribbean. The World Development Indicators (WDI) database of the World Bank and the International Financial Statistics (IFS) database of the International Monetary Fund (IMF) were used for these purposes.

1. Growth transitions: accelerations, decelerations and stable periods

To identify growth accelerations and decelerations, the series on per capita GDP growth, investment rates, and national and foreign savings rates were run through the Hodrick and Prescott (HP) filter.² The HP filter is a method for obtaining a smooth estimate of the long-term trend component of a series. This two-sided linear filter computes the smoothed series m_t of a given series y_t by minimizing the variance of y_t around m_t , subject to a penalty that constrains the second difference of m_t . The HP filter chooses a complete sequence $m_1 \dots m_T$ to minimize:

$$\sum_{t=1}^T (y_t - m_t)^2 + \lambda \sum_{t=2}^{(T-1)} [(m_{t+1} - m_t) - (m_t - m_{t-1})]^2$$

where the penalty parameter λ controls the smoothness of the series m_t : the larger the λ , the smoother the m_t . When $\lambda \rightarrow \infty$, m_t approaches a linear trend. Hodrick and Prescott (1997) suggested the use of $\lambda = 100$ for annual data (cycles of about 20 years for smoothing) as it provides a better fit with the growth story of the United States economy. Given the higher degree of volatility observed in the growth series for Latin America, in this case a λ of 7 (cycles of about 10 years for smoothing) was felt to be the most appropriate choice for reflecting the growth pattern of Latin American countries (see Maravall and del Río, 2001).

The HP filter was applied to the original series. For the per capita GDP series, however, the HP filter was first used on the original series in level terms, i.e., the per capita GDP (in constant 2000 dollars) series, and the HP-filtered per capita GDP growth rate was then derived from the results. Moving averages calculated over 3- and 5-year periods were also tried, with differenced moving averages being obtained from the differentials between the original and lagged moving average series (using various lags). These alternatives were discarded, however, as the derived series were highly volatile, were contaminated by lagged data and, as a result, provided questionable information about the starting and ending years of the various growth spells.

The study distinguishes three types of transitions: acceleration, deceleration and stable episodes. Accelerations (decelerations) are defined as episodes in which the HP-filtered series displays a persistently increasing (decreasing) trend for at least three years. When the HP-filtered series exhibits consecutive years of mixed trends, the periods are identified as stable episodes. In other words, a stable episode is a period in which the series exhibits no clear trend.

Common acceleration, deceleration and stable periods for per capita GDP growth, investment, national saving and foreign saving were identified for each of the eight countries in the sample and for the Latin American and Caribbean region as a whole. For purposes of comparison with Latin America and the Caribbean, growth transitions and common growth transitions were calculated for the United States, 15 high-income OECD countries and the East Asia and Pacific region. All the results are reported in appendix A.

² This method was first used in a working paper (circulated in the early 1980s and published in 1997) in which Hodrick and Prescott analysed postwar business cycles in the United States (Hodrick and Prescott, 1997).

2. Granger causality

The Granger causality test examines the degree of significance in the statistical order of precedence between two time series. Thus, the test does not reveal a “causal” relation in a strict sense, but rather signals “causality” by determining that order of precedence. Saying that series x “Granger-causes” series y signifies that y 's behaviour can be explained in part by x 's lags.³

Application of a pairwise Granger causality test consists of running bivariate regressions of the form:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \dots + \alpha_k y_{t-k} + \beta_1 x_{t-1} + \dots + \beta_k x_{t-k} + \varepsilon_t$$

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \dots + \alpha_k x_{t-k} + \beta_1 y_{t-1} + \dots + \beta_k y_{t-k} + \nu_t$$

The reported *F-statistics* are the Wald statistics for each equation for the joint hypothesis $\beta_1 = \beta_2 = \dots = \beta_k = 0$. The pairwise Granger causality test examines causality for both equations and therefore tests causality in both directions. Whenever the test is significant at the 1%, 5% or 10% level, then the null hypothesis is rejected and the existence of “Granger causality” is accepted.

A suite of Granger tests consisting of all pairwise combinations of per capita GDP growth, investment (proxied by total gross capital formation rates), national saving and foreign saving series for the Latin American and Caribbean region and for the eight countries in the sample were performed. Granger tests were applied to the HP-filtered series using three lags to extract more rigorous statistical conclusions regarding the relationships existing among the four variables examined for the entire story of growth transitions in 1960-2004.⁴ All the results are reported in appendix A.

3. Measured probabilities

Two sets of measured probabilities were generated using the database on growth transitions compiled for this study. The first set measures the probabilities that investment, national savings and foreign savings rates lead or lag per capita GDP growth; that national or foreign saving lead or lag investment; and that foreign saving leads or lags national saving. The second set provides an estimate of the probability of common growth transitions. These measures help to gauge, for example, the probability of a growth transition being led or lagged by an acceleration of investment and the probability of a growth deceleration being the result of a common deceleration (i.e., one affecting all Latin American and Caribbean countries). All the results are reported in appendix A.

³ Granger-causality between two series is found to exist when the test provides statistical evidence to reject the null hypothesis. The null hypothesis in the Granger test is that “ x does not Granger-cause y ”. When statistical evidence for rejecting the null hypothesis is present, it means that “ x Granger-causes y ”.

⁴ Pairwise Granger causality tests were applied to original series and HP-filtered series using 3, 5, 8, and 10 lags. These results are not reported because they do not add any further insights to the reported conclusions.

IV. Growth transitions, investment and saving in Latin America (1960-2005)

The literature on economic growth assigns key roles to investment and saving as the main factors driving economic growth, especially during growth transitions. In the Solow model, the savings rate is exogenous and equal to actual investment. Savings and investment rates play a role only in the transitions between steady states, but not in the determination of long-run growth. The model predicts that high- and low-saving/investment economies experiencing the same extent of technological progress will not differ in their long-run per capita growth rates, but this conclusion is contradicted by most of the empirical evidence. The evidence has also confirmed the important role of investment as a key contributing factor to growth in the long run and during growth transitions (Barro, 1991; Lucas, 1988; Romer, 1986; and Hausmann, Rodrik and Velasco, 2004). Saving is the financing counterpart of investment, and the evidence points to a high correlation between national saving and growth (Feldstein and Horioka, 1980; and Bordo and Flandreau, 2003).⁵

⁵ The breakdown of investment between the public and private sectors and between machinery and construction has a bearing on growth, but the breakdown of saving between the public and private sectors also matters (Solimano and Gutiérrez, 2006).

1. Growth trends and general patterns

The 1960-2005 period exhibits a slight downward trend in growth for Latin America and the Caribbean starting in the early 1960s, a pronounced deceleration during the 1970s and early 1980s, a less pronounced acceleration from the mid-1980s until the mid-1990s, and no clear trend after the mid-1990s (see figure A.1). A different long-term pattern is observed in East Asia and the Pacific (see figure A.2), which experienced a continuous upward long-term growth trend during the entire period. The United States exhibits a slight decline in long-term per capita growth, but it is less pronounced than the downtrend seen in Latin America and the Caribbean. The 15 high-income OECD countries used in this study displayed a declining long-run trend which became somewhat flatter after the 1980s.

Of the eight selected Latin American countries, Chile is the only one that exhibits an upward long-run trend in per capita GDP growth. The other seven countries show either a nearly flat or a slightly declining long-run trend. Although the frequency of growth transitions (growth spells) is not higher for the Latin American and Caribbean region or for most of the selected countries than it is for the United States or for East Asia and the Pacific, their transitions' amplitude and duration are much greater. (see figure B.3.1)

The results for all the growth transitions (both positive and negative growth spells) indicate that growth leads investment in about 56% of all growth accelerations and 43% of all growth decelerations. National saving and growth are about equally distributed in terms of leads and lags. Foreign saving lags growth in about 33% of growth accelerations and 57% of growth decelerations. The results also show that national saving leads investment in about 44% of investment accelerations and 26% of investment decelerations. Foreign saving also leads national saving in about 42% of national saving accelerations and 43% of decelerations (see table A.5).

More than 60% of the total years encompassed by accelerations and decelerations of per capita GDP growth and investment rates experienced by Argentina, Brazil, Colombia, Costa Rica and Peru also occurred at the regional level. This implies that the majority of these growth transitions resulted either from forces generated outside the Latin American and Caribbean region or from the influence of large countries within the region (intraregional contagion effects). Countries that have been more isolated or "protected" from contagion include Chile (50% of growth acceleration years in common with the region as a whole), Mexico (25% of growth acceleration years and 35% of growth deceleration years in common) and Peru (50% of growth deceleration years in common) (see figures B.1.4, B.2.4, B.3.4, B.4.4, B.5.4, B.6.4 and B.7.4)

The results thus suggest that the majority of growth and investment transitions in Latin America have been "common" in the sense that they match up with transitions at the aggregate regional level. National saving and, to a lesser extent, foreign saving, in contrast, have mainly been country-specific. The national savings rate has moved more independently across countries, especially during periods of deceleration in national savings rates. The results also trace out a general pattern of substitution of foreign saving for national saving.

2. Characteristics of growth transitions

(a) Frequency

(i) Latin America's growth story is one of frequent and large fluctuations in growth regimes, and the region's growth transition episodes have increased in frequency since the 1980s. This observation holds for the region as a whole as well as for most of the individual countries in the

sample. Growth accelerations or decelerations have dominated the region's growth story in 1960-2005, with very few stable periods being observed (see table A.1).

(ii) Stable growth episodes are rather infrequent events not only in Latin America and the Caribbean but also in the United States, OECD and the East Asia and Pacific region. Colombia is an exception to the rule, as it has witnessed three stable episodes (the longest being from 1989 to 1994), compared to just one or none for other Latin American countries.

(iii) The frequency of growth accelerations and decelerations is illustrated by the fact that the Latin American and Caribbean region, taken as a whole, experienced a total of eight growth transitions in 1960-2005: four accelerations, two decelerations and two stable periods. Of the eight observed growth transitions, five took place in 1980-2005 (three accelerations, one deceleration and one stable episode).

(iv) The story is similar at the level of individual countries. Growth transitions (mostly either accelerations or decelerations) have been concentrated in the years after the 1970s, with the most frequent number of growth transitions during this subperiod being observed in Brazil (6), Mexico (6) and Peru (6). The lowest frequencies are observed in Chile (4) and Venezuela (3), although the transitions in the latter were of a much longer amplitude than those of Chile.

(b) Amplitude

(i) The amplitudes of growth accelerations and decelerations (distance between peaks and troughs, comparing growth rates in the first and last years of a growth transition or spell) in Latin America and the Caribbean are much longer than they are in the United States or East Asia and the Pacific, while the latter region exhibits shorter amplitudes than does the United States. The amplitudes of growth transitions have increased in the United States since the 1980s and in East Asia and the Pacific since the 1990s, however.

(ii) Amplitudes in Latin America and the Caribbean have remained long since the 1980s. Although they have declined slightly for the Latin American and Caribbean region in the aggregate, longer amplitudes have been found for Argentina, the Bolivarian Republic of Venezuela, Chile, Mexico and Peru.

(iii) The longest growth transition amplitudes for the region as a whole are observed in the 1972-1983 deceleration spell (from +3.8% to -1.8%) and the 1984-1994 acceleration spell (from -1.8% to +1.8), which was briefly interrupted by a stable period in 1987-1989.

(iv) An extended period of growth acceleration during the 1960s was led by Brazil (Brazil's golden age of industrialization). Growth accelerations were also observed in the 1960s, though less pronounced, in Argentina, Colombia and Costa Rica. That decade marked the most dynamic period in the import-substitution industrialization model adopted after the Second World War, in which national output was heavily protected from import competition.

(v) An extended period of growth deceleration was observed starting in the 1970s that lasted until about the mid-1980s for the region as a whole. The Bolivarian Republic of Venezuela and Mexico managed to escape this general trend, however. Mexico's growth accelerated during the first and second oil shocks of the early and late 1970s, however, whereas Venezuela's growth accelerated only during the first oil shock.

The 1970s marked the death throes of the industrialization model, which came to an end with the 1980s debt crisis. The 1970s was also a decade that saw two oil shocks (1973-1974 and 1979-1980) and two major hikes in external interest rates (1973-1974 and 1978-1981). In addition, the United States experienced growth decelerations in the early 1970 and late 1980s that had negative contagion effects on Latin America and the Caribbean. The early 1980s was a time of external debt defaults across the region, debt restructurings, and balance-of-payments and fiscal adjustments.

(vi) From the mid-1980s until roughly the mid-1990s, an extended period of growth acceleration was seen in the region (interrupted, as noted earlier, by a brief stable period in 1987-1989) amid economic reforms and benign external conditions (falling external interest rates, a recovery of primary commodity prices and massive inflows of foreign capital and foreign direct investment). Growth accelerations were led by Chile, followed by the Bolivarian Republic of Venezuela, Colombia and Costa Rica. Argentina's, Brazil's and Peru's growth accelerated in the late 1980s, while Mexico's did not until the second half of the 1990s.

(vii) From 1994 to 2001 the region exhibited a period of growth deceleration followed by a growth acceleration after 2002. The growth rates posted by the region as a whole after the 1980s have never reached or surpassed the peak rate recorded in the early 1970s (3.8% at its height in 1971). Since the 1990s, the region has proven to be vulnerable to a series of external contagion shocks of a type not seen in the 1960s or 1970s as a consequence of financial-sector reforms and capital-account liberalizations that heighten the contagion effect of foreign events.

(viii) At the level of individual countries, the longest growth acceleration/deceleration cycles have been observed in: (1) Argentina, which experienced a deceleration from 1969 to 1982 (from +3.6 to -2%) that was briefly interrupted by a stable period in 1977-1979 and an acceleration in 1989-1993 (from -1.7% to +4.6%), as well as a deceleration in 1994-2001 (from +4.6% to -2.6%); (2) Brazil, which underwent an acceleration in 1965-1972 (from +0.6 to +8.6%) and a deceleration in 1973-1982 (from +8.6% to -0.8%); (3) Chile, which witnessed an acceleration in 1974-1978 (from -2.5 to +3.7%), an acceleration in 1983-1992 (from -0.6% to +6.7%), and a deceleration in 1993-2000 (from +6.7% to +1.7%); Colombia, which recorded a deceleration in 1972-1982 (from +3.9% to +0.4%) that was briefly interrupted by a stable period in 1976-1978, and a deceleration in 1988-1999 (from +2.4% to -1%), which was broken by a stable episode involving a slight declining trend in 1989-1994; Costa Rica, which registered a deceleration in 1972-1982 (from +4.5% to -2.8%) and an acceleration in 1983-1992 (from -2.8% to +3%); Mexico, which experienced a deceleration in 1980-1985 (from +4.5% to -1.6%); Peru, which witnessed a deceleration in 1990-1995 (from -5.4% to 4.2%); and the Bolivarian Republic of Venezuela, whose economic deceleration in 1976-1982 (from +0.8% to -4.5%) was followed by an acceleration in 1983-1991 (from -4.5% to +1.6%) and then a fresh deceleration in 1992-2001 (from +1.6% to -2.5).

(c) Duration

(i) Growth spells have been longer in Latin America and the Caribbean than in the United States, OECD or East Asia and the Pacific. The longest growth spells for the region as a whole were observed in 1964-1971 (a 7-year acceleration), 1972-1983 (an 11-year deceleration) and 1995-2001 (a 6-year deceleration).

(ii) The longest growth spells have occurred in Costa Rica (a 10-year deceleration in 1972-1982), Brazil (a 9-year deceleration in 1973-1982), Chile (a 9-year acceleration in 1983-1992) and the Bolivarian Republic of Venezuela (a 6-year deceleration in 1976-1982). However, if brief periods of growth rate stability are discounted, then the longest decelerations have occurred in Peru from 1962 to 1989 (27 years), the Bolivarian Republic of Venezuela from 1962-1982 (20 years) and Argentina from 1968 to 1982 (14 years).

(d) Common and country-specific growth transitions

(i) A comparison of growth spells for each of the eight countries in the sample and for the Latin American and Caribbean region as a whole points up several common accelerations, decelerations and stable periods in 1960-2005. These data constitute evidence of common events in the entire region, but they also illustrate contagion effects in some of the larger countries. Country-specific growth transitions not found in the region as a whole have been longer in the case of

Mexico (growth accelerations, decelerations or stable periods). In all of the other seven countries in the sample, growth transitions in 1960-2005 have mainly been associated with common episodes (more than 50% of individual-country growth transitions have coincided with such episodes at the regionwide level).

(ii) Common acceleration and deceleration episodes in terms of national and foreign savings rates have been quite frequent in the cases of Argentina, Brazil, Chile and Colombia, with correlations of more than 60% with the region as a whole in most cases. Common episodes have been less frequent for the Bolivarian Republic of Venezuela, Costa Rica, Mexico and Peru (correlations below 50% in most cases). The correlations for national saving are also lower during decelerations than during accelerations of the national saving rate.

(iii) The increase in the probability of common growth transitions observed after the 1990s (except in the case of Colombia) is an indication of heightened interdependence during this new wave of globalization.⁶ The frequency of common foreign savings accelerations rose after the 1990s for Argentina, Chile, Colombia, Mexico and Peru. Common foreign saving decelerations increased after the 1990s for the Bolivarian Republic of Venezuela, Brazil, Colombia and Peru (for different views on this issue, see Aiolfi, Catao and Timmermann, 2006; Hakura, 2007; Prasad, Rajan and Subramanian, 2006; and Rana and Goyal, 2006).

(iv) About half of all the relevant growth transitions are common to Latin America and the United States, which is an indication of the strong influence that the United States economy has had on the region, although important exceptions are to be observed in the second halves of the 1960s and 1980s. In both of these periods, the United States exhibited growth decelerations while Latin America and the Caribbean were experiencing accelerations (mainly as a consequence of Brazil's performance in the first of these periods and of the results achieved by most Latin American countries (except Peru) during the second as they pursued stabilization efforts and succeeded in making a partial recovery from the early 1980s debt crisis (see also Aiolfi, Catao and Timmermann, 2006; and Hakura, 2007).

(e) Investment and growth

The role played by investment in growth transitions is bound to be influential, since it is of critical importance as a vehicle for the creation of productive capacities, knowledge spillovers and new technologies. A reform process can also trigger short-term productivity gains that lead to faster initial growth in economies that are starting from high, distorted levels (Solimano and Gutiérrez, 2006). The composition of investment (in terms of machinery and equipment/construction and private/public investment) has an impact on growth (Solimano and Gutierrez, 2006). In part, this is because the "irreversible" character of physical-investment decisions implies that there is a high "value of waiting" in investment decisions (Servén and Solimano, 1993). Hausmann, Pritchett and Rodrik (2004) also provide evidence that growth accelerations have been accompanied by an increase in investment.

The crucial importance of investment during growth transitions is confirmed by the evidence gathered for this study, as most growth transitions have been, at some point, supported by accelerated investment (higher investment rates). In most cases, growth accelerates or decelerates before investment, as growth leads investment in about 56% of all growth accelerations and 43% of all decelerations. Growth can accelerate before investment when unutilized capacity is available, which seems to be the general case in Latin America and the Caribbean. This situation also reflects the fact that growth accelerations often follow upon a deceleration.

⁶ During the second half of the 1880s and until the First World War, the world economy experienced a first wave of globalization. In today's global capital markets, however, capital flows and foreign investment aim for risk sharing and diversification instead of long-term financing to build infrastructure and housing, as was the case in the pre-1914 world (Solimano and Gutiérrez, 2006).

Although growth needs to be sustained by higher investment rates, an initial impulse from investment is not required in order for growth to accelerate. Growth accelerations can be preceded by falling or stable investment rates, and not all investment accelerations are accompanied or followed by growth accelerations. Growth may also decelerate while the investment rate is rising. Investment in construction and public investment have proven to be less effective in promoting growth in Latin America than elsewhere (see Gutiérrez 2005; and Solimano and Gutiérrez, 2006).

There have also been several growth accelerations that have been accompanied by accelerations of investment rates which extend beyond the end of the relevant growth acceleration episode, as well as several growth decelerations that have been accompanied by decelerations of investment rates which also have extended beyond the end of the corresponding growth deceleration. This is valid for the Latin American and Caribbean region as a whole and for several episodes in the selected countries. The “irreversibility” of investment helps to underpin this observation. In such cases, investment reacts after accelerated growth episodes have led to full (or nearly full) utilization of installed capacity, which in many cases takes between three and four years. When growth decelerates, investment also decelerates but with a lag, and the physical capital capacity that was built during the investment acceleration, if not destroyed, becomes available for the next round of growth acceleration.

A number of other cases of co-movements between investment and growth were also observed, however. These episodes suggest that investment is required but does not guarantee higher growth and that growth can accelerate even without an initial impulse from higher investment. These observations include the following: (i) growth accelerations preceded by an acceleration of investment rates (Latin America and the Caribbean, 1990-1994; the Bolivarian Republic of Venezuela, 1972-1975 and 1988-1991; Chile, 1975-1979; Colombia, 1966-1971; and Mexico, 1961-1964, 1976-1979); (ii) growth accelerations preceded by stable or decelerating investment rates (Latin America 1964-1971, 1984-1986 and 2002-2005; Argentina 1961-1965, 1989-1993 and 2002-2005; Bolivarian Republic of Venezuela, 1983-1991 and 2002-2005; Brazil, 1965-1972, 1983-1986, 1991-1995 and 2003-2005; Chile, 1983-1992 and 2001-2005; Colombia, 1984-1988 and 2000-2005; Costa Rica, 1961-1971; Mexico, 1986-1991 and 1995-1998; and Peru, 1969-1973, 1990-1995 and 2001-2005); (iii) accelerations of investment rates followed by decelerations of growth (Colombia, 1977-1982 and 1991-1999); (iv) prolonged accelerations of investment rates accompanied by growth decelerations (the Bolivarian Republic of Venezuela, 1960-1971 and 1992-2001; Costa Rica, 1972-1981; Mexico 1960-1970; and Peru, 1973-1981); (v) growth and investment rates that accelerate or decelerate simultaneously (Latin America and the Caribbean, 1964-1971; Chile 1968-1972); (vi) protracted growth decelerations accompanied by accelerations of investment rates (Argentina, 1970-1977 and 1994-1996); and (vii) long stable periods accompanied by an acceleration of investment rates (Chile, 1961-1967).

The HP-filtered Granger test results show causality in both directions between investment and growth for the Latin American and Caribbean region in the aggregate (at 1% significance, see table A.4). This suggests a mutual reinforcement between growth and investment; in some cases, lifting constraints on investment may trigger a more rapid pace of growth while, in other cases, an acceleration of growth may improve investment sentiment (and expected returns) and encourage additional investments (for more on this subject, see Hausmann, Rodrik and Velasco, 2004; and Gutiérrez, 2005). The possibility of mutual causality is confirmed by the diversity observed in the individual countries’ results. In the cases of the Bolivarian Republic of Venezuela, Brazil, Chile and Peru, the results are similar to those obtained for the region in the aggregate, as causality in both directions was highly significant in most cases (at the 1% level). For Argentina, growth caused investment; for Costa Rica, investment caused growth; for Colombia and Mexico, the results showed no direct causality in either direction. The results also suggest that growth can accelerate without an initial investment impulse and that the composition and quality of investment has an impact in terms of growth (see Gutierrez, 2005; and Solimano and Gutierrez, 2006).

(f) National saving and growth

Theories and evidence about the links between saving and current growth have been founded upon the permanent income hypothesis of Milton Friedman and the life-cycle model of Franco Modigliani. The former states that consumption is determined by permanent (long-run) income, implying that saving follows current (transitory) growth. The latter argues that productivity growth makes the working young population richer than the old, with the young saving more than the old are dissaving. It also implies that aggregate income growth would follow from an increase in the lifetime profiles of succeeding generations.⁷ In the Keynesian school of thought, saving is endogenously determined by interactions between income and consumption. Higher current growth generates higher incomes, which lead, in turn, to higher saving (as the propensity to consume out of income is less than one). Carroll and Weil (1994) argue that habit formation in consumption is a factor that helps to rationalize the positive correlation between saving and current growth. They also provide evidence that growth Granger-causes saving, although this finding has been questioned by some authors (Attanasio, Picci and Scorcu, 2000; Gutierrez, 2007).

The evidence on growth transitions gathered in this study (see tables in appendix A, figure A.1 and figures B) includes information on several cases in which growth accelerations and decelerations have, at some point, been accompanied or followed by accelerations in national savings rates. This evidence thus corroborates the findings presented in the literature about the relationship between these two variables, with growth driving up national saving or higher national saving helping to finance higher investment and higher growth.

Growth does not necessarily generate higher national saving, however. Growth accelerations may be consumption-oriented. If this is the case, they will be reflected in a rising current-account deficit financed by foreign capital flows (foreign savings). In such a case, foreign saving would then substitute for national saving, and growth would be coupled with falling national savings rates. The results obtained in this study for all growth transitions (positive and negative growth spells) show that national saving and growth are about equally distributed in terms of leads and lags (see table A.5).

Several cases have also been observed, however, that suggest that growth may accelerate (decelerate) without an increase (decrease) in national savings rates and that higher (lower) national savings rates do not necessarily translate into an acceleration (deceleration) of growth. For policy purposes, these cases suggest that some growth transitions may be primarily oriented towards consumption (reducing national saving) and that, in such cases, national savings policies may not necessarily translate into higher growth. Examples of this combination of circumstances include: (i) stable national savings rates over a lengthy period of time, coupled with growth accelerations and decelerations (Latin America in 1989-2000 and Mexico in 1980-1984); (ii) a long-standing deceleration of national savings rates combined with a mixture of growth stability, acceleration and deceleration (Argentina in 1976-1999); (iii) a growth deceleration in conjunction with an acceleration of national saving (Latin America in 1972-1976, Colombia in 1972-1975, Costa Rica in 2000-2003 and Peru in 1996-1999); and (iv) growth accelerations accompanied by decelerations in national savings rates (Brazil in 1991-1995, Chile in 1977-1979, Costa Rica in 1988-1992 and Mexico in 1986-1991).

The HP-filtered Granger results show mutual causality between national saving and growth for the Latin American and Caribbean region as a whole (significant at 10%), as was also the case for investment and growth. This indicates that, generally speaking, growth and national saving “go together” (as do growth and investment), although this is not always the case. These mutually reinforcing elements have also been documented in the literature (see, for example, Attanasio, Picci

⁷ The terms-of-trade effect is viewed as a transitory deviation of national income from its trend. According to Milton Friedman’s consumption hypothesis, the additional income resulting from transitory improvements in countries’ terms of trade would mostly be saved. In more extensive models of consumer behaviour, the relationship is theoretically ambiguous (Carroll and Weil, 1994).

and Scorcu, 2000; Hausmann, Rodrik and Velasco, 2005; and Gutiérrez, 2007). This finding suggests that the removal of restrictions on national saving will stimulate investment and growth, but it also indicates that an acceleration of growth will stimulate saving (see also Carroll and Weil, 2004; Schmidt-Hebbel and Servén 1999; and Solimano and Gutiérrez, 2006). The results for the selected countries also suggest that causality may run in both directions, although the pattern is not uniform. For Argentina, for example, there is no causality in either direction. For Chile, Colombia, Costa Rica and Peru, however, causality does run in both directions, although it is stronger in the case of growth causing national saving (significant at 1%). For the Bolivarian Republic of Venezuela, Brazil and Mexico, growth Granger-causes national saving.

(g) Foreign saving and growth

Although investment has primarily been financed with national saving in Latin America and, for that matter, most developing countries, foreign saving (the financing counterpart of the current-account deficit, most of which is in the form of capital inflows) has, at several points in the region's history, served as an important source of investment financing. Foreign saving has been highly volatile, however, and has tended to be a substitute for national saving, thereby fuelling consumption booms and current-account crises. The evidence on the association between growth and foreign saving is mixed. There are cases of high growth with relatively low foreign savings rates (East Asian economies) as well as cases of low-growth episodes combined with high foreign savings rates (low-income countries in Africa and Latin America that receive sizeable levels of foreign aid) (see Prasad, Rajan and Subramanian, 2006; Schmidt-Hebbel and Servén, 1999; Solimano and Gutiérrez, 2006; and Gutiérrez, 2007). The results for all the growth transitions (positive and negative growth spells) show that foreign saving lags behind growth in about 33% of growth accelerations and 57% of growth decelerations (see table A.5).

The results also show that foreign saving and growth display more diverse relationships during growth transitions than national saving and growth do. Episodes in which growth accelerations (decelerations) are coupled with foreign savings rate accelerations and decelerations have been observed for the Latin American and Caribbean region and for individual countries, but the presence of several cases in which the results vary considerably points to a more unstable relationship between growth and foreign saving. These cases include the following: (i) stable foreign savings rates over lengthy periods of time coexisting with growth accelerations and decelerations (Latin America in 1967-1977); (ii) rising foreign savings rates combined with growth decelerations (Latin America in 1995-1998, Argentina in 1980-1982 and 1995-1997, the Bolivarian Republic of Venezuela in 1976-1978, Brazil in 1978-1980 and 1996-1999, Chile in 1980-1982, Costa Rica in 2000-2003, and Peru in 1981-1983 and 1986-1988); and (iii) decelerations in foreign savings rates in conjunction with growth accelerations (Latin America in 2002-2005, Argentina in 2002-2004, the Bolivarian Republic of Venezuela in 1972-1974 and 2002-2004, Brazil in 2003-2005, Chile in 1983-1990 and 2001-2005, Colombia in 1984-1998 and 2000-2005, Costa Rica in 1983-1986 and 1990-1992, Mexico in 1995-1997 and Peru in 2001-2005).

The HP-filtered Granger results for Latin America and the individual countries show the presence of mutual causality between foreign savings and growth, suggesting a reinforcing relation between the highly observed volatility of capital flows and the high volatility of growth in the region (see also Prasad, Rajan and Subramanian, 2006; and Sahay and Goyal, 2006). For Argentina, Peru and Mexico, causality runs in both sense. For Brazil, growth Granger-causes foreign saving. For Costa Rica, foreign saving Granger-causes growth. For Colombia and the Bolivarian Republic of Venezuela, the results show no causality in either direction.

(h) Investment and national saving

The literature offers evidence of a relationship not only between investment and growth but also between investment and national saving (Bordo and Flandreau, 2003; Feldstein and Horioka, 1980; and Taylor, 1996 and 1999). The corresponding empirical studies have uncovered a high and significant correlation between investment and national saving both in time series and in cross-country data, which contradicts the predictions of perfect capital mobility theory and provides grounds for the claim that “home biases” are to be found in the saving-investment process.

The evidence on growth transitions compiled in the course of this study shows that, in several instances, investment accelerations (decelerations) have been accompanied at some point by accelerations (decelerations) in national savings rates, thus corroborating the general evidence of a high correlation between these two variables. Accelerations in investment have also been financed with rising foreign saving (and shrinking national saving), however, as the substitution of foreign saving for national saving can give rise to a mix involving a larger component of foreign saving and a smaller one of national saving that makes a higher rate of investment growth possible. The overall results show that national saving leads investment in about 44% of all investment accelerations and in approximately 26% of investment decelerations.

Several cases involving varying types of relationships were also identified, however, such as: (i) stable national savings rates combined with accelerations in investment rates (Latin America in 1989-1997, Chile in 1993-1995); (ii) stable national savings rates coupled with falling investment rates (Mexico in 1981-1984, Peru in 2000-2002); (iii) higher national savings rates in conjunction with falling investment (Latin America in 2001-2003, Argentina in 2000-2002, Brazil in 2000-2005, Colombia in 1972-1976 and 1984-1990); (iv) falling national savings rates and rising investment rates (Argentina in 1991-1996, the Bolivarian Republic of Venezuela in 1985-1987, Brazil in 1993-1996, Chile in 1977-1979, Colombia in 1978-1982 and 1992-1995, Costa Rica in 1977-1979, Mexico in 1987-1991); and (v) accelerations in national savings rates in combination with stable investment rates (Bolivarian Republic of Venezuela in 2000-2004, Costa Rica in 1982-1987, Mexico in 2003-2005, Peru in 2003-2005).

The HP-filtered Granger results show no causality between investment and national saving for the Latin American and Caribbean region as a whole or for Argentina. Causality in both directions was found for Brazil, Chile, Costa Rica, Mexico and Peru. In the case of Colombia, causality runs from investment to national saving. This behaviour is, in part, explained by the empirical evidence of partial substitution between national and foreign saving, since investment accelerations may at some point be financed by foreign saving as a substitute for national saving, even though a closer correlation between national saving and investment will eventually emerge.

(i) Investment and foreign saving

Although foreign saving, in combination with national saving, does help to finance investment, the literature points to the existence of a partial offset between the two types of saving owing to the co-movements of these two variables (partial Ricardian equivalence). In other words, foreign saving tends to substitute (partially) for national saving (see Schmidt-Hebbel and Servén, 1999; Solimano and Gutiérrez, 2006; and Gutiérrez, 2007). It is therefore to be expected that increases in foreign saving will make a partial contribution to the financing of investment. The literature does not, however, suggest what basis there might be for causality between foreign saving and investment. Accelerations in investment have been financed with rising foreign saving and shrinking national saving during periods of booming capital inflows. The overall results also show that foreign saving leads national saving in about 28% of investment accelerations and around 33% of investment decelerations.

A wide variety of different types of cases were observed: (i) stable foreign savings rates coupled with accelerating investment rates (Latin America in 1987-1997); (ii) falling foreign savings rates combined with rising investment rates (Latin America in 1985-1988, Bolivarian Republic of Venezuela in

1970-1974 and 1994-1996, Brazil in 1985-1989, Chile in 1984-1990, Colombia in 2002-2005, Mexico in 1995-1997 and Peru in 1977-1979); (iii) rising foreign savings rates accompanied by falling investment rates (Argentina in 1978-1982, Brazil in 1978-1980, Chile in 1980-1982 and Peru in 1982-1988); and (iv) falling foreign saving in conjunction with stable investment rates (Costa Rica in 1982-1987 and Mexico in 2003-2005).

The HP-filtered Granger results show a diverse array of results which do not support a finding of any clear causality between these two variables. In fact, the results show no causality for the Latin America and Caribbean region as a whole or for Chile. For Argentina, Colombia and Costa Rica, foreign saving has Granger-caused investment. For Brazil and Peru, investment has Granger-caused foreign saving. For Mexico and the Bolivarian Republic of Venezuela, causality ran in both directions.

(j) National and foreign saving

The body of empirical evidence corroborates the existence of a partial Ricardian offset between national and foreign saving (between 50% and 70) (Gutiérrez, 2007; and Schmidt-Hebbel and Servén, 1999). Thus, a growing current-account deficit would be financed by capital inflows (an increase in foreign saving), which help to finance investment but, at the same time, drive down national saving, thereby stimulating consumption. Capital inflows could also be driven by a reduction of national saving and/or a rise in investment. The overall results show that foreign saving leads national saving in about 42% of national saving accelerations and 41% of its decelerations (see figures A.5, B.1.1, B.2.1, B.3.1, B.4.1, B.5.1, B.6.1, B.7.1 and B.8.1).

There have been several cases in which national savings rates have risen or while foreign savings rates for the region as a whole have been stable or falling too. The individual countries in the sample, however, display a more general pattern of substitution between these two types of saving. Moreover, there are only a few cases in which both national and foreign savings rates have risen simultaneously (Bolivarian Republic of Venezuela in 1997-1998, Chile in 1975-1976, Costa Rica in 2000-2004 and Peru in 1980-1981 and 1992-1995). This evidence suggests that substitutability between national and foreign saving is greater in the presence of net capital inflows than net capital outflows. It seems easier to maintain or reduce national saving in periods when external foreign credit constraints are more relaxed than to increase national saving in periods of tighter external financing conditions (a reduction of foreign saving associated with lower growth would, at the same time, depress national saving). This also implies that foreign capital has a more damaging effect on investment and growth when it flows out than the positive effects it has on investment and growth when it flows in. Thus, the crowding out of national saving by foreign saving seems to be biased on the positive side (when foreign saving is rising).

The HP-filtered Granger results for the entire region and for the Bolivarian Republic of Venezuela show no causality between national and foreign saving. For Argentina, Brazil, Colombia and Costa Rica, causality ran in both directions. For Chile, Mexico and Peru, national saving Granger-caused foreign saving. These results indicate that, although there is a general pattern of substitution between national and foreign saving, there is no a general pattern of causality or precedence between the two series, suggesting that these two variables tend to move simultaneously in opposite directions.

V. Final Remarks and policy issues

The growth story of Latin America has been one of frequent growth transitions rather than steady growth around a long-run trend. For the purposes of this study, a statistical framework for identifying growth transitions was developed, and probabilities of leads and lags related to co-movements among per capita GDP growth, investment, and national and foreign savings rates were derived. Granger causality tests were also applied with a view to arriving at general observations about co-movements among the pairwise combinations of the series of GDP per capita growth, investment rates, national savings rates and foreign savings rates. The period 1960-2005 was surveyed for a sample of eight Latin American countries and the Latin American and Caribbean region in the aggregate.

The research conducted for this study helps to shape a statistical framework for the examination of growth transitions and to demonstrate that several growth episodes in Latin America have not been well captured by standard theories or econometric work based on various types of situations. Common growth spells (accelerations, deceleration, and stable periods) have also been identified, and growth transitions in Latin American countries and in the Latin American and Caribbean region as a whole have been compared with transitions in the United States and in East Asia and the Pacific.

Key observations are made about growth transitions and about the relationships among investment, national saving, foreign saving and growth. More specifically, evidence is provided that demonstrates the following points:

(i) Although growth needs to be sustained by higher investment rates, an initial impulse from investment is not required in order for growth to accelerate. It is not always the case that investment leads growth, since growth may also accelerate as a result of improved consumer confidence, productivity-driven economic reforms or idle capital stock. Growth leads investment in about 55% of the acceleration transitions and in roughly 43% of decelerations. Growth accelerations may also be preceded by falling or stable investment rates, as occurred in Argentina in 2002-2005 and Chile in 1983-1992.

(ii) Not all investment accelerations are accompanied or followed by growth accelerations. Growth may decelerate while the investment rate is rising (e.g., Colombia in 1991-1999 and Peru in 1973-1981). Investment in construction or public investment has proved to be less effective in the Latin American and Caribbean region (see Gutiérrez, 2005; Solimano and Gutiérrez, 2006).

(iii) Although the evidence has shown that high growth needs to be sustained by high national savings rates, it is not always the case that growth accelerations are accompanied by rising national savings rates; the latter may also decline. Growth does not necessarily generate higher national saving either (e.g., Brazil in 1991-1995 and Mexico in 1986-1991). Growth accelerations may be oriented towards consumption, and when this occurs it is reflected in a mounting current-account deficit financed by foreign capital inflows (foreign saving). When foreign saving is a substitute for national saving, then growth may occur in the presence of falling national savings rates.

(iv) The high correlation between national saving and investment does not mean that national saving must necessarily rise in order to finance investment. Accelerations in investment have also been financed by rising foreign saving (while national saving has shrunk, as occurred in Argentina in 1991-1996 and in Chile in 1977-1979). As noted earlier, the substitution of foreign saving for national saving can make it possible to achieve higher investment growth based on a combination of higher foreign saving and lower national saving.

(v) Foreign saving does not, in most cases, add to total saving (equal to investment), and the crowding out of national saving by foreign saving seems to be positively biased (being stronger when foreign saving is rising). The instances in which investment and foreign saving precede each other is approximately the same: between 20% and 30% of accelerations and decelerations.

(vi) Episodes in which rising foreign savings rates have been combined with falling investment have been identified (e.g., Argentina in 1978-1982 and Chile in 1980-1982), as well as episodes of rising foreign saving with declining growth (e.g., Bolivarian Republic of Venezuela in 1976-1978, Brazil in 1996-1999 and Peru in 1981-1983). Consumption-oriented accelerations of foreign saving reflect a strong substitution of foreign saving for national saving and a net reduction in national saving (and a rise in consumption). These situations constitute cases in which national saving has been more than fully crowded-out by foreign saving. Episodes of rising foreign saving (and falling national saving) and declining growth are worse in the sense that they signal profound imbalances which, in many cases, are caused by growing fiscal deficits.

(vii) Common transitions for the Latin American and Caribbean region as a whole are more likely to be observed for GDP growth and investment (more than 50% of the accelerations and more than 40% of the decelerations). Country-specific transitions are found more frequently in the case of national saving. Foreign saving co-movements are to be observed in about 50% of the cases in the Latin American and Caribbean region. The probability of common growth and foreign saving transitions was found to increase after the 1990s, which is interpreted as an indication of increased growth volatility during this new wave of globalization.

The results of this study show no common pattern of co-occurrence or precedence in relation to growth, investment, national saving and foreign saving, which suggests that co-movements among these variables depend on the particular circumstances existing in each country. The interaction between common and country-specific factors gives rise to variations in co-movements and causality relationships across time and countries. The application of general theoretical considerations or econometric results may therefore give rise to misleading interpretations of growth processes and oversimplification in the design of growth policies in the region.

The diversity of the causality results across countries for growth, investment, and national and foreign saving suggests that growth is the result of forces whose dynamic and motion are continuously changing through time and that are strongly influenced by the economic and social framework in which they interact. Key forces in the growth process include investment, national saving and foreign saving, but different growth sources (such as improvements in human capital, discoveries, better economic policies, pro-growth reforms or positive political and social events) are required to improve investor and consumer sentiment and set those forces into motion in a way that will give rise to a virtuous circle with growth (Solimano and Gutiérrez, 2006).

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Appendix

Appendix A

Table A.1
GROWTH TRANSITIONS (SUMMARY), 1960-2005

World regions	United States: Per capita GDP growth rate	OECD countries: Per capita GDP growth rate	East Asia and the Pacific: Per capita GDP growth rate	Latin America and the Caribbean Per capita GDP growth rate
Accelerations	1961-1965 (2.96)	1961-1966 (4.22)	1961-1965 (-0.25)	1964-1971 (2.97)
	1971-1972 (2.08)	1976-1977 (2.39)	1968-1970 (4.73)	1984-1986 (-0.37)
	1975-1977 (2.23)	1982-1987 (2.54)	1975-1978 (4.63)	1990-1994 (1.31)
	1982-1985 (2.42)	1994-1998 (1.97)	1982-1983 (5.89)	2002-2005 (1.09)
	1992-1997 (1.95)	2003-2005 (1.72)	1990-1994 (7.77)	
	2003-2005 (2.07)		2000-2005 (6.95)	
Decelerations	1966-1970 (2.54)	1967-1975 (3.41)	1966-1967 (4.28)	1972-1983 (1.77)
	1973-1974 (2.00)	1978-1981 (1.91)	1971-1974 (4.44)	1995-2001 (1.00)
	1978-1981 (1.62)	1988-1993 (2.09)	1995-1999 (6.27)	
	1986-1991 (2.04)	1999-2002 (1.77)		
	1998-2002 (2.03)			
Stationary			1979-1981 (5.52)	1961-1963 (1.83)
			1984-1989 (6.33)	1987-1989 (0.05)

Latin America and the Caribbean	Per capita GDP growth (annual %)	Gross capital formation (% of GDP)	National saving (% of GDP)	Foreign saving (% of GDP)
Accelerations	1964-1971 (2.97)	1964-1977 (21.83)	1967-1976 (19.78)	1978-1980 (3.24)
	1984-1986 (-0.37)	1986-1997 (20.61)	1985-1988 (19.08)	1989-1998 (2.34)
	1990-1994 (1.31)	2004-2005 (20.03)	2001-2005 (20.01)	
	2002-2005 (1.09)			
Decelerations	1972-1983 (1.77)	1960-1963 (20.10)	1977-1984 (19.82)	1981-1988 (1.64)
	1995-2001 (1.00)	1978-1985 (22.00)		1999-2005 (0.79)
		1998-2003 (20.57)		
Stationary	1961-1963 (1.83)		1989-2000 (18.50)	1967-1977 (2.34)
	1987-1989 (0.05)			

Table A.1 (continued)

Argentina	Per capita GDP growth (annual %)		Gross capital formation (% of GDP)		National saving (% of GDP)		Foreign saving (% of GDP)	
Accelerations	1961-1969	(2.22)	1967-1977	(24.36)	2000-2004	(18.07)	1976-1982	(1.11)
	1989-1993	(2.45)	1991-1996	(17.77)			1991-1997	(2.72)
	2002-2005	(1.13)	2003-2004	(16.05)				
Decelerations	1970-1976	(1.50)	1960-1962	(23.65)	1976-1999	(18.37)	1983-1990	(1.97)
	1980-1983	(-1.51)	1978-1990	(20.74)			1998-2004	(-0.69)
	1994-2001	(0.66)	1997-2002	(16.83)				
Stationary	1977-1979	(0.30)	1963-1965	(21.31)				
	1984-1988	(-1.68)						
<hr/>								
Brazil	Per capita GDP growth (annual %)		Gross capital formation (% of GDP)		National saving (% of GDP)		Foreign saving (% of GDP)	
Accelerations	1965-1972	(5.59)	1967-1975	(21.98)	1984-1989	(19.66)	1978-1980	(4.43)
	1983-1986	(1.08)	1985-1989	(20.59)	2000-2005	(19.44)	1992-1999	(2.28)
	1991-1995	(0.82)	1993-1996	(21.21)				
	2003-2005	(0.97)						
Decelerations	1961-1964	(0.97)	1960-1966	(19.58)	1975-1983	(18.13)	1975-1977	(4.49)
	1973-1982	(3.27)	1976-1984	(21.39)	1990-1999	(19.37)	1981-1989	(1.66)
	1987-1990	(0.06)	1990-1992	(21.05)			2000-2005	(0.95)
	1996-1999	(0.99)	1997-2005	(20.64)				
Stationary	2000-2002	(0.57)					1990-1991	(-0.28)
<hr/>								
Chile	Per capita GDP growth (annual %)		Gross capital formation (% of GDP)		National saving (% of GDP)		Foreign saving (% of GDP)	
Accelerations	1975-1979	(1.65)	1963-1967	(18.09)	1975-1976	(13.79)	1975-1982	(6.43)
	1983-1992	(4.26)	1973-1979	(18.23)	1984-1992	(16.99)	1991-1996	(3.00)
	2001-2005	(2.72)	1984-1995	(22.42)	2002-2005	(22.01)		
			2004-2005	(21.99)				
Decelerations	1968-1974	(-0.15)	1968-1972	(17.49)	1977-1983	(10.08)	1983-1990	(5.35)
	1980-1982	(0.91)	1980-1983	(16.72)	1997-2001	(21.52)	1997-2005	(1.28)
	1993-2000	(4.15)	1996-2003	(23.69)				
Stationary	1961-1967	(2.10)	1960-1962	(17.22)	1993-1996	(22.73)		

Table A.1 (continued)

Colombia	Per capita GDP growth (annual %)	Gross capital formation (% of GDP)	National saving (% of GDP)	Foreign saving (% of GDP)
Accelerations	1966-1971 (3.04)	1965-1969 (19.40)	1972-1977 (17.64)	1968-1970 (3.47)
	1984-1988 (1.83)	1977-1982 (19.05)	1984-1991 (18.10)	1978-1983 (2.74)
	2000-2005 (0.92)	1991-1995 (20.95)	2001-2005 (16.80)	1991-1996 (1.96)
		2002-2005 (16.92)		
Decelerations	1972-1975 (3.30)	1960-1964 (19.14)	1968-1971 (16.76)	1971-1977 (1.25)
	1979-1983 (1.08)	1970-1976 (18.94)	1978-1983 (16.53)	1984-1990 (1.03)
	1995-1999 (0.11)	1983-1990 (18.96)	1992-2000 (17.12)	1997-2005 (1.53)
		1996-2001 (17.89)		
Stationary	1961-1965 (1.56)			
	1976-1978 (2.68)			
	1989-1994 (2.22)			
<hr/>				
Costa Rica	Per capita GDP growth (annual %)	Gross capital formation (% of GDP)	National saving (% of GDP)	Foreign saving (% of GDP)
Accelerations	1961-1971 (3.31)	1965-1981 (22.59)	1980-1987 (17.56)	1977-1980 (11.34)
	1983-1992 (1.34)	1998-2005 (18.87)	2000-2004 (15.67)	1987-1989 (4.70)
				1997-2004 (4.36)
Decelerations	1972-1982 (1.45)	1988-1997 (21.07)	1977-1979 (13.83)	1981-1986 (7.79)
	1993-1996 (2.50)		1988-1999 (16.53)	1990-1996 (3.98)
	2000-2003 (1.77)			
Stationary	1997-1999 (2.49)	1960-1964 (18.31)		
	2004-2005 (2.12)	1982-1987 (25.40)		
<hr/>				
Mexico	Per capita GDP growth (annual %)	Gross capital formation (% of GDP)	National saving (% of GDP)	Foreign saving (% of GDP)
Accelerations	1961-1964 (4.11)	1960-1980 (21.02)	1994-1998 (19.82)	1986-1992 (2.12)
	1971-1972 (2.78)	1987-1991 (21.80)	2003-2005 (20.18)	
	1976-1979 (3.99)	1995-1998 (23.23)		
	1986-1991 (0.20)			
	1995-1998 (1.65)			
Decelerations	1965-1970 (3.26)	1981-1986 (22.05)	1985-1993 (19.51)	1979-1985 (1.91)
	1980-1985 (0.47)	1999-2002 (22.50)	1999-2002 (20.02)	1993-1997 (3.67)
	1992-1994 (0.83)			2001-2005 (1.63)
	1999-2003 (1.75)			
Stationary	1973-1975 (2.99)	1992-1994 (22.36)	1979-1984 (21.66)	1998-2000 (2.69)
	2004-2005 (1.37)	2003-2005 (21.38)		

Table A.1 (conclusion)

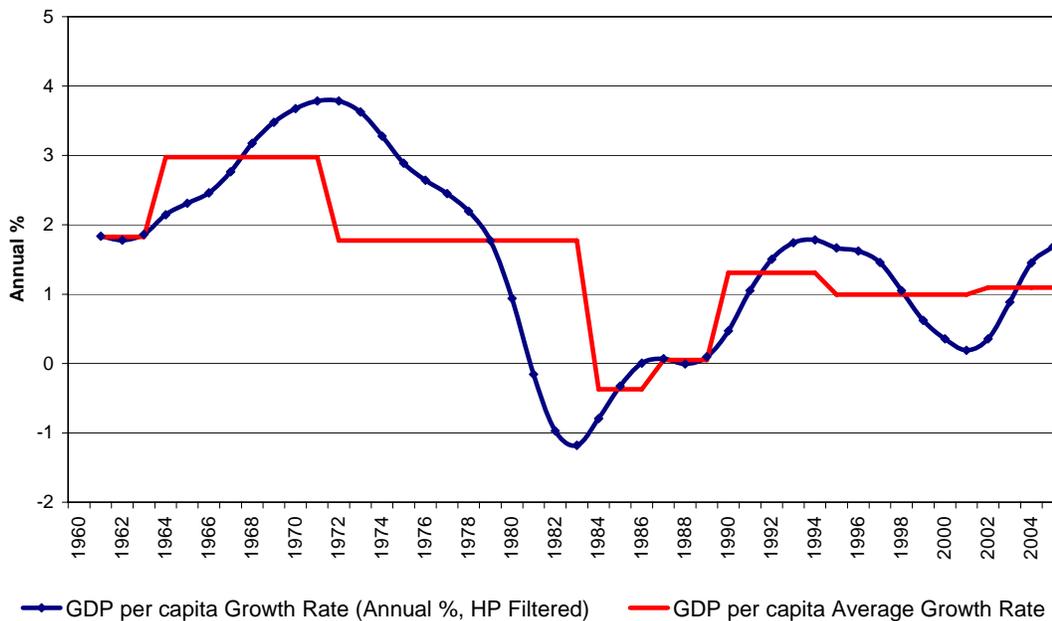
Peru	Per capita GDP growth (annual %)		Gross capital formation (% of GDP)		National saving (% of GDP)		Foreign saving (% of GDP)	
Accelerations	1969-1973	(1.53)	1973-1981	(23.29)	1977-1981	(21.97)	1980-1988	(4.56)
	1984-1985	(-0.93)	1992-1997	(21.55)	1992-1999	(15.83)	1992-1995	(6.41)
	1990-1995	(0.31)			2003-2005	(18.45)		
	2001-2005	(2.12)						
Decelerations	1961-1968	(2.53)	1960-1972	(31.25)	1982-1991	(17.52)	1977-1979	(2.22)
	1974-1977	(0.83)	1982-1991	(22.98)			1989-1991	(6.41)
	1981-1983	(-1.46)	1998-2005	(19.92)			1996-2005	(2.85)
	1986-1989	(-3.06)						
	1996-2000	(1.66)						
Stationary								
	1978-1980	(-0.14)			2000-2002	(17.48)		
<hr/>								
Bolivarian Republic of Venezuela	Per capita GDP growth (annual %)		Gross capital formation (% of GDP)		National saving (% of GDP)		Foreign saving (% of GDP)	
Accelerations	1972-1975	(0.54)	1960-1977	(28.33)	1970-1975	(35.81)	1975-1978	(-0.83)
	1983-1991	(-0.60)	1985-1987	(20.08)	1989-1990	(20.35)	1984-1987	(-1.36)
	2002-2005	(0.04)	1991-1999	(20.95)	1993-2004	(27.50)	1991-1993	(-1.98)
Decelerations							1997-1998	(-3.30)
	1964-1971	(0.83)	1978-1984	(27.08)	1976-1988	(27.24)	1970-1974	(-3.14)
	1976-1982	(-2.20)	1988-1990	(18.55)	1991-1992	(19.78)	1979-1983	(-1.29)
	1992-2001	(-0.90)	2000-2004	(22.38)			1988-1990	(-1.75)
							1994-1996	(-3.20)
						1999-2004	(-7.82)	
Stationary								
	1961-1963	(2.34)						

Source: author's elaboration.

Figure A.1

LATIN AMERICA AND THE CARIBBEAN: PER CAPITA GDP GROWTH, GROSS CAPITAL FORMATION AND NATIONAL AND FOREIGN SAVING

GDP per capita Growth Rate



GDP per capita Growth Rate and Investment Rate

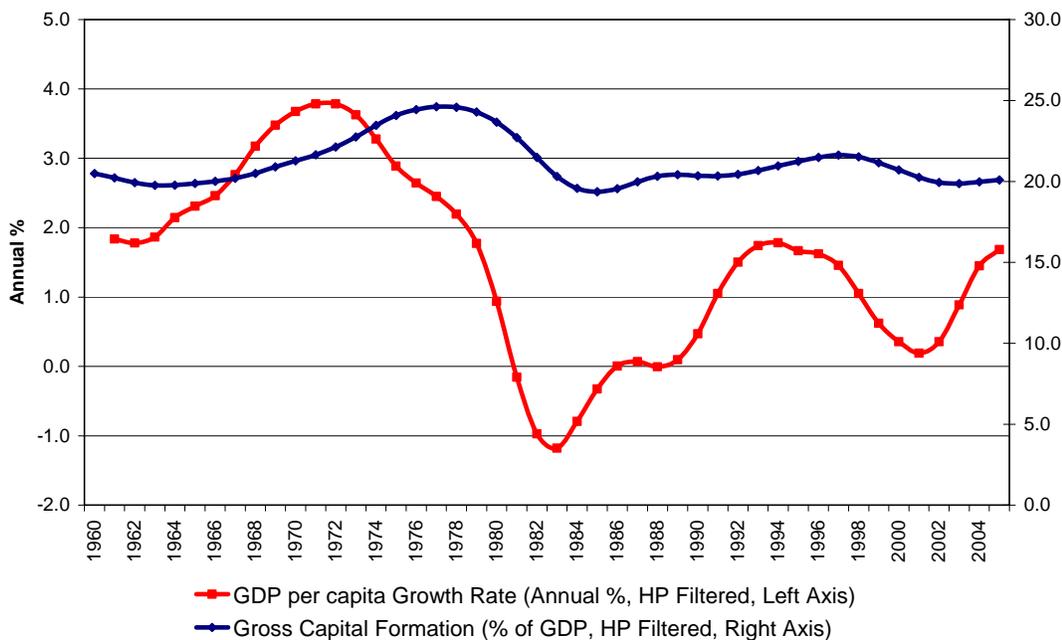
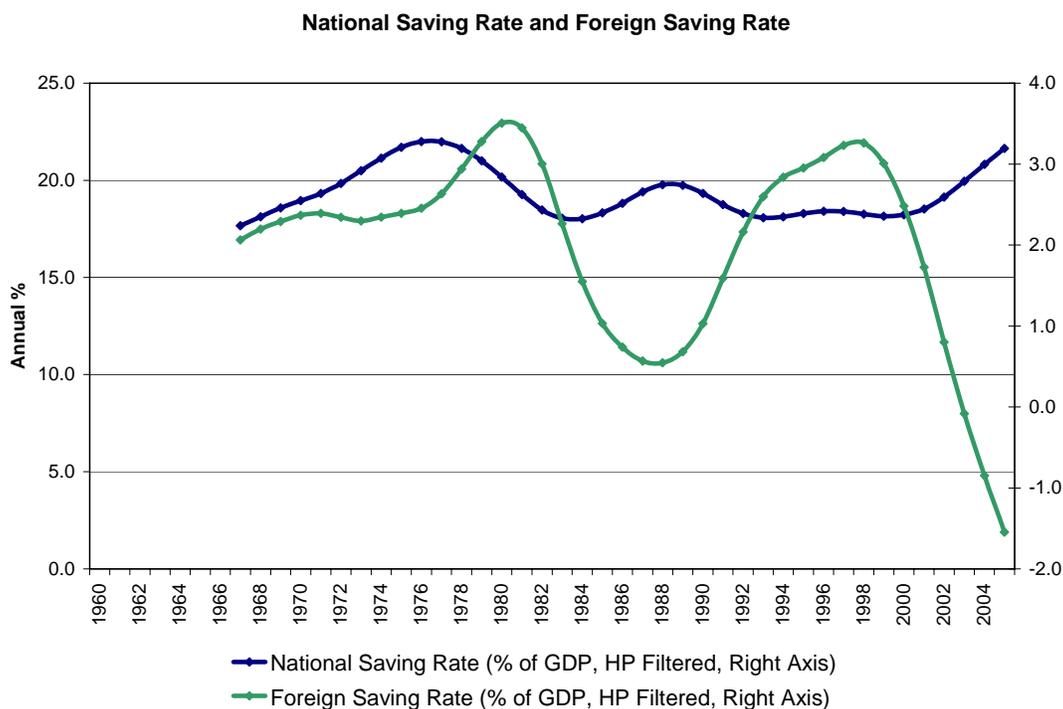
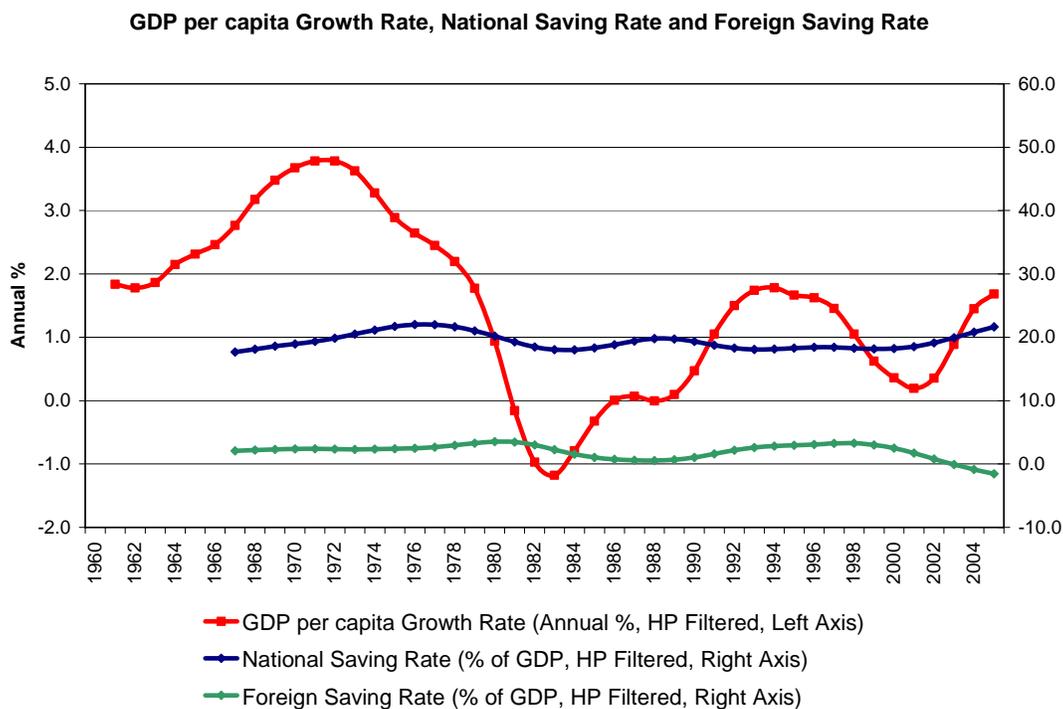


Figure A.1 (conclusion)



Source: author's elaboration.

Table A.2
**LATIN AMERICA AND THE CARIBBEAN:
 ACCELERATIONS AND DECELERATIONS SUMMARY**

Year	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		D		
1961	S	D		
1962	S	D		
1963	S	D		
1964	A	A		
1965	A	A		
1966	A	A		
1967	A	A	A	S
1968	A	A	A	S
1969	A	A	A	S
1970	A	A	A	S
1971	A	A	A	S
1972	D	A	A	S
1973	D	A	A	S
1974	D	A	A	S
1975	D	A	A	S
1976	D	A	A	S
1977	D	A	D	S
1978	D	D	D	A
1979	D	D	D	A
1980	D	D	D	A
1981	D	D	D	D
1982	D	D	D	D
1983	D	D	D	D
1984	A	D	D	D
1985	A	D	A	D
1986	A	A	A	D
1987	S	A	A	D
1988	S	A	A	D
1989	S	A	S	A
1990	A	A	S	A
1991	A	A	S	A
1992	A	A	S	A
1993	A	A	S	A
1994	A	A	S	A
1995	D	A	S	A
1996	D	A	S	A
1997	D	A	S	A
1998	D	D	S	A
1999	D	D	S	D
2000	D	D	S	D
2001	D	D	A	D
2002	A	D	A	D
2003	A	D	A	D
2004	A	A	A	D
2005	A	A	A	D

A

 Acceleration

S

 Stability

D

 Deceleration

Source: author's elaboration.

Note: All series have been HP filtered.

Figure A.2

UNITED STATES, OECD, EAST ASIA AND PACIFIC: GDP PER CAPITA GROWTH RATE, AVERAGE GROWTH RATE PER SPELL, AND COMOVEMENTS WITH LATIN AMERICA AND CARIBBEAN GDP PER CAPITA GROWTH RATE

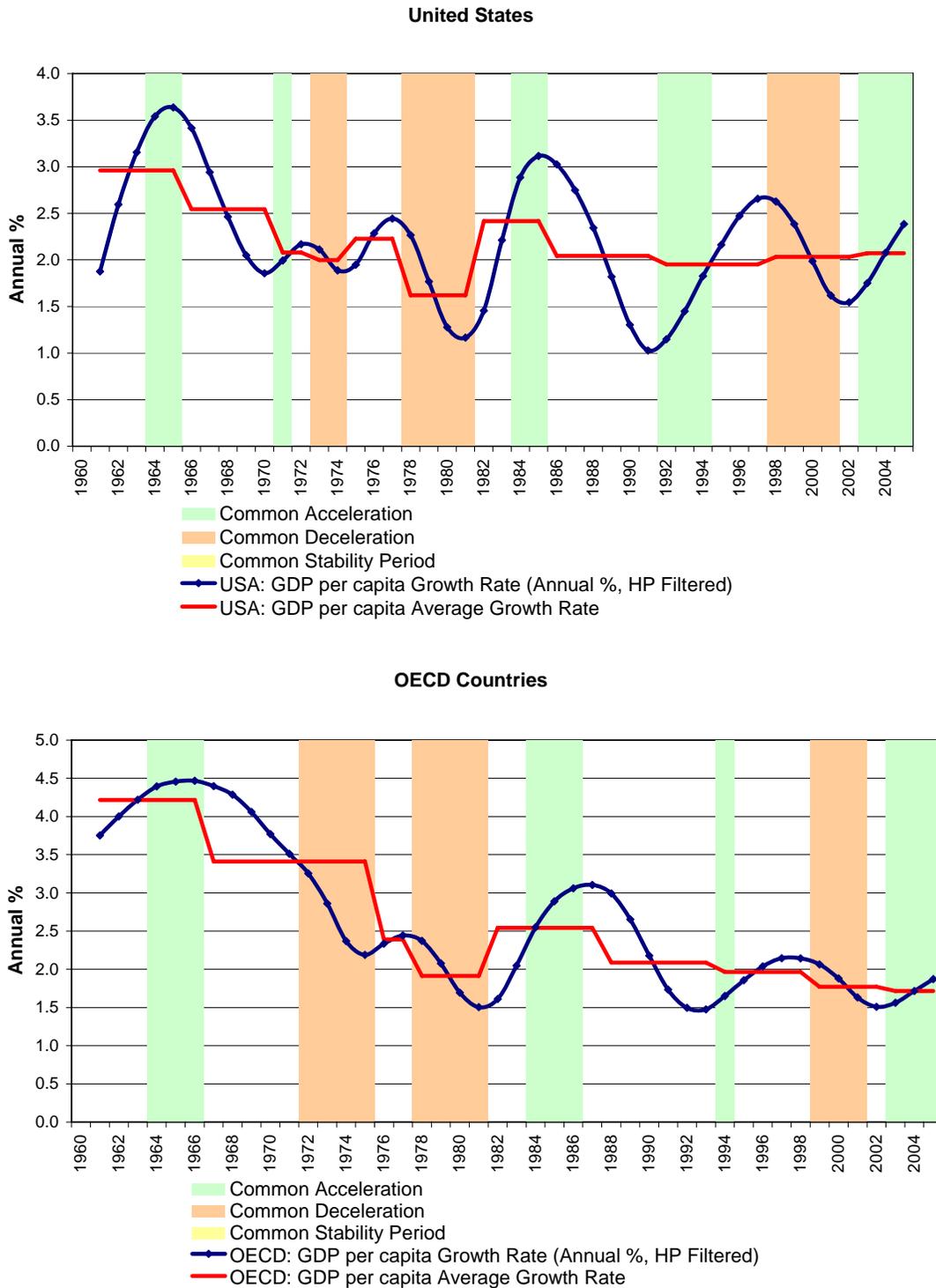
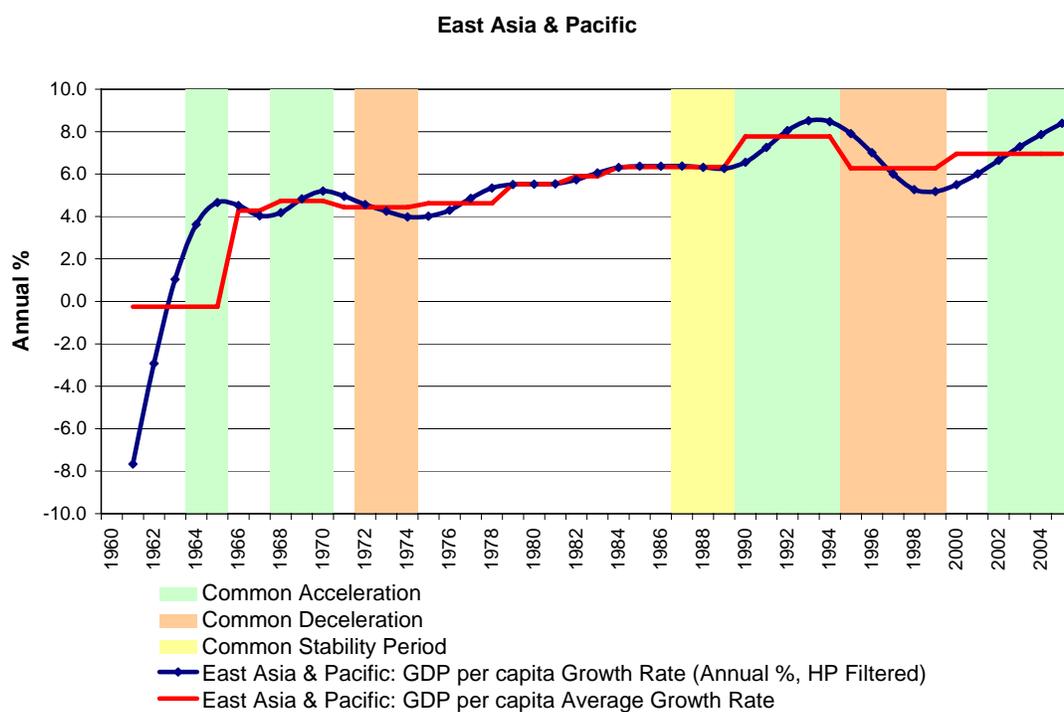


Figure A.2 (conclusion)



Source: author's elaboration.

Table A.3
**REGIONAL BEHAVIOUR:
ACCELERATIONS AND DECELERATIONS SUMMARY**

Year	USA: GDP per capita growth (annual %)	OECD: GDP per capita growth (annual %)	East Asia & Pacific: GDP per capita growth (annual %)	Latin America & Caribbean: GDP per capita growth (annual %)
1960				
1961	A	A	A	S
1962	A	A	A	S
1963	A	A	A	S
1964	A	A	A	A
1965	A	A	A	A
1966	D	A	D	A
1967	D	D	D	A
1968	D	D	A	A
1969	D	D	A	A
1970	D	D	A	A
1971	A	D	D	A
1972	A	D	D	D
1973	D	D	D	D
1974	D	D	D	D
1975	A	D	A	D
1976	A	A	A	D
1977	A	A	A	D
1978	D	D	A	D
1979	D	D	S	D
1980	D	D	S	D
1981	D	D	S	D
1982	A	A	A	D
1983	A	A	A	D
1984	A	A	S	A
1985	A	A	S	A
1986	D	A	S	A
1987	D	A	S	S
1988	D	D	S	S
1989	D	D	S	S
1990	D	D	A	A
1991	D	D	A	A
1992	A	D	A	A
1993	A	D	A	A
1994	A	A	A	A
1995	A	A	D	D
1996	A	A	D	D
1997	A	A	D	D
1998	D	A	D	D
1999	D	D	D	D
2000	D	D	A	D
2001	D	D	A	D
2002	D	D	A	A
2003	A	A	A	A
2004	A	A	A	A
2005	A	A	A	A

A

 Acceleration

S

 Stability

D

 Deceleration

Source: author's elaboration.
Note: All series have been HP filtered

Table A.4

LATIN AMERICA AND THE CARIBBEAN: GRANGER CAUSALITY TESTS

Year	Series definitions				
Pairwise Granger causality tests Sample: 1960 2005 Lags: 3	GDP: Per capita GDP growth (annual %, HP-filtered)				
	INV: Gross capital formation (% of GDP, HP-filtered)				
	FS : Foreign saving (% of GDP, HP-filtered)				
	NS : National saving (% of GDP, HP-filtered)				
Null hypothesis:	Obs	F-statistic	Probability	Conclusion	
INV does not Granger-cause GDP	42	11.0421	3.00E-05	*	At 1% significance level, INV Granger-causes GDP
GDP does not Granger-cause INV		12.784	8.50E-06	*	At 1% significance level, GDP Granger-causes INV
NS does not Granger-cause GDP	36	2.77042	0.0594	***	At 10% significance level, NS Granger-causes GDP
GDP does not Granger-cause NS		2.7165	0.06288	***	At 10% significance level, GDP Granger-causes NS
FS does not Granger-cause GDP	36	6.32135	0.00197	*	At 1% significance level, FS Granger-causes GDP
GDP does not Granger-cause FS		4.48089	0.01056	**	At 5% significance level, GDP Granger-causes FS
NS does not Granger-cause INV	36	0.49009	0.69188		NS does not Granger-cause INV
INV does not Granger-cause NS		0.68415	0.56897		INV does not Granger-cause NS
FS does not Granger-cause INV	36	0.7571	0.5273		FS does not Granger-cause INV
INV does not Granger-cause FS		0.60115	0.61947		INV does not Granger-cause FS
FS does not Granger-cause NS	36	0.92564	0.4408		FS does not Granger-cause NS
NS does not Granger-cause FS		0.59704	0.62206		NS does not Granger-cause FS

Source: author's elaboration.

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.5

**LATIN AMERICA:
PROBABILITY OF LEADS AND LAGS AMONG GROWTH, INVESTMENT AND SAVING**

Probability of Leads and Lags on Growth

	Investment Rate			National Saving Rate			Foreign Saving Rate			
	Lead	Contemporaneous	Lag	Lead	Contemporaneous	Lag	Lead	Contemporaneous	Lag	
Total Growth Transitions										
All Countries										
Accelerations	27	4	1	15	8	2	7	4	2	9
Decelerations	28	6	3	12	5	4	5	3	2	16
Stationary	13	0	1	1	0	0	0	0	0	0
Percentages										
Accelerations	14.8%	3.7%	55.6%	29.6%	7.4%	25.9%	14.8%	7.4%	33.3%	
Decelerations	21.4%	10.7%	42.9%	17.9%	14.3%	17.9%	10.7%	7.1%	57.1%	
Stationary	0.0%	7.7%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Probability of Leads and Lags on Investment Rate

Probability of Leads and Lags on National Saving Rate

	National Saving Rate			Foreign Saving Rate				Foreign Saving Rate			
	Lead	Contemporaneous	Lag	Lead	Contemporaneous	Lag		Total National Saving	Lead	Contemporaneous	Lag
Total Investment Transitions											
All Countries											
Accelerations	25	11	3	2	5	4	7	19	8	2	4
Decelerations	27	7	4	3	9	1	5	17	7	1	5
Stationary	8	0	0	0	0	0	0	2	0	0	0
Percentages											
Accelerations	44.0%	12.0%	8.0%	20.0%	16.0%	28.0%	42.1%	10.5%	21.1%		
Decelerations	25.9%	14.8%	11.1%	33.3%	3.7%	18.5%	41.2%	5.9%	29.4%		
Stationary	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		

Source: author's elaboration.

Figure A.3
ARGENTINA: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT, NATIONAL AND FOREIGN SAVING RATES

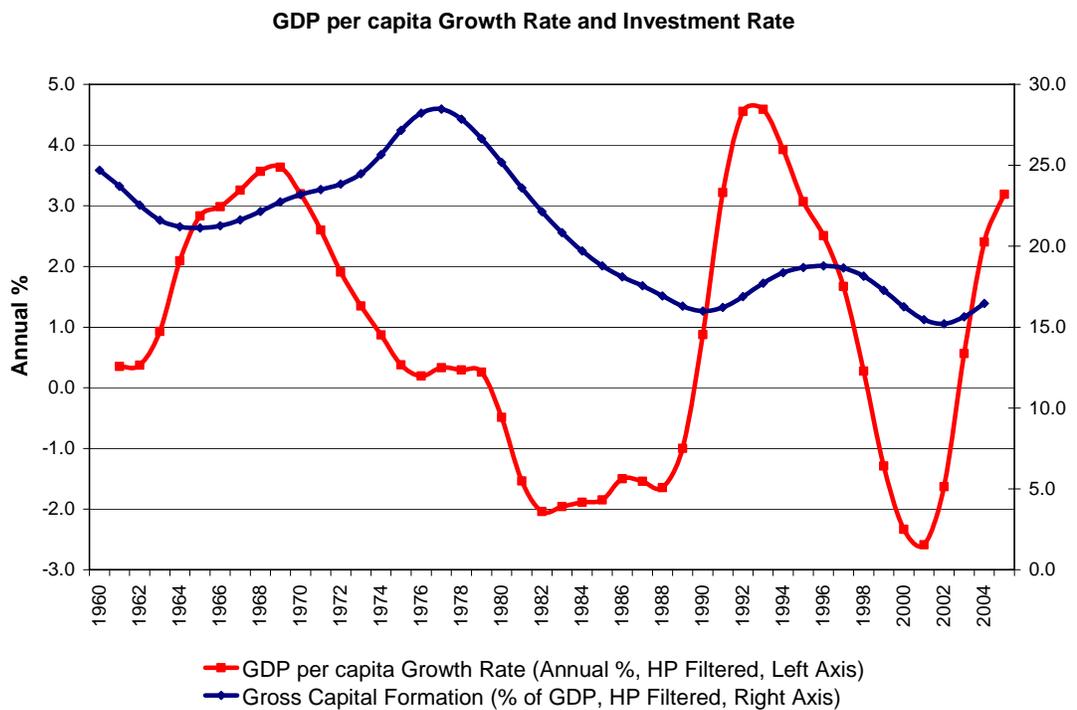
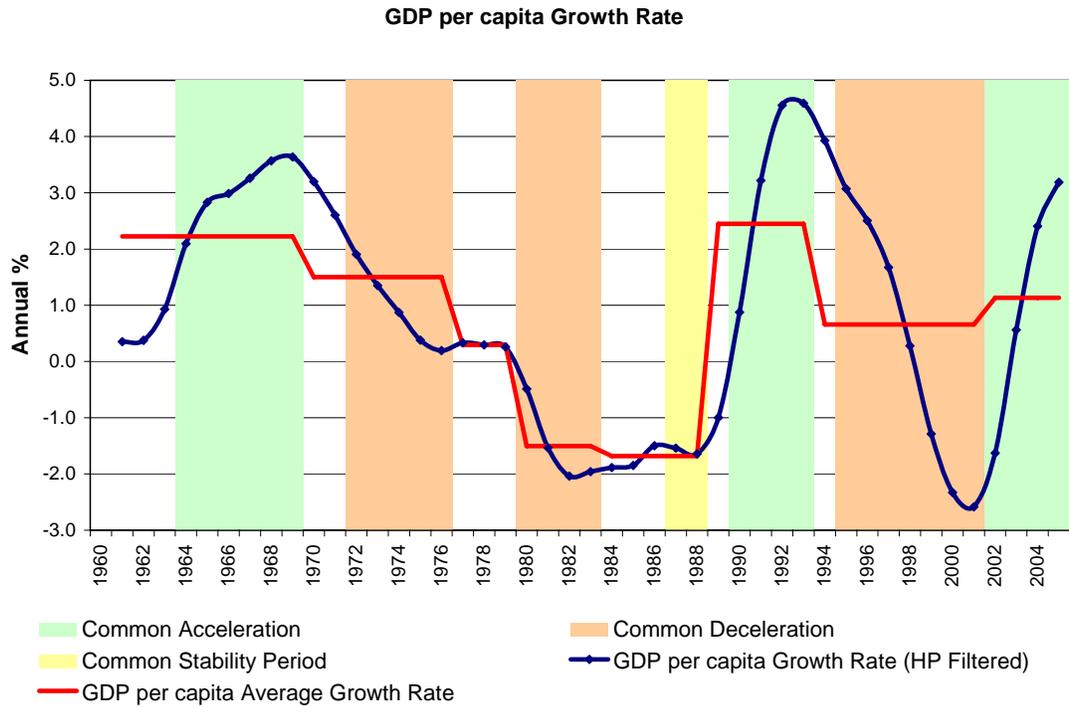
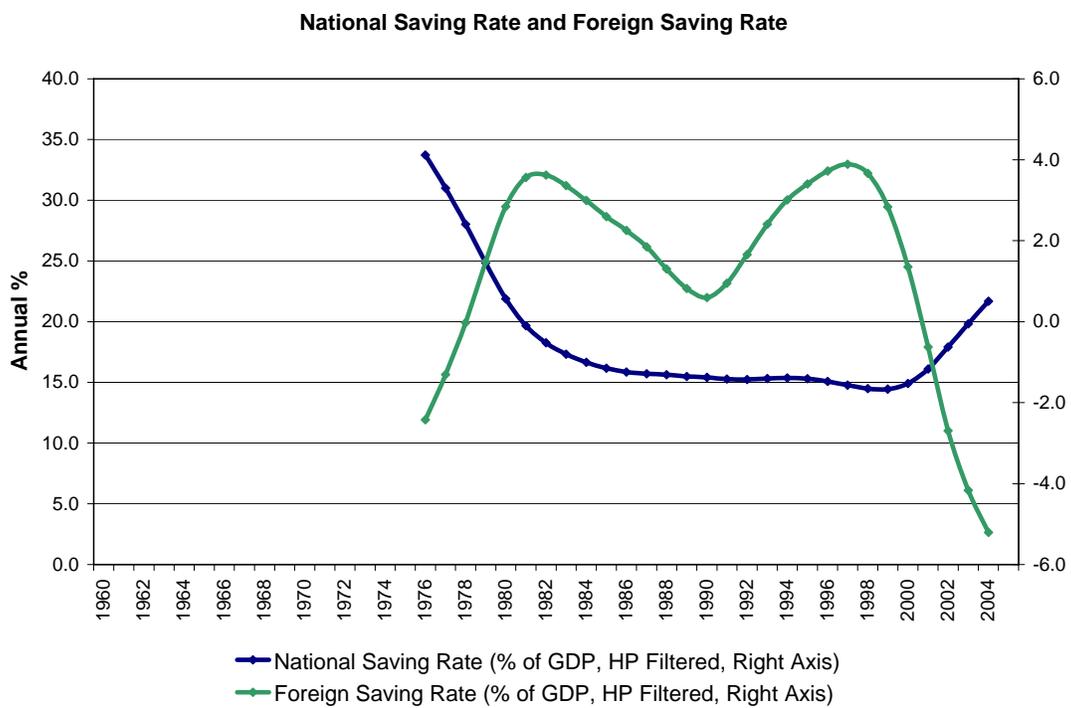
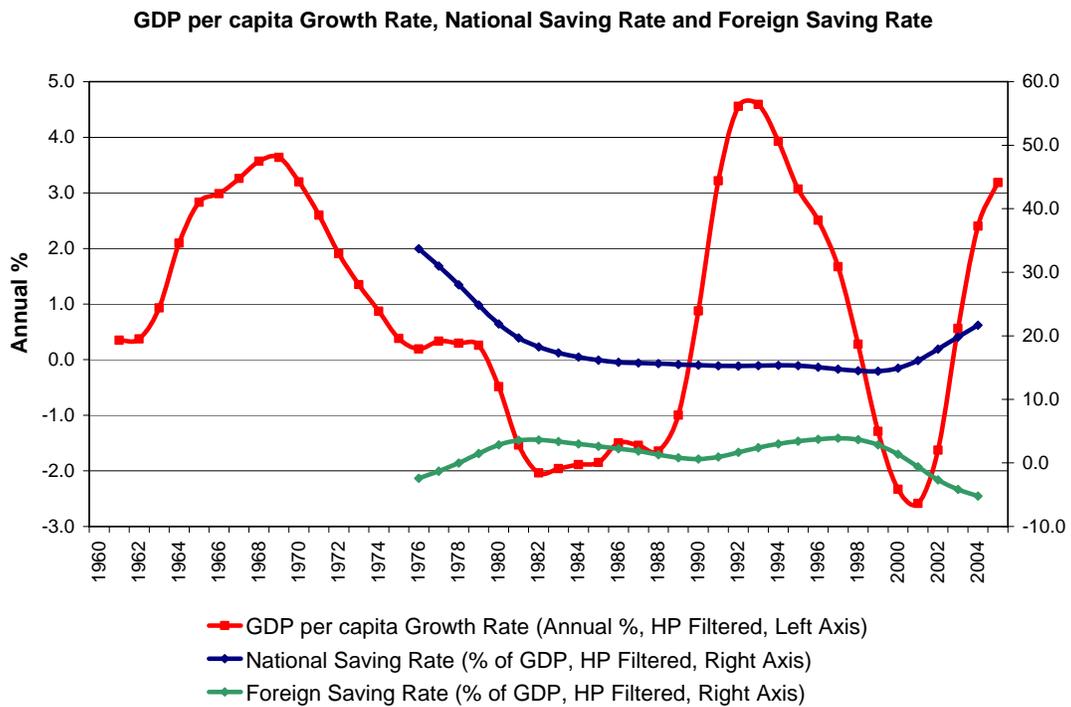


Figure A.3 (conclusion)



Source: author's elaboration.

Table A.6

ARGENTINA: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Argentina: Accelerations and Decelerations				Argentina and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		D				D		
1961	A	D				D		
1962	A	D				D		
1963	A	S						
1964	A	S			A			
1965	A	S			A			
1966	A	A			A	A		
1967	A	A			A	A		
1968	A	A			A	A		
1969	A	A			A	A		
1970	D	A				A		
1971	D	A				A		
1972	D	A			D	A		
1973	D	A			D	A		
1974	D	A			D	A		
1975	D	A			D	A		
1976	D	A	D	A	D	A		
1977	S	A	D	A		A	D	
1978	S	D	D	A		D	D	A
1979	S	D	D	A		D	D	A
1980	D	D	D	A	D	D	D	A
1981	D	D	D	A	D	D	D	
1982	D	D	D	A	D	D	D	
1983	D	D	D	D	D	D	D	D
1984	S	D	D	D		D	D	D
1985	S	D	D	D		D		D
1986	S	D	D	D				D
1987	S	D	D	D	S			D
1988	S	D	D	D	S			D
1989	A	D	D	D				D
1990	A	D	D	D	A			
1991	A	A	D	A	A	A		A
1992	A	A	D	A	A	A		A
1993	A	A	D	A	A	A		A
1994	D	A	D	A		A		A
1995	D	A	D	A	D	A		A
1996	D	A	D	A	D	A		A
1997	D	D	D	A	D			A
1998	D	D	D	D	D	D		
1999	D	D	D	D	D	D		D
2000	D	D	A	D	D	D		D
2001	D	D	A	D	D	D	A	D
2002	A	D	A	D	A	D	A	D
2003	A	A	A	D	A		A	D
2004	A	A	A	D	A	A	A	D
2005	A				A			

A Acceleration
 D Deceleration
 S Stability

Source: author's elaboration.

Note: All series have been HP filtered

Table A.7
ARGENTINA: GRANGER-CAUSALITY TESTS

ARGENTINA: HP Filtered Series		Series Definitions			
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)			
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)			
Lags: 3		FS: Foreign Savings (% of GDP, HP filtered)			
		NS: National Savings (% of GDP, HP filtered)			
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion	
INV does not Granger Cause GDP	41	0.9643	0.4208	INV does not Granger Cause GDP	
GDP does not Granger Cause INV		3.65772	0.02184	** At 5% significance level, GDP Granger Cause INV	
NS does not Granger Cause GDP	25	0.43963	0.72743	NS does not Granger Cause GDP	
GDP does not Granger Cause NS		1.38923	0.27827	GDP does not Granger Cause NS	
FS does not Granger Cause GDP	26	2.73087	0.07248	*** At 10% significance level, FS Granger Cause GDP	
GDP does not Granger Cause FS		2.95776	0.05852	*** At 10% significance level, GDP Granger Cause FS	
NS does not Granger Cause INV	24	2.06811	0.14246	NS does not Granger Cause INV	
INV does not Granger Cause NS		1.22892	0.32983	INV does not Granger Cause NS	
FS does not Granger Cause INV	26	4.75895	0.01223	** At 5% significance level, FS Granger Cause INV	
INV does not Granger Cause FS		0.12129	0.94643	INV does not Granger Cause FS	
FS does not Granger Cause NS	24	13.6506	0.000088	* At 1% significance level, FS Granger Cause NS	
NS does not Granger Cause FS		2.58986	0.08669	*** At 10% significance level, NS Granger Cause FS	

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.8
ARGENTINA: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	22.22%	75.00%	15.79%	77.78%	25.00%	84.21%
Gross Capital Formation	5.00%	100.00%	27.27%	95.00%	0.00%	72.73%
National Savings	20.00%	--	66.67%	80.00%	--	33.33%
Foreign Savings	28.57%	--	20.00%	71.43%	--	80.00%

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	40.00%	75.00%	18.18%	60.00%	25.00%	81.82%
Gross Capital Formation	0.00%	100.00%	26.67%	100.00%	0.00%	73.33%
National Savings	42.86%	57.14%
Foreign Savings	57.14%	..	14.29%	42.86%	..	85.71%

Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	0.00%	..	12.50%	100.00%	..	87.50%
Gross Capital Formation	12.50%	..	28.57%	87.50%	..	71.43%
National Savings	20.00%	..	100.00%	80.00%	..	0.00%
Foreign Savings	0.00%	..	25.00%	100.00%	..	75.00%

Source: author's elaboration.

Figure A.4
BRAZIL: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT,
NATIONAL AND FOREIGN SAVING RATES

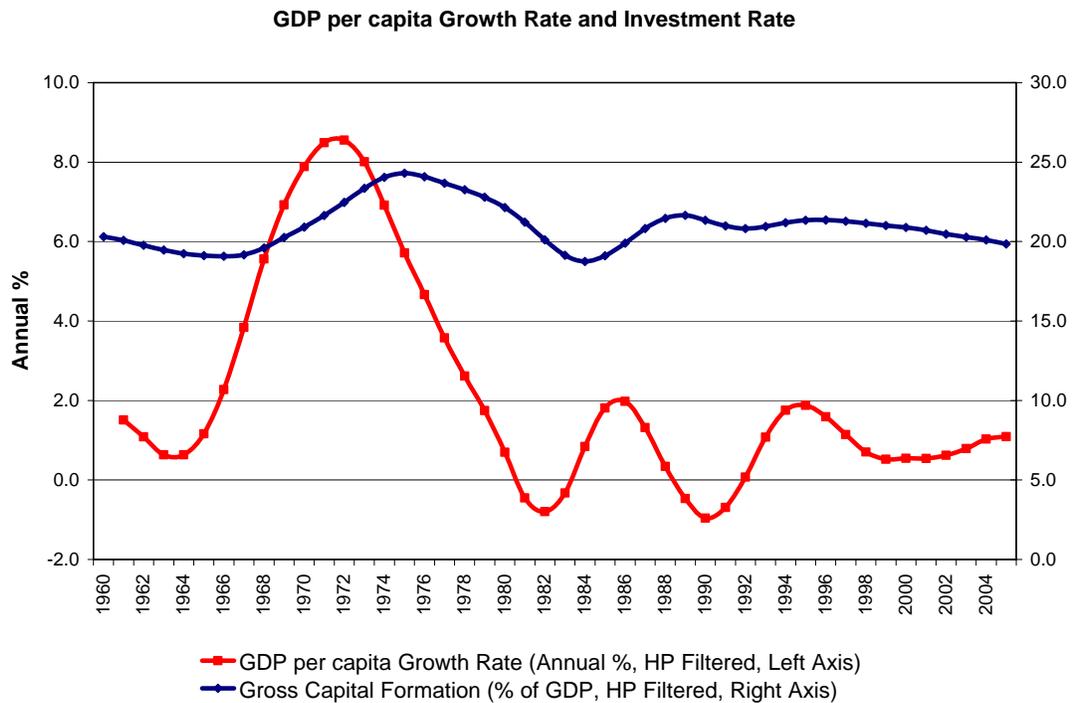
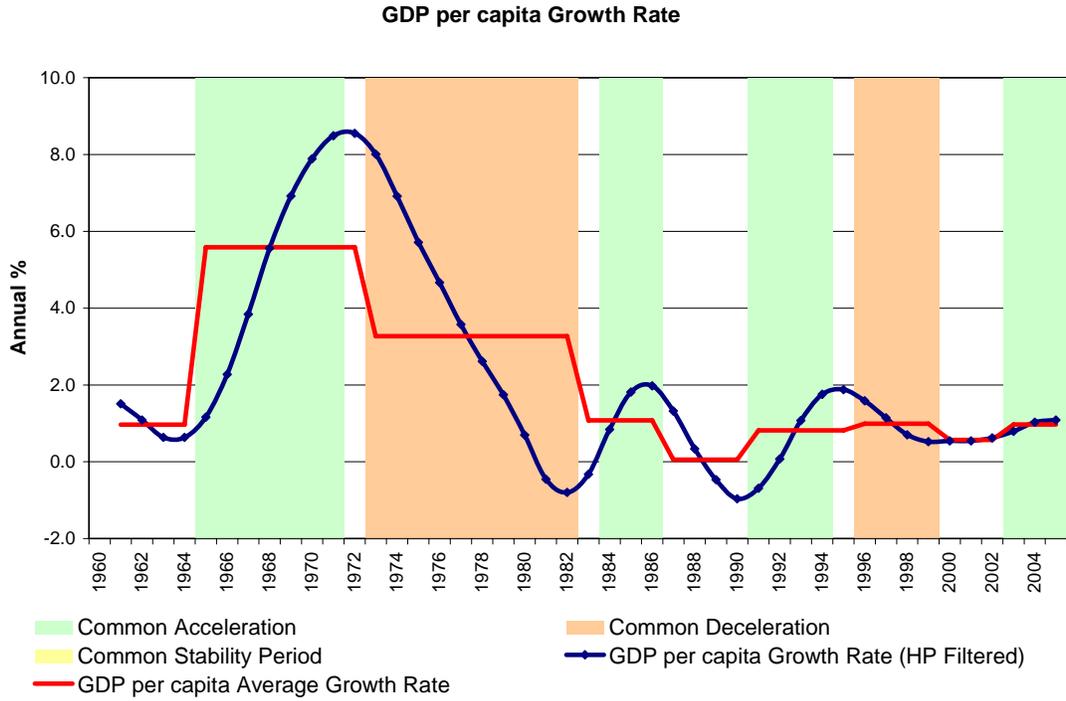
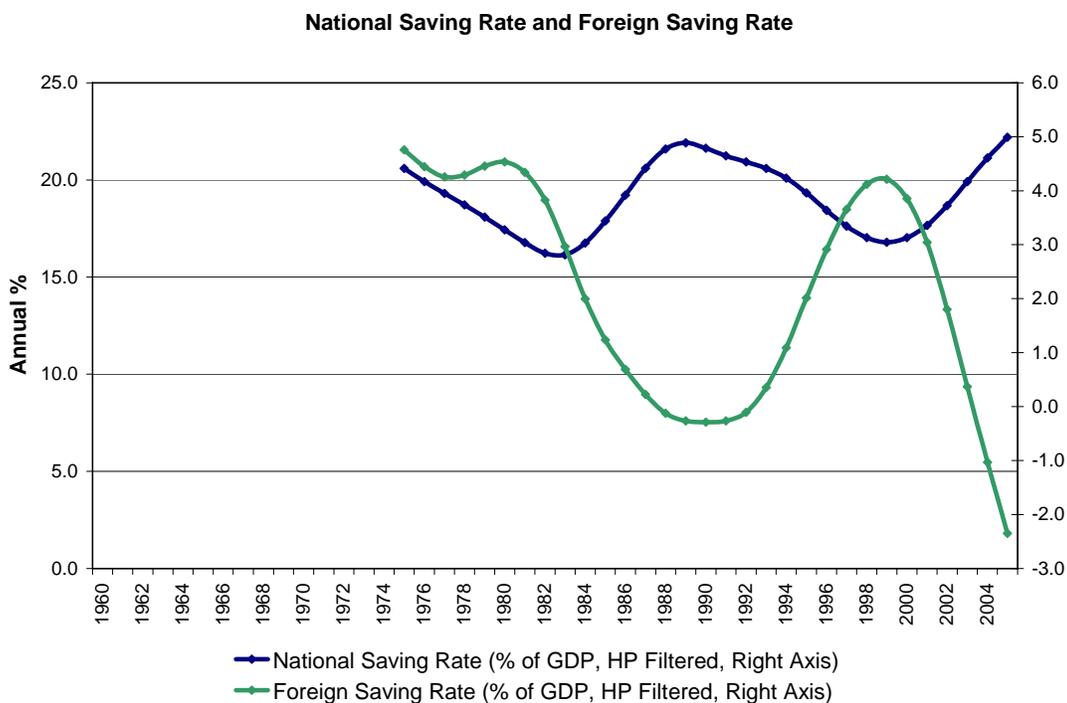
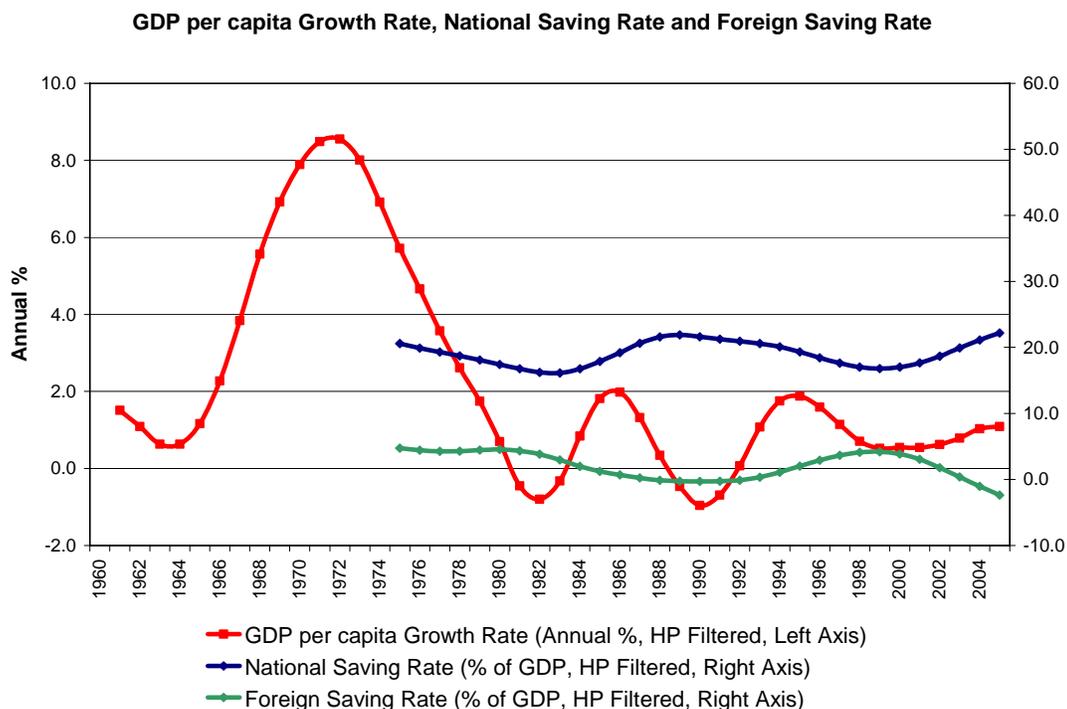


Figure A.4 (conclusion)



Source: author's elaboration.

Table A.9
BRAZIL: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Brazil: Accelerations and Decelerations				Brazil and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		D				D		
1961	D	D				D		
1962	D	D				D		
1963	D	D				D		
1964	D	D				D		
1965	A	D			A			
1966	A	D			A			
1967	A	A			A	A		
1968	A	A			A	A		
1969	A	A			A	A		
1970	A	A			A	A		
1971	A	A			A	A		
1972	A	A				A		
1973	D	A			D	A		
1974	D	A			D	A		
1975	D	A	D	D	D	A		
1976	D	D	D	D	D			
1977	D	D	D	D	D		D	
1978	D	D	D	A	D	D	D	A
1979	D	D	D	A	D	D	D	A
1980	D	D	D	A	D	D	D	A
1981	D	D	D	D	D	D	D	D
1982	D	D	D	D	D	D	D	D
1983	A	D	D	D		D	D	D
1984	A	D	A	D	A	D		D
1985	A	A	A	D	A		A	D
1986	A	A	A	D	A	A	A	D
1987	D	A	A	D		A	A	D
1988	D	A	A	D		A	A	D
1989	D	A	A	D		A		D
1990	D	D	D	S				
1991	A	D	D	S	A			
1992	A	D	D	A	A			A
1993	A	A	D	A	A	A		A
1994	A	A	D	A	A	A		A
1995	A	A	D	A		A		A
1996	D	A	D	A	D	A		A
1997	D	D	D	A	D			A
1998	D	D	D	A	D	D		A
1999	D	D	D	A	D	D		
2000	S	D	A	D		D		D
2001	S	D	A	D		D	A	D
2002	S	D	A	D		D	A	D
2003	A	D	A	D	A	D	A	D
2004	A	D	A	D	A		A	D
2005	A	D	A	D	A		A	D

A Acceleration
 D Deceleration
 S Stability

Source: author's elaboration.

Note: All series have been HP filtered.

Table A.10
BRAZIL: GRANGER-CAUSALITY TESTS

BRAZIL: HP Filtered Series		Series Definitions			
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)			
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)			
Lags: 3		FS: Foreign Savings (% of GDP, HP filtered)			
		NS: National Savings (% of GDP, HP filtered)			
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion	
INV does not Granger Cause GDP	42	15.0364	1.90E-06	*	At 1% significance level, INV Granger Cause GDP
GDP does not Granger Cause INV		7.9878	0.00035	*	At 1% significance level, GDP Granger Cause INV
NS does not Granger Cause GDP	26	2.15343	0.12712		NS does not Granger Cause GDP
GDP does not Granger Cause NS		6.54998	0.00316	*	At 1% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	28	1.27425	0.30892		FS does not Granger Cause GDP
GDP does not Granger Cause FS		4.66784	0.01189	**	At 5% significance level, GDP Granger Cause FS
NS does not Granger Cause INV	26	7.66977	0.00148	*	At 1% significance level, NS Granger Cause INV
INV does not Granger Cause NS		9.74076	0.00042	*	At 1% significance level, INV Granger Cause NS
FS does not Granger Cause INV	28	1.31647	0.29548		FS does not Granger Cause INV
INV does not Granger Cause FS		3.62412	0.02984	**	At 5% significance level, INV Granger Cause FS
FS does not Granger Cause NS	26	8.50173	0.00087	*	At 1% significance level, FS Granger Cause NS
NS does not Granger Cause FS		5.06029	0.00961	*	At 1% significance level, NS Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.11
BRAZIL: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	16.67%	..	41.18%	83.33%	..	58.82%
Gross Capital Formation	7.14%	..	31.25%	92.86%	..	68.75%
National Savings	33.33%	..	22.22%	66.67%	..	77.78%
Foreign Savings	0.00%	..	33.33%	100.00%	..	66.67%

Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	12.50%	100.00%	20.00%	87.50%	0.00%	80.00%
Gross Capital Formation	0.00%	..	50.00%	100.00%	..	50.00%
National Savings	16.67%	..	100.00%	83.33%	..	0.00%
Foreign Savings	12.50%	100.00%	0.00%	87.50%	0.00%	100.00%

Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	15.00%	100.00%	36.36%	85.00%	0.00%	63.64%
Gross Capital Formation	5.56%	--	39.29%	94.44%	--	60.71%
National Savings	25.00%	--	63.16%	75.00%	--	36.84%
Foreign Savings	9.09%	100.00%	22.22%	90.91%	0.00%	77.78%

Source: author's elaboration.

Figure A.5
CHILE: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT,
NATIONAL AND FOREIGN SAVING RATES

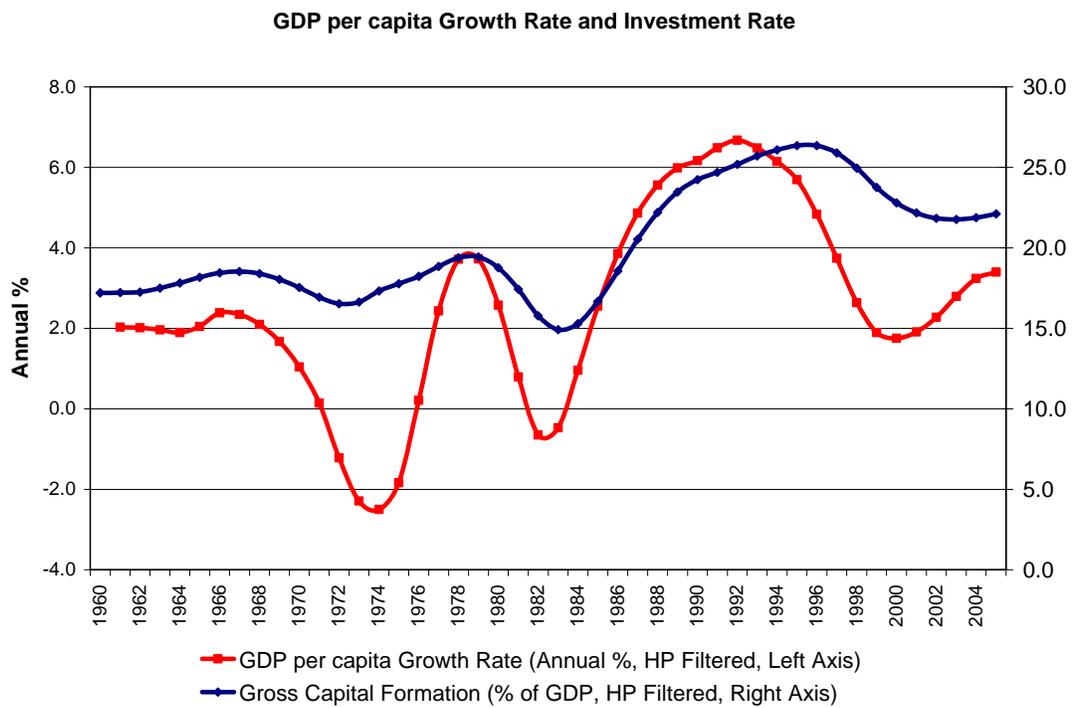
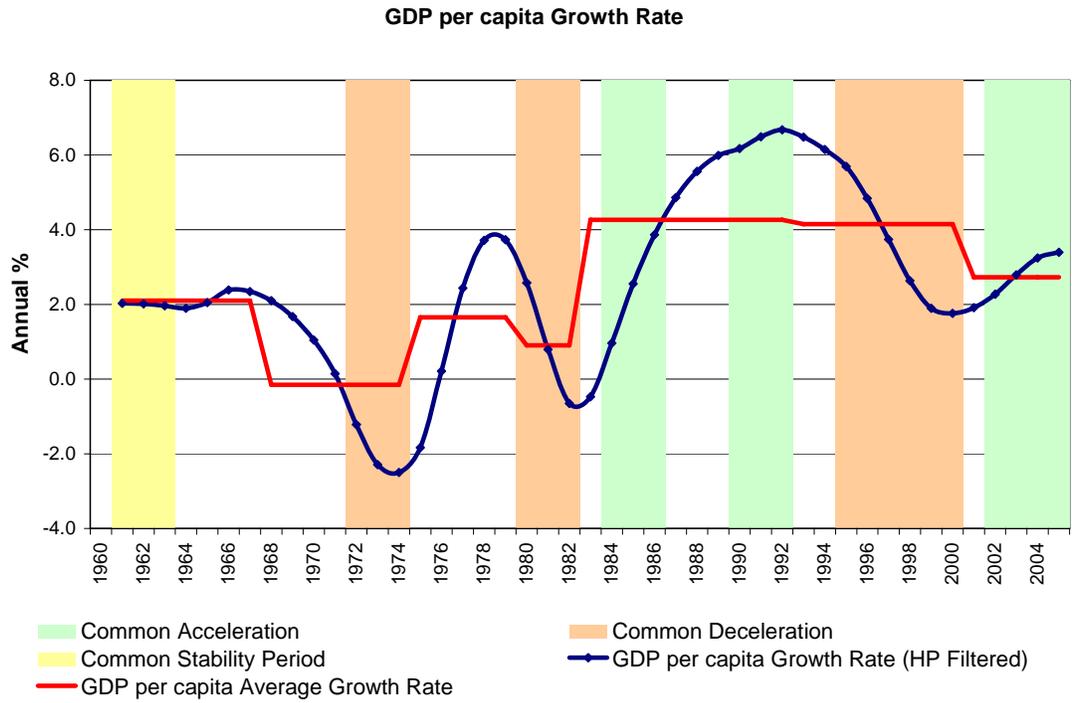
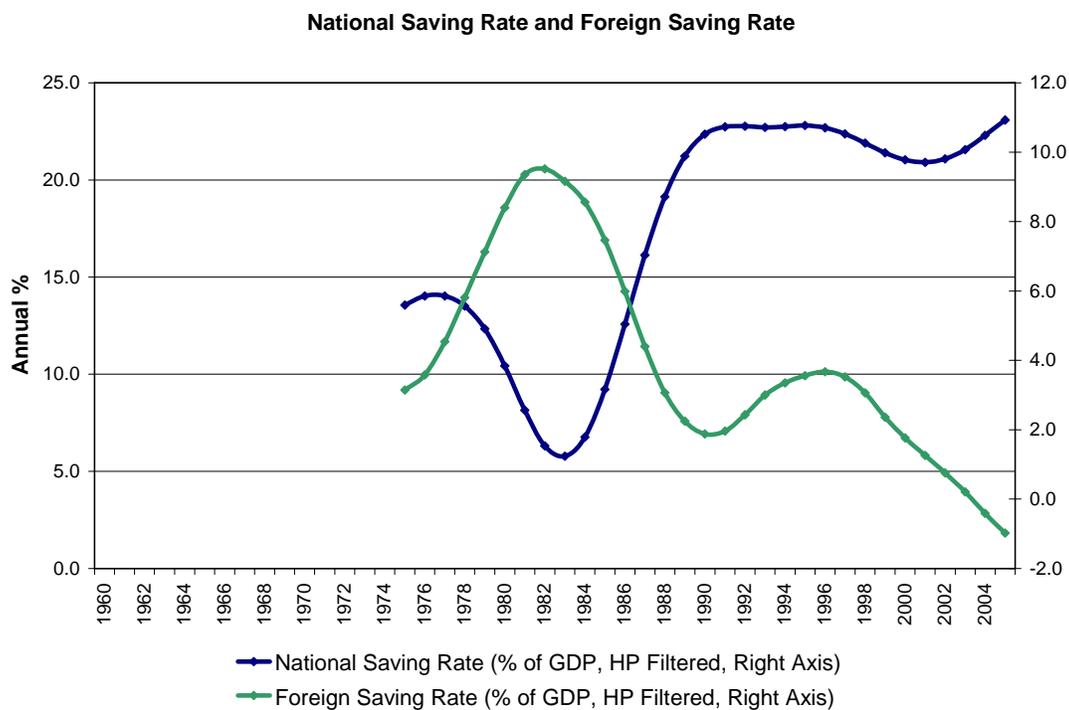
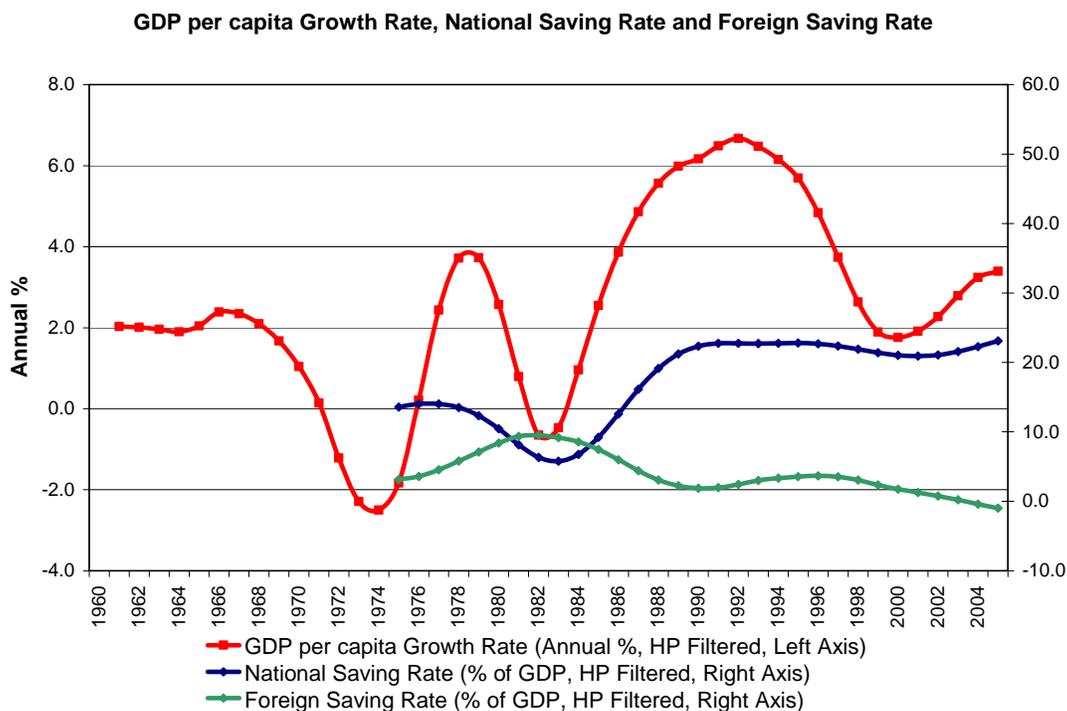


Figure A.5 (conclusion)



Source: author's elaboration.

Table A.12
CHILE: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Chile: Accelerations and Decelerations				Chile and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		S						
1961	S	S			S			
1962	S	S			S			
1963	S	A			S			
1964	S	A				A		
1965	S	A				A		
1966	S	A				A		
1967	S	A				A		
1968	D	D						
1969	D	D						
1970	D	D						
1971	D	D						
1972	D	D			D			
1973	D	A			D	A		
1974	D	A			D	A		
1975	A	A	A	A		A	A	
1976	A	A	A	A		A	A	
1977	A	A	D	A		A	D	
1978	A	A	D	A			D	A
1979	A	A	D	A			D	A
1980	D	D	D	A	D	D	D	A
1981	D	D	D	A	D	D	D	
1982	D	D	D	A	D	D	D	
1983	A	D	D	D		D	D	D
1984	A	A	A	D	A			D
1985	A	A	A	D	A		A	D
1986	A	A	A	D	A	A	A	D
1987	A	A	A	D		A	A	D
1988	A	A	A	D		A	A	D
1989	A	A	A	D		A		D
1990	A	A	A	D	A	A		
1991	A	A	A	A	A	A		A
1992	A	A	A	A	A	A		A
1993	D	A	S	A		A	S	A
1994	D	A	S	A		A	S	A
1995	D	A	S	A	D	A	S	A
1996	D	D	S	A	D		S	A
1997	D	D	D	D	D			
1998	D	D	D	D	D	D		
1999	D	D	D	D	D	D		D
2000	D	D	D	D	D	D		D
2001	A	D	D	D		D		D
2002	A	D	A	D	A	D		D
2003	A	D	A	D	A	D	A	D
2004	A	A	A	D	A	A	A	D
2005	A	A	A	D	A	A	A	D

A Acceleration D Deceleration S Stability

Source: author's elaboration.
Note: All series have been HP filtered.

Table A.13
CHILE: GRANGER-CAUSALITY TESTS

CHILE: HP Filtered Series		Series Definitions			
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)			
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)			
Lags: 3		FS: Foreign Savings (% of GDP, HP filtered)			
		NS: National Savings (% of GDP, HP filtered)			
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion	
INV does not Granger Cause GDP	42	2.43952	0.08073	***	At 10% significance level, INV Granger Cause GDP
GDP does not Granger Cause INV		6.55441	0.00124	*	At 1% significance level, GDP Granger Cause INV
NS does not Granger Cause GDP	26	3.84347	2.63E-02	**	At 5% significance level, NS Granger Cause GDP
GDP does not Granger Cause NS		52.0541	2.30E-09	*	At 1% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	28	3.21516	0.04366	**	At 5% significance level, FS Granger Cause GDP
GDP does not Granger Cause FS		0.1041	0.95676		GDP does not Granger Cause FS
NS does not Granger Cause INV	26	4.98248	0.01022	**	At 5% significance level, NS Granger Cause INV
INV does not Granger Cause NS		71.1558	1.60E-10	*	At 1% significance level, INV Granger Cause NS
FS does not Granger Cause INV	28	1.95865	0.15115		FS does not Granger Cause INV
INV does not Granger Cause FS		1.18187	0.34051		INV does not Granger Cause FS
FS does not Granger Cause NS	26	1.18198	0.34298		FS does not Granger Cause NS
NS does not Granger Cause FS		3.03113	0.05466	***	At 10% significance level, NS Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.14
CHILE: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	18.18%	55.56%	0.00%	81.82%	44.44%	100.00%
Gross Capital Formation	45.45%	..	63.16%	54.55%	..	36.84%
National Savings	25.00%	..	40.00%	75.00%	..	60.00%
Foreign Savings	66.67%	..	61.54%	33.33%	..	38.46%
Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	33.33%	100.00%	0.00%	66.67%	0.00%	100.00%
Gross Capital Formation	22.22%	..	42.86%	77.78%	..	57.14%
National Savings	28.57%	..	100.00%	71.43%	..	0.00%
Foreign Savings	0.00%	..	30.00%	100.00%	..	70.00%
Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	50.00%	57.14%	33.33%	50.00%	42.86%	66.67%
Gross Capital Formation	19.23%	100.00%	41.18%	80.77%	0.00%	58.82%
National Savings	33.33%	0.00%	41.67%	66.67%	100.00%	58.33%
Foreign Savings	35.71%	--	23.53%	64.29%	--	76.47%

Source: author's elaboration.

Figure A.6

COLOMBIA: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT, NATIONAL AND FOREIGN SAVING RATES

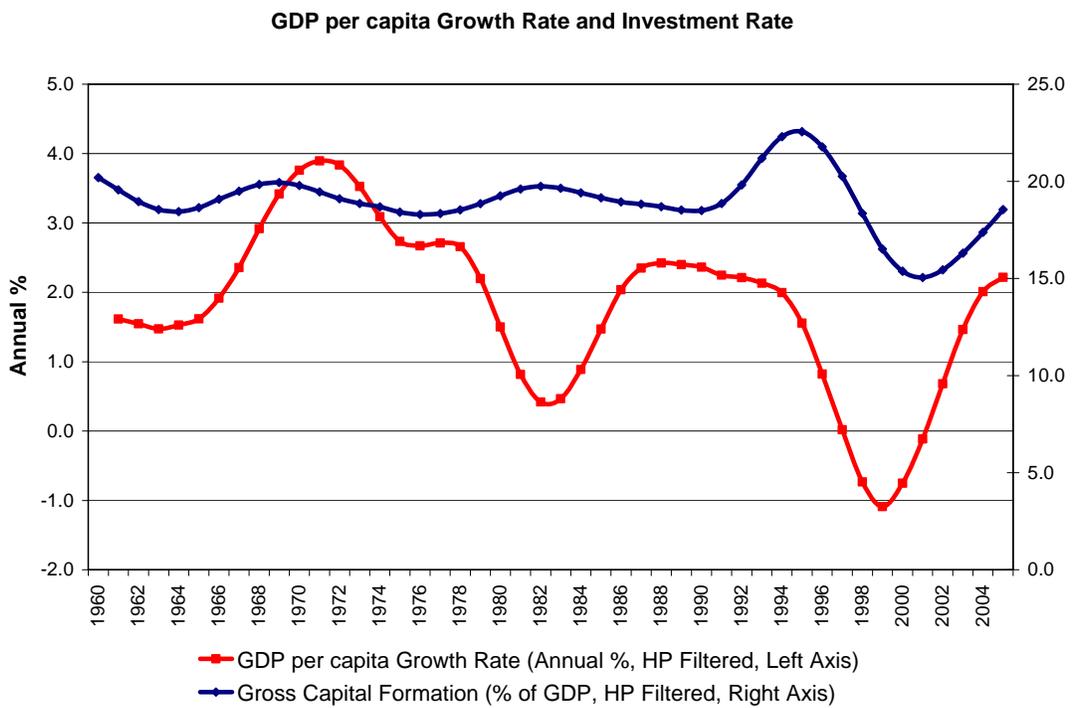
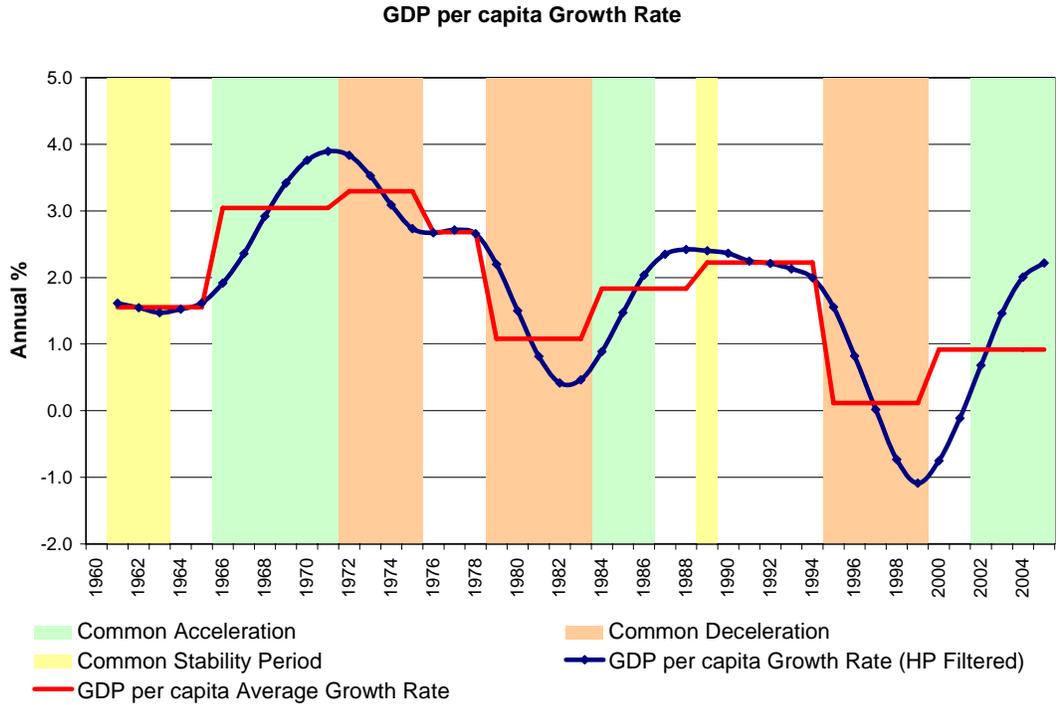
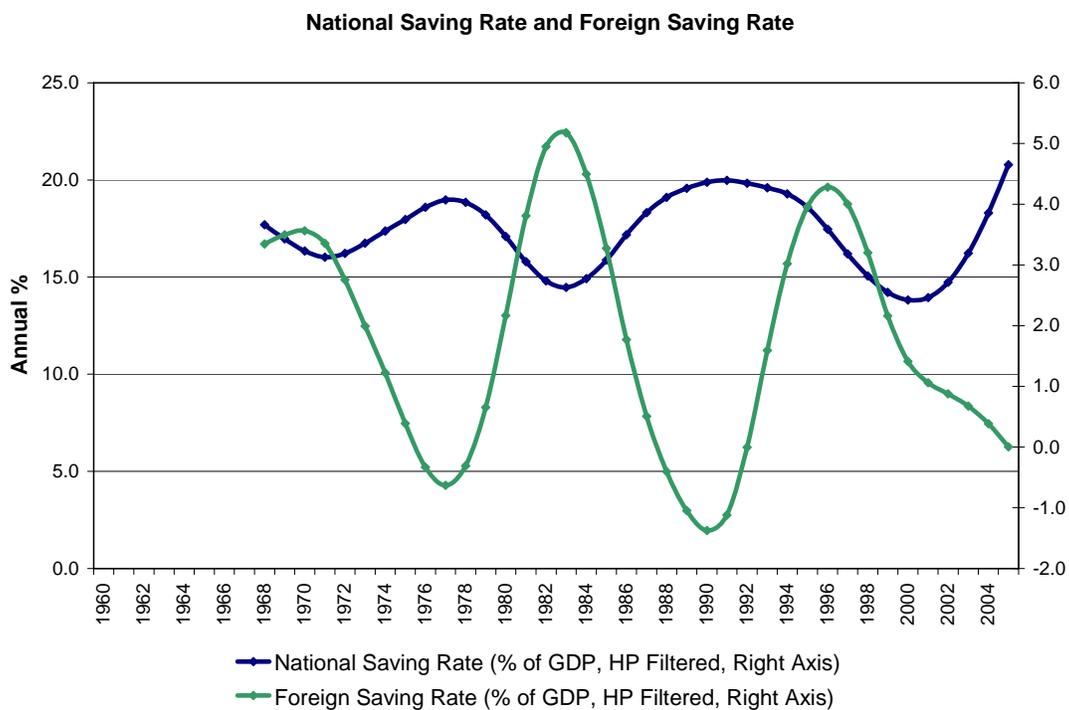
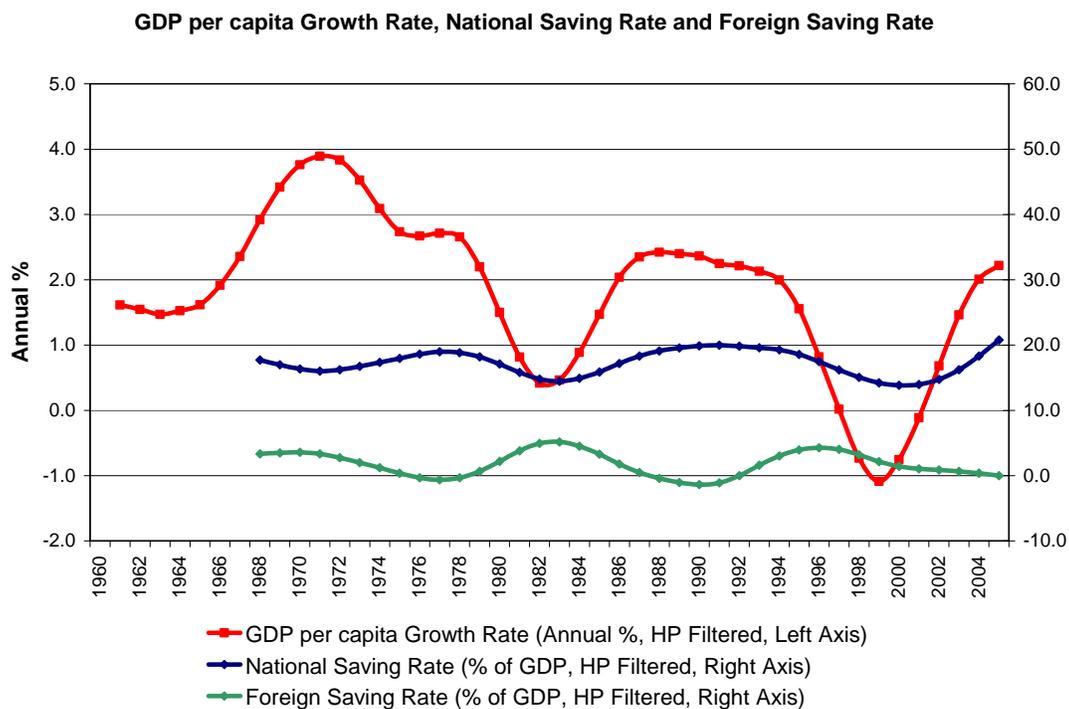


Figure A.6 (conclusion)



Source: author's elaboration.

Table A.15
COLOMBIA: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Colombia: Accelerations and Decelerations				Colombia and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		D				D		
1961	S	D			S	D		
1962	S	D			S	D		
1963	S	D			S	D		
1964	S	D						
1965	S	A				A		
1966	A	A			A	A		
1967	A	A			A	A		
1968	A	A	D	A	A	A		
1969	A	A	D	A	A	A		
1970	A	D	D	A	A			
1971	A	D	D	D	A			
1972	D	D	A	D	D		A	
1973	D	D	A	D	D		A	
1974	D	D	A	D	D		A	
1975	D	D	A	D	D		A	
1976	S	D	A	D			A	
1977	S	A	A	D		A		
1978	S	A	D	A			D	A
1979	D	A	D	A	D		D	A
1980	D	A	D	A	D		D	A
1981	D	A	D	A	D		D	
1982	D	A	D	A	D		D	
1983	D	D	D	A	D	D	D	
1984	A	D	A	D	A	D		D
1985	A	D	A	D	A	D	A	D
1986	A	D	A	D	A		A	D
1987	A	D	A	D			A	D
1988	A	D	A	D			A	D
1989	S	D	A	D	S			
1990	S	D	A	D				
1991	S	A	A	A		A		A
1992	S	A	D	A		A		A
1993	S	A	D	A		A		A
1994	S	A	D	A		A		A
1995	D	A	D	A	D	A		A
1996	D	D	D	D	D			A
1997	D	D	D	D	D			
1998	D	D	D	D	D	D		
1999	D	D	D	D	D	D		D
2000	A	D	D	D		D		D
2001	A	D	A	D		D	A	D
2002	A	A	A	D	A		A	D
2003	A	A	A	D	A		A	D
2004	A	A	A	D	A	A	A	D
2005	A	A	A	D	A	A	A	D

A Acceleration D Deceleration S Stability

Source: author's elaboration.
 Note: All series have been HP filtered.

Table A.16
COLOMBIA: GRANGER-CAUSALITY TESTS

COLOMBIA: HP Filtered Series		Series Definitions		
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)		
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)		
Lags: 3		FS: Foreign Savings (% of GDP, HP filtered)		
		NS: National Savings (% of GDP, HP filtered)		
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion
INV does not Granger Cause GDP	42	1.08227	0.3693	INV does not Granger Cause GDP
GDP does not Granger Cause INV		1.05564	0.38032	GDP does not Granger Cause INV
NS does not Granger Cause GDP	33	4.0633	0.0171	** At 5% significance level, NS Granger Cause GDP
GDP does not Granger Cause NS		6.85058	0.00149	* At 1% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	35	1.18024	0.33502	FS does not Granger Cause GDP
GDP does not Granger Cause FS		0.79935	0.5047	GDP does not Granger Cause FS
NS does not Granger Cause INV	33	1.98828	0.14045	NS does not Granger Cause INV
INV does not Granger Cause NS		4.02789	0.01769	** At 5% significance level, INV Granger Cause NS
FS does not Granger Cause INV	35	2.31102	0.09783	*** At 10% significance level, FS Granger Cause INV
INV does not Granger Cause FS		1.78993	0.17197	INV does not Granger Cause FS
FS does not Granger Cause NS	33	2.45137	0.08594	*** At 10% significance level, FS Granger Cause NS
NS does not Granger Cause FS		2.55763	0.0769	*** At 10% significance level, NS Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.17
COLOMBIA: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	18.18%	55.56%	0.00%	81.82%	44.44%	100.00%
Gross Capital Formation	45.45%	..	63.16%	54.55%	..	36.84%
National Savings	25.00%	..	40.00%	75.00%	..	60.00%
Foreign Savings	66.67%	..	61.54%	33.33%	..	38.46%
Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	33.33%	100.00%	0.00%	66.67%	0.00%	100.00%
Gross Capital Formation	22.22%	..	42.86%	77.78%	..	57.14%
National Savings	28.57%	..	100.00%	71.43%	..	0.00%
Foreign Savings	0.00%	..	30.00%	100.00%	..	70.00%
Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	23.53%	71.43%	0.00%	76.47%	28.57%	100.00%
Gross Capital Formation	35.00%	--	57.69%	65.00%	--	42.31%
National Savings	26.32%	--	68.42%	73.68%	--	31.58%
Foreign Savings	40.00%	--	47.83%	60.00%	--	52.17%

Source: author's elaboration.

Figure A.7

COSTA RICA: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT, NATIONAL AND FOREIGN SAVING RATES

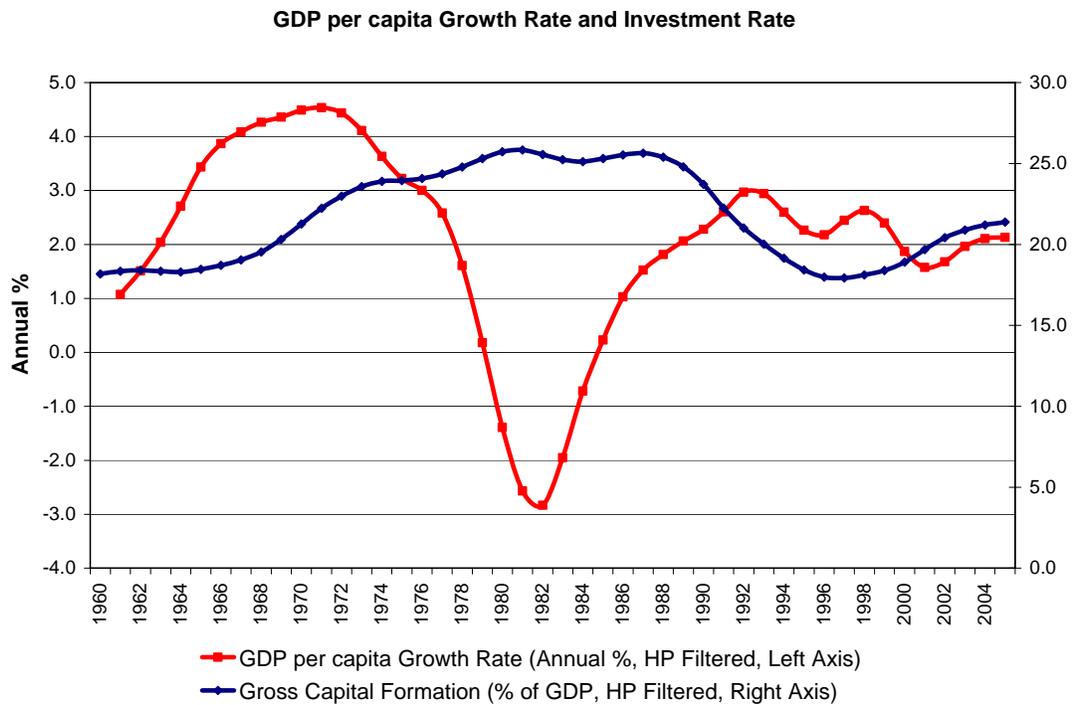
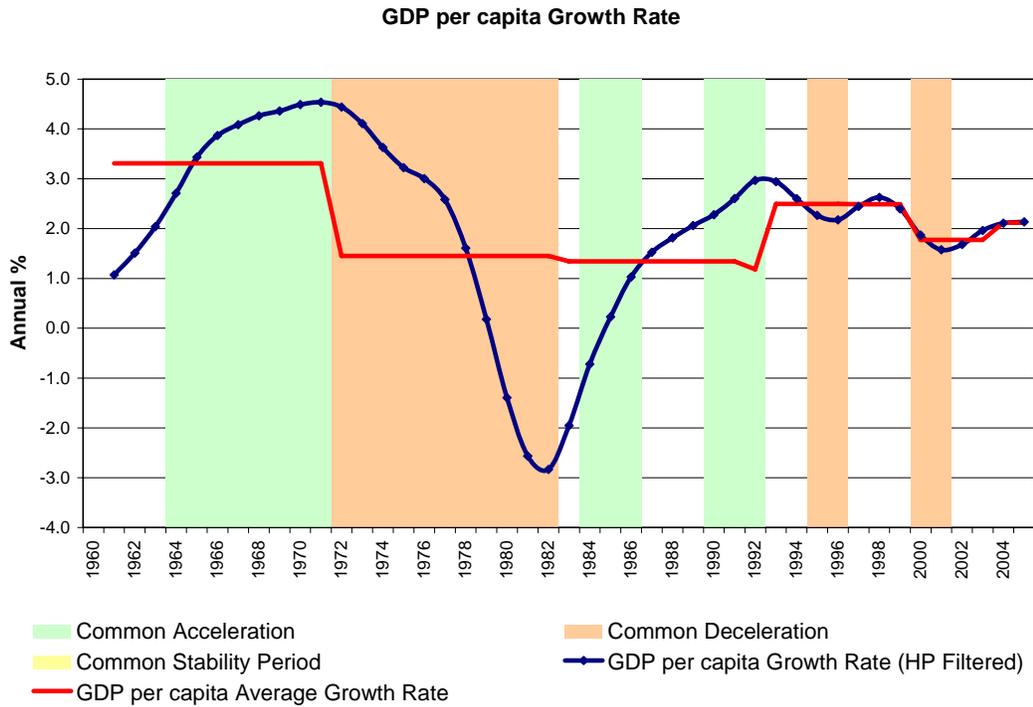
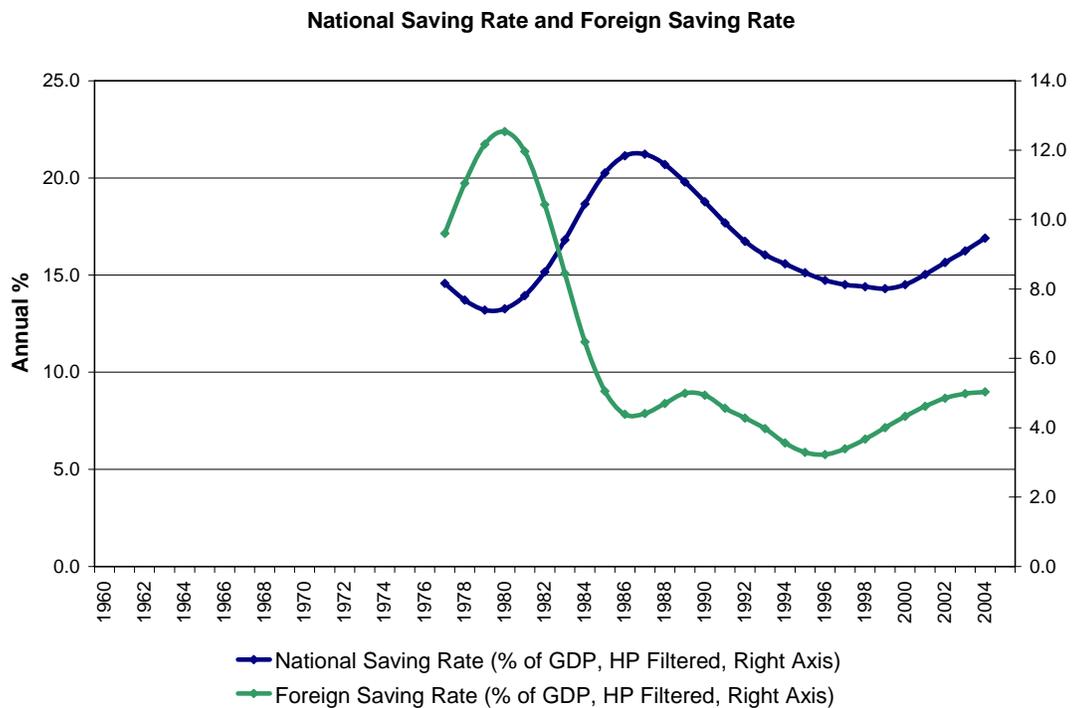
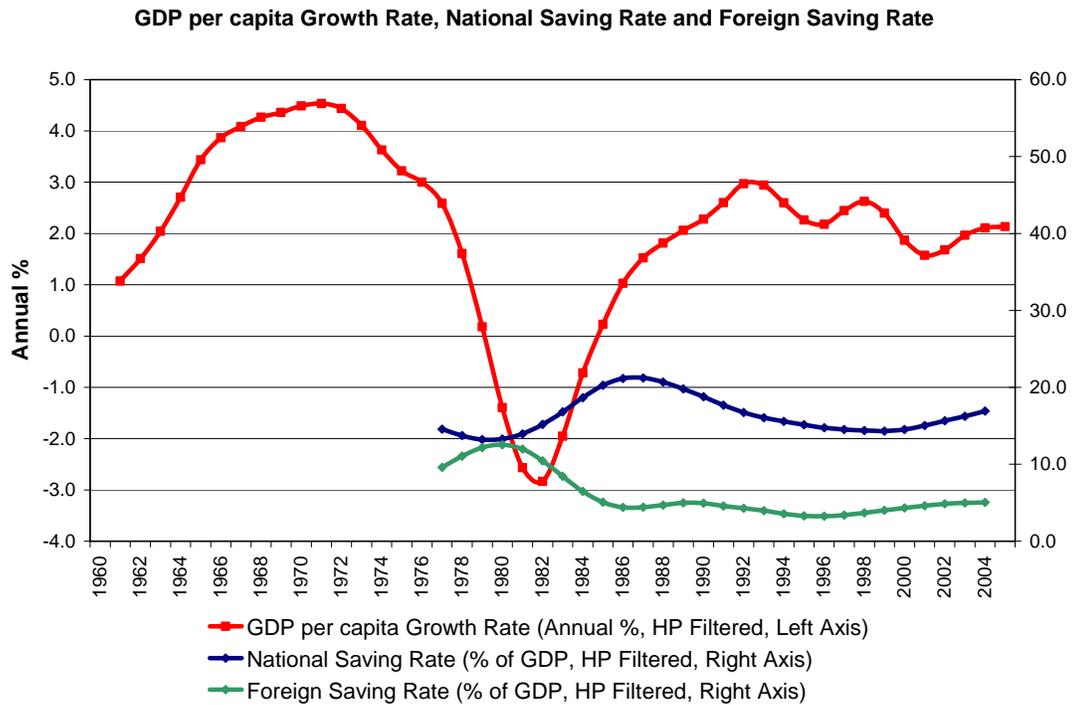


Figure A.7 (conclusion)



Source: author's elaboration.

Table A.18
COSTA RICA: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Costa Rica: Accelerations and Decelerations				Costa Rica and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		S						
1961	A	S						
1962	A	S						
1963	A	S						
1964	A	S			A			
1965	A	A			A	A		
1966	A	A			A	A		
1967	A	A			A	A		
1968	A	A			A	A		
1969	A	A			A	A		
1970	A	A			A	A		
1971	A	A			A	A		
1972	D	A			D	A		
1973	D	A			D	A		
1974	D	A			D	A		
1975	D	A			D	A		
1976	D	A			D	A		
1977	D	A	D	A	D	A	D	A
1978	D	A	D	A	D	A	D	A
1979	D	A	D	A	D	A	D	A
1980	D	A	A	A	D			A
1981	D	A	A	D	D			D
1982	D	S	A	D	D			D
1983	A	S	A	D				D
1984	A	S	A	D	A			D
1985	A	S	A	D	A		A	D
1986	A	S	A	D	A		A	D
1987	A	S	A	A			A	
1988	A	D	D	A				
1989	A	D	D	A				A
1990	A	D	D	D	A			
1991	A	D	D	D	A			
1992	A	D	D	D	A			
1993	D	D	D	D				
1994	D	D	D	D				
1995	D	D	D	D	D			
1996	D	D	D	D	D			
1997	S	D	D	A				A
1998	S	A	D	A				A
1999	S	A	D	A				
2000	D	A	A	A	D			
2001	D	A	A	A	D		A	
2002	D	A	A	A			A	
2003	D	A	A	A			A	
2004	S	A	A	A		A	A	
2005	S	A				A		

A Acceleration **D** Deceleration **S** Stability

Source: author's elaboration.
Note: All series have been HP filtered.

Table A.19
COSTA RICA: GRANGER-CAUSALITY TESTS

COSTA RICA: HP Filtered Series		Series Definitions			
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)			
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)			
Lags: 3		FS: Foreign Savings (% of GDP, HP filtered)			
		NS: National Savings (% of GDP, HP filtered)			
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion	
INV does not Granger Cause GDP	42	4.09198	0.01367	**	At 5% significance level, INV Granger Cause GDP
GDP does not Granger Cause INV		1.30252	0.28902		GDP does not Granger Cause INV
NS does not Granger Cause GDP	24	2.59303	0.08643	***	At 10% significance level, NS Granger Cause GDP
GDP does not Granger Cause NS		6.79109	0.00327	*	At 1% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	25	5.71742	0.00626	*	At 1% significance level, FS Granger Cause GDP
GDP does not Granger Cause FS		0.05973	0.98026		GDP does not Granger Cause FS
NS does not Granger Cause INV	24	11.5062	0.00023	*	At 1% significance level, NS Granger Cause INV
INV does not Granger Cause NS		5.55574	0.00762	*	At 1% significance level, INV Granger Cause NS
FS does not Granger Cause INV	25	5.59919	0.00682	*	At 1% significance level, FS Granger Cause INV
INV does not Granger Cause FS		1.27786	0.31202		INV does not Granger Cause FS
FS does not Granger Cause NS	23	6.89142	0.00343	*	At 1% significance level, FS Granger Cause NS
NS does not Granger Cause FS		4.32204	0.02061	**	At 5% significance level, NS Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.20
COSTA RICA: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	38.89%	..	0.00%	61.11%	..	100.00%
Gross Capital Formation	23.53%	100.00%	100.00%	76.47%	0.00%	0.00%
National Savings	62.50%	..	40.00%	37.50%	..	60.00%
Foreign Savings	42.86%	..	0.00%	57.14%	..	100.00%
Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	0.00%	100.00%	50.00%	100.00%	0.00%	50.00%
Gross Capital Formation	75.00%	..	100.00%	25.00%	..	0.00%
National Savings	20.00%	..	100.00%	80.00%	..	0.00%
Foreign Savings	75.00%	..	100.00%	25.00%	..	0.00%
Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	33.33%	100.00%	21.05%	66.67%	0.00%	78.95%
Gross Capital Formation	40.00%	100.00%	100.00%	60.00%	0.00%	0.00%
National Savings	46.15%	--	80.00%	53.85%	--	20.00%
Foreign Savings	60.00%	--	53.85%	40.00%	--	46.15%

Source: author's elaboration.

Figure A.8
MEXICO: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT, NATIONAL AND FOREIGN SAVING RATES

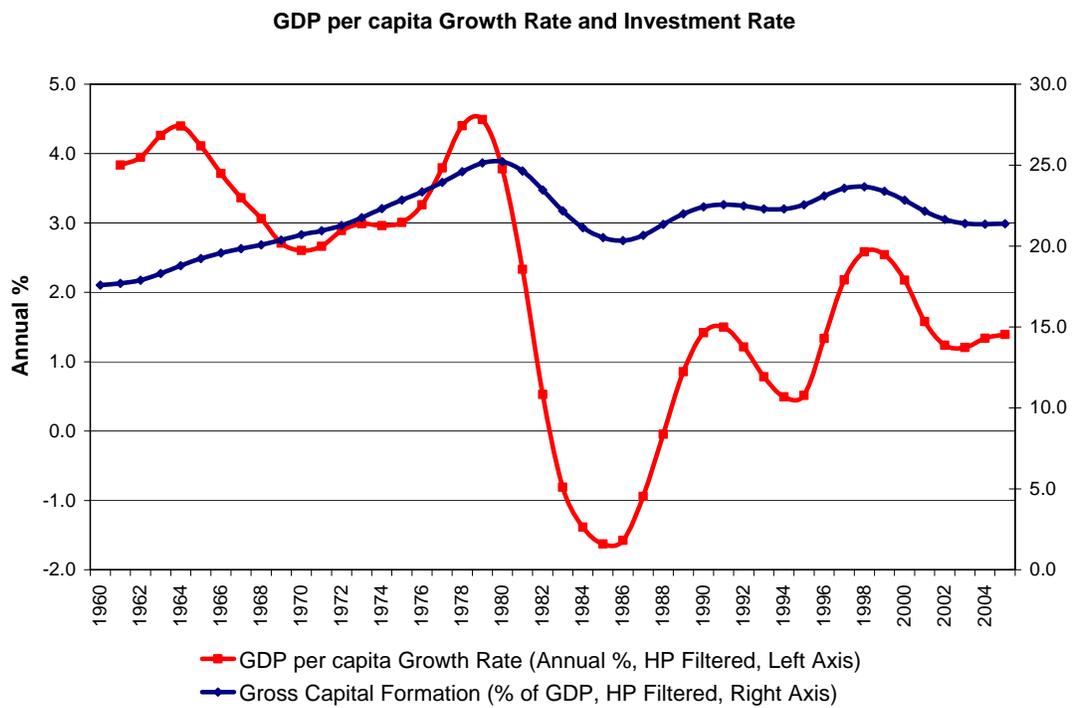
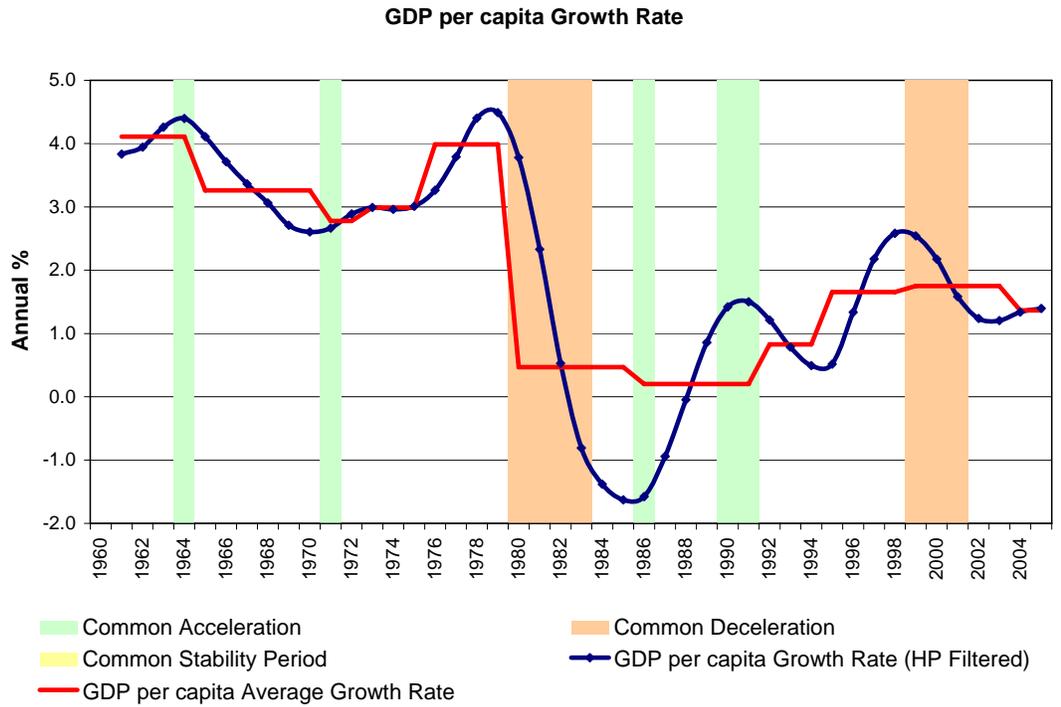
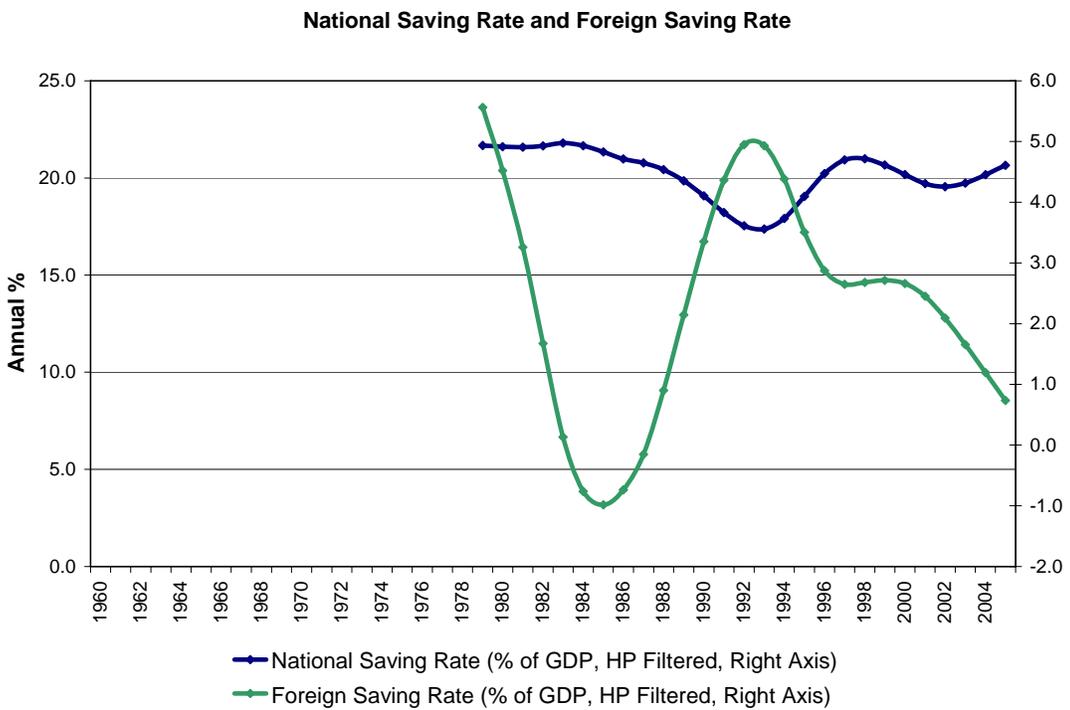
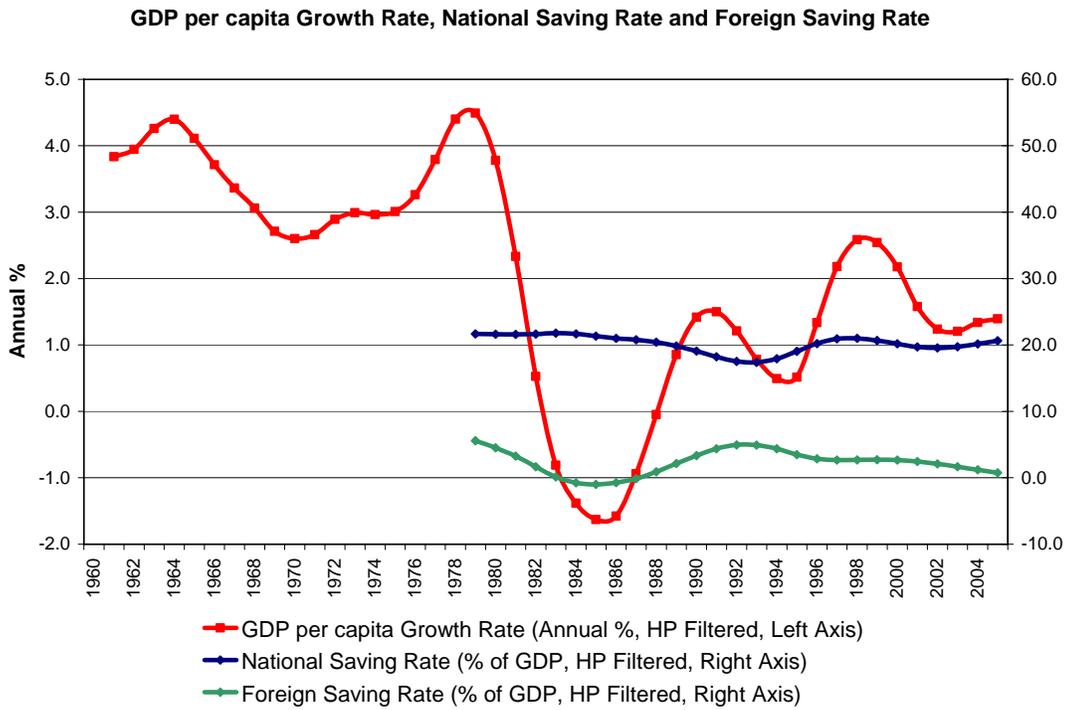


Figure A.8 (conclusion)



Source: author's elaboration.

Table A.21
MEXICO: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Mexico: Accelerations and Decelerations				Mexico and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		A						
1961	A	A						
1962	A	A						
1963	A	A						
1964	A	A			A	A		
1965	D	A				A		
1966	D	A				A		
1967	D	A				A		
1968	D	A				A		
1969	D	A				A		
1970	D	A				A		
1971	A	A			A	A		
1972	A	A				A		
1973	S	A				A		
1974	S	A				A		
1975	S	A				A		
1976	A	A				A		
1977	A	A				A		
1978	A	A						
1979	A	A	S	D				
1980	D	A	S	D	D			D
1981	D	D	S	D	D	D		D
1982	D	D	S	D	D	D		D
1983	D	D	S	D	D	D		D
1984	D	D	S	D		D		D
1985	D	D	D	D		D		D
1986	A	D	D	A	A			
1987	A	A	D	A		A		
1988	A	A	D	A		A		
1989	A	A	D	A		A		A
1990	A	A	D	A	A	A		A
1991	A	A	D	A	A	A		A
1992	D	S	D	A				A
1993	D	S	D	D				
1994	D	S	A	D				
1995	A	A	A	D		A		
1996	A	A	A	D		A		
1997	A	A	A	D		A		
1998	A	A	A	S				
1999	D	D	D	S	D	D		
2000	D	D	D	S	D	D		
2001	D	D	D	D	D	D		D
2002	D	D	D	D		D		D
2003	D	S	A	D			A	D
2004	S	S	A	D			A	D
2005	S	S	A	D			A	D

A Acceleration **D** Deceleration **S** Stability

Source: author's elaboration.
Note: Note: All series have been HP filtered.

Table A.22

MEXICO: GRANGER-CAUSALITY TESTS

MEXICO: HP Filtered Series		Series Definitions		
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)		
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)		
Lags: 3		FS : Foreign Savings (% of GDP, HP filtered)		
		NS : National Savings (% of GDP, HP filtered)		
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion
INV does not Granger Cause GDP	42	2.15594	0.11076	INV does not Granger Cause GDP
GDP does not Granger Cause INV		1.48506	0.23549	GDP does not Granger Cause INV
NS does not Granger Cause GDP	22	1.82408	0.18605	NS does not Granger Cause GDP
GDP does not Granger Cause NS		7.39973	0.00286	* At 1% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	24	5.07559	0.01085	** At 5% significance level, FS Granger Cause GDP
GDP does not Granger Cause FS		5.66606	0.00704	* At 1% significance level, GDP Granger Cause FS
NS does not Granger Cause INV	22	3.17779	0.05482	*** At 10% significance level, NS Granger Cause INV
INV does not Granger Cause NS		11.9049	0.0003	* At 1% significance level, INV Granger Cause NS
FS does not Granger Cause INV	24	5.54431	0.00769	* At 1% significance level, FS Granger Cause INV
INV does not Granger Cause FS		2.71745	0.07703	*** At 10% significance level, INV Granger Cause FS
FS does not Granger Cause NS	22	2.4241	0.10614	FS does not Granger Cause NS
NS does not Granger Cause FS		3.71016	0.03538	** At 5% significance level, NS Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.23

MEXICO: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	78.57%	100.00%	66.67%	21.43%	0.00%	33.33%
Gross Capital Formation	29.17%	..	16.67%	70.83%	..	83.33%
National Savings	..	100.00%	100.00%	..	0.00%	0.00%
Foreign Savings	75.00%	..	28.57%	25.00%	..	71.43%
Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	66.67%	100.00%	62.50%	33.33%	0.00%	37.50%
Gross Capital Formation	16.67%	100.00%	0.00%	83.33%	0.00%	100.00%
National Savings	62.50%	..	100.00%	37.50%	..	0.00%
Foreign Savings	0.00%	100.00%	50.00%	100.00%	0.00%	50.00%
Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	75.00%	100.00%	65.00%	25.00%	0.00%	35.00%
Gross Capital Formation	26.67%	100.00%	10.00%	73.33%	0.00%	90.00%
National Savings	62.50%	100.00%	100.00%	37.50%	0.00%	0.00%
Foreign Savings	42.86%	100.00%	41.18%	57.14%	0.00%	58.82%

Source: author's elaboration.

Figure A.9
PERU: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP WITH INVESTMENT,
NATIONAL AND FOREIGN SAVING RATES

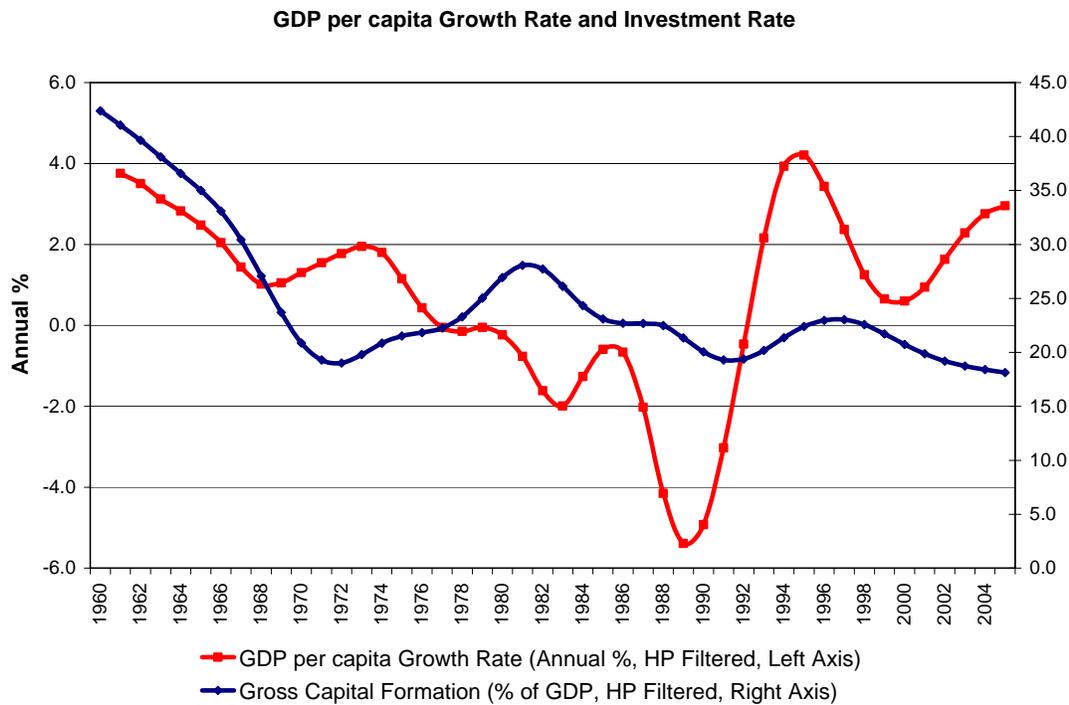
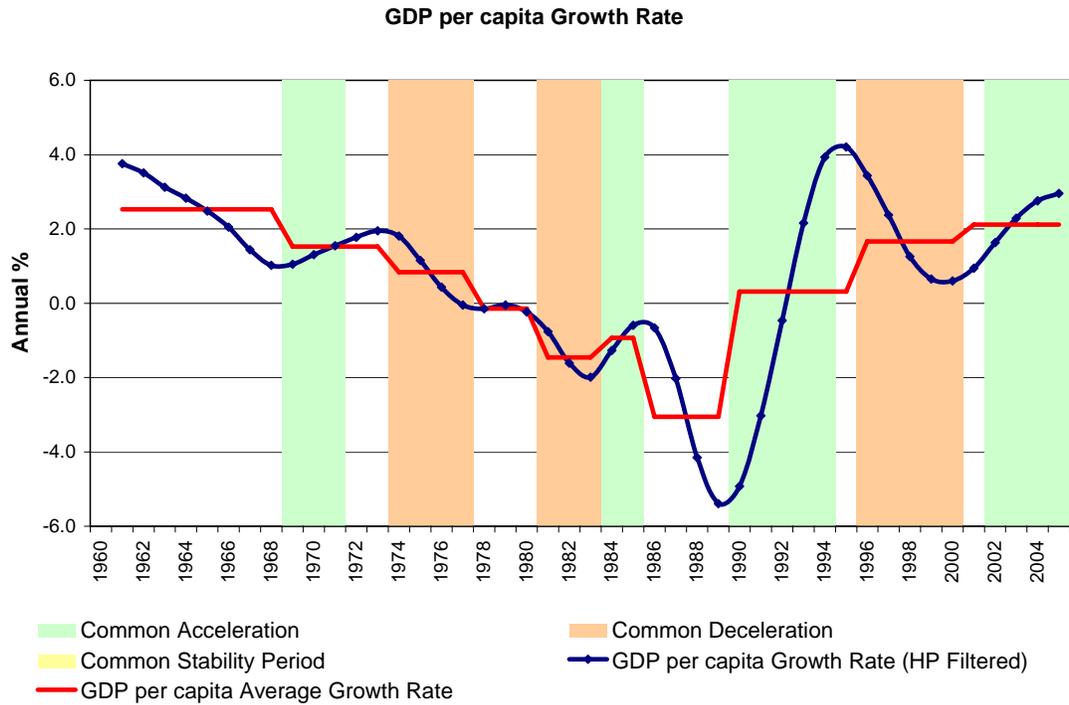
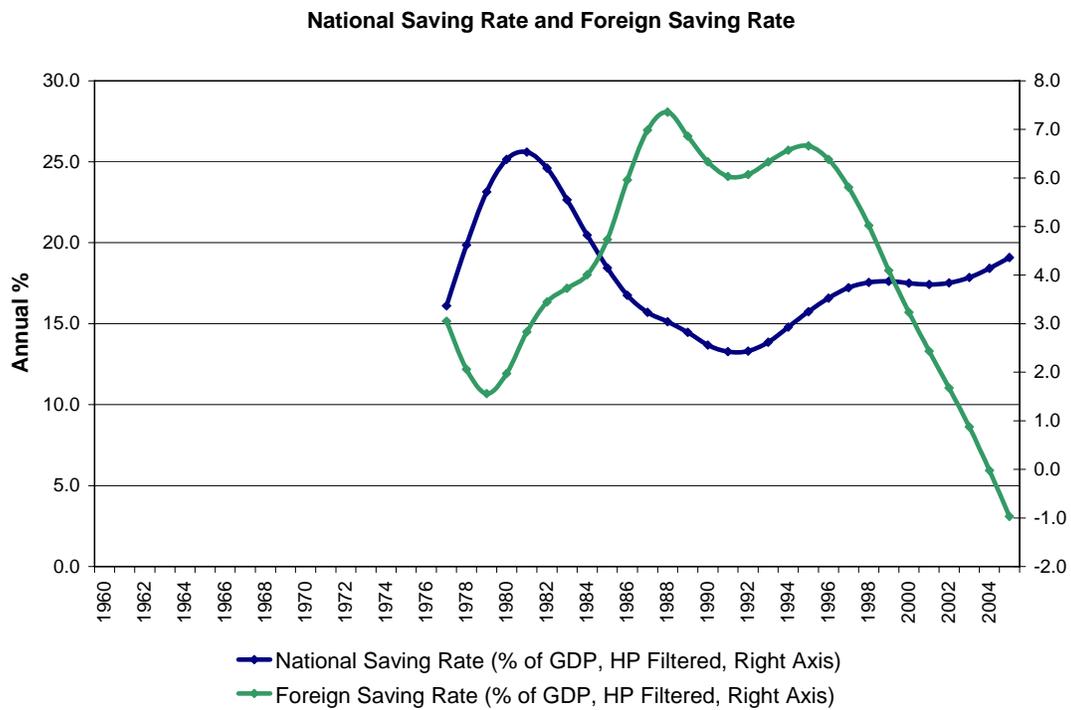
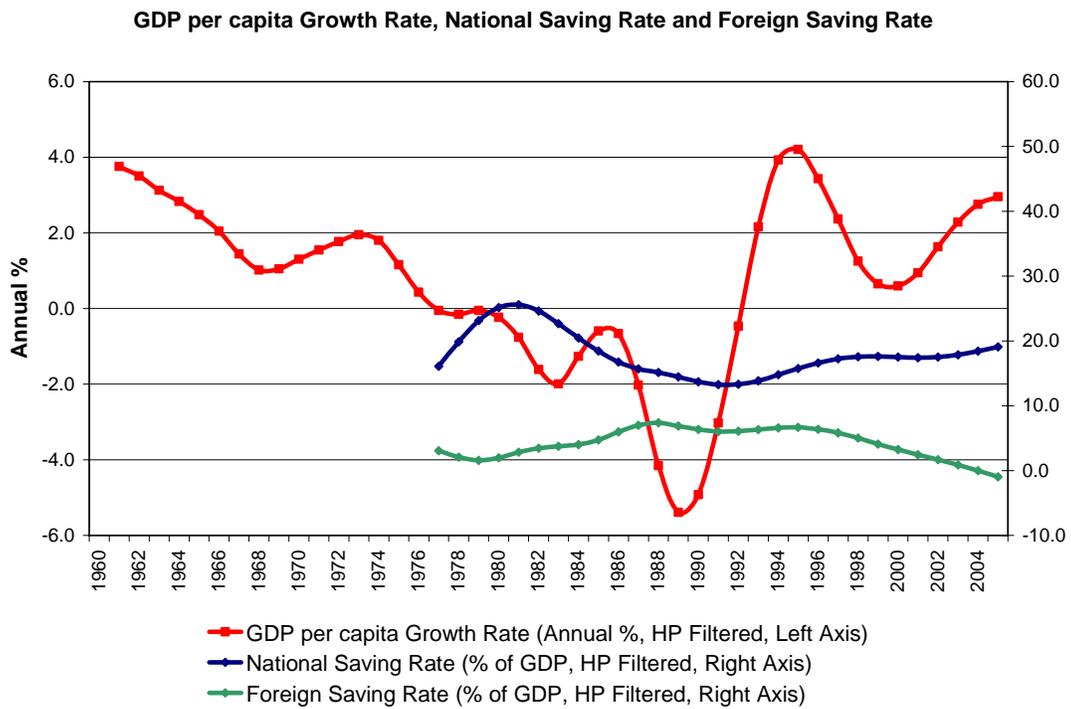


Figure A.9 (conclusion)



Source: author's elaboration.

Table A.24

PERU: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Peru: Accelerations and Decelerations				Peru and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		D				D		
1961	D	D				D		
1962	D	D				D		
1963	D	D				D		
1964	D	D				D		
1965	D	D						
1966	D	D						
1967	D	D						
1968	D	D						
1969	A	D			A			
1970	A	D			A			
1971	A	D			A			
1972	A	D						
1973	A	A				A		
1974	D	A			D	A		
1975	D	A			D	A		
1976	D	A			D	A		
1977	D	A	A	D	D	A		
1978	S	A	A	D				
1979	S	A	A	D				
1980	S	A	A	A				A
1981	D	A	A	A	D			
1982	D	D	D	A	D	D	D	
1983	D	D	D	A	D	D	D	
1984	A	D	D	A	A	D	D	
1985	A	D	D	A	A	D		
1986	D	D	D	A				
1987	D	D	D	A				
1988	D	D	D	A				
1989	D	D	D	D				
1990	A	D	D	D	A			
1991	A	D	D	D	A			
1992	A	A	A	A	A	A		A
1993	A	A	A	A	A	A		A
1994	A	A	A	A	A	A		A
1995	A	A	A	A		A		A
1996	D	A	A	D	D	A		
1997	D	A	A	D	D	A		
1998	D	D	A	D	D	D		
1999	D	D	A	D	D	D		
2000	D	D	S	D	D	D	S	D
2001	A	D	S	D		D		D
2002	A	D	S	D	A	D		D
2003	A	D	A	D	A	D	A	D
2004	A	D	A	D	A		A	D
2005	A	D	A	D	A		A	D

A Acceleration D Deceleration S Stability

Source: author's elaboration.

Note: All series have been HP filtered.

Table A.25
PERU: GRANGER-CAUSALITY TESTS

PERU: HP Filtered Series		Series Definitions			
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)			
Sample: 1960 2005		INV: Gross capital formation (% of GDP, HP filtered)			
Lags: 3		FS : Foreign Savings (% of GDP, HP filtered)			
		NS : National Savings (% of GDP, HP filtered)			
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion	
INV does not Granger Cause GDP	42	3.22869	0.03403	**	At 5% significance level, INV Granger Cause GDP
GDP does not Granger Cause INV		5.00564	0.00542	*	At 1% significance level, GDP Granger Cause INV
NS does not Granger Cause GDP	24	4.8397	0.01297	**	At 5% significance level, NS Granger Cause GDP
GDP does not Granger Cause NS		7.25376	0.00242	*	At 1% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	26	6.52079	0.00323	*	At 1% significance level, FS Granger Cause GDP
GDP does not Granger Cause FS		4.42803	0.01603	**	At 5% significance level, GDP Granger Cause FS
NS does not Granger Cause INV	24	2.65138	0.08187	***	At 10% significance level, NS Granger Cause INV
INV does not Granger Cause NS		4.42531	0.0179	**	At 5% significance level, INV Granger Cause NS
FS does not Granger Cause INV	26	2.1648	0.12569		FS does not Granger Cause INV
INV does not Granger Cause FS		4.46837	0.0155	**	At 5% significance level, INV Granger Cause FS
FS does not Granger Cause NS	24	1.93617	0.16207		FS does not Granger Cause NS
NS does not Granger Cause FS		5.84805	0.00619	*	At 1% significance level, NS Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.26
PERU: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	28.57%	100.00%	63.16%	71.43%	0.00%	36.84%
Gross Capital Formation	44.44%	..	61.90%	55.56%	..	38.10%
National Savings	100.00%	..	62.50%	0.00%	..	37.50%
Foreign Savings	88.89%	..	100.00%	11.11%	..	0.00%
Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	0.00%	0.00%	Probability	0.00%	0.00%	140.00%
Gross Capital Formation	0.00%	..	Probability	0.00%	..	238.46%
National Savings	0.00%	..	Probability	0.00%	..	238.46%
Foreign Savings	0.00%	..	0.00%	0.00%	..	0.00%
Period 1960-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	22.22%	100.00%	50.00%	77.78%	0.00%	50.00%
Gross Capital Formation	26.67%	--	54.84%	73.33%	--	45.16%
National Savings	81.25%	66.67%	70.00%	18.75%	33.33%	30.00%
Foreign Savings	61.54%	--	56.25%	38.46%	--	43.75%

Source: author's elaboration.

Figure A.10
VENEZUELA: GDP PER CAPITA GROWTH RATE AND ITS RELATIONSHIP
WITH INVESTMENT, NATIONAL AND FOREIGN SAVING RATES

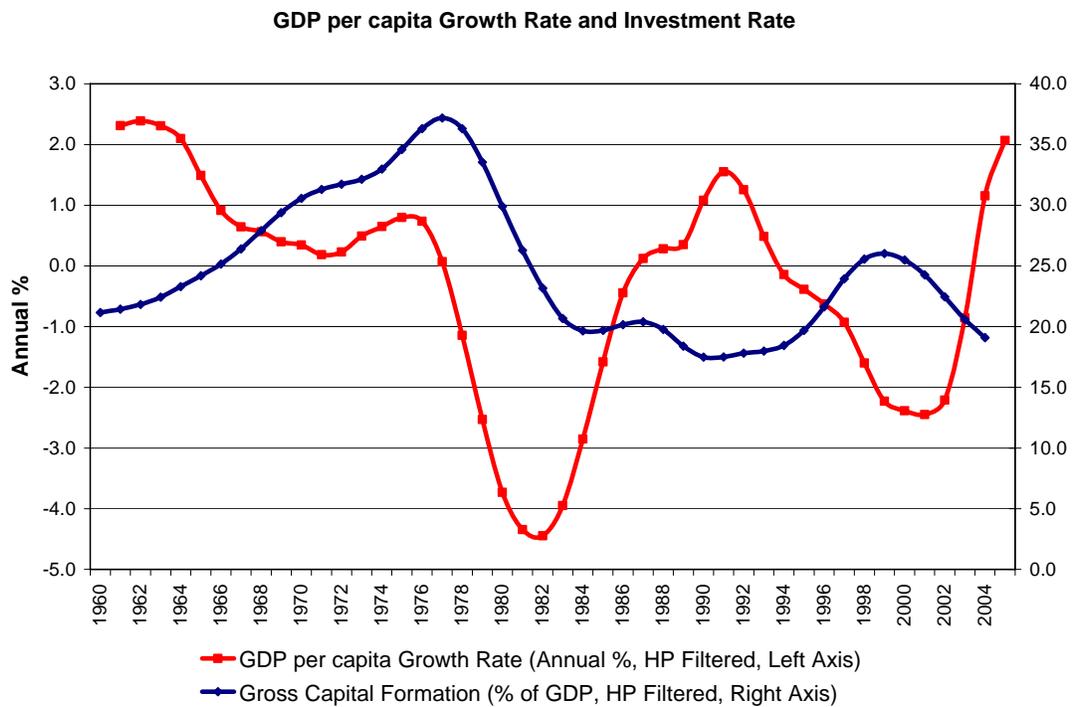
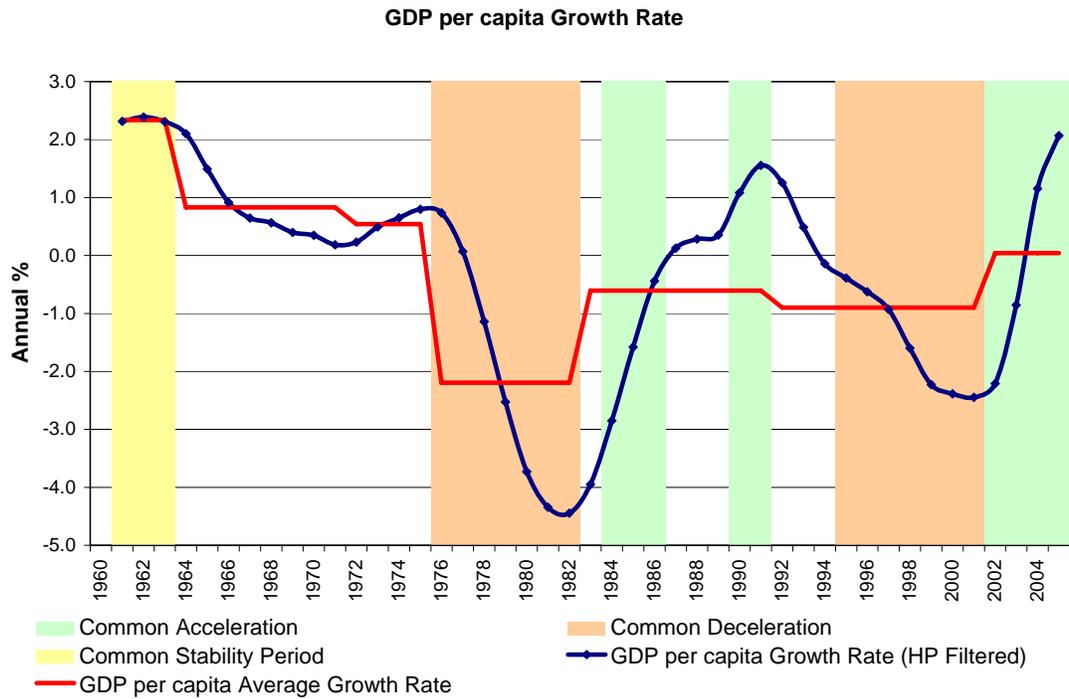
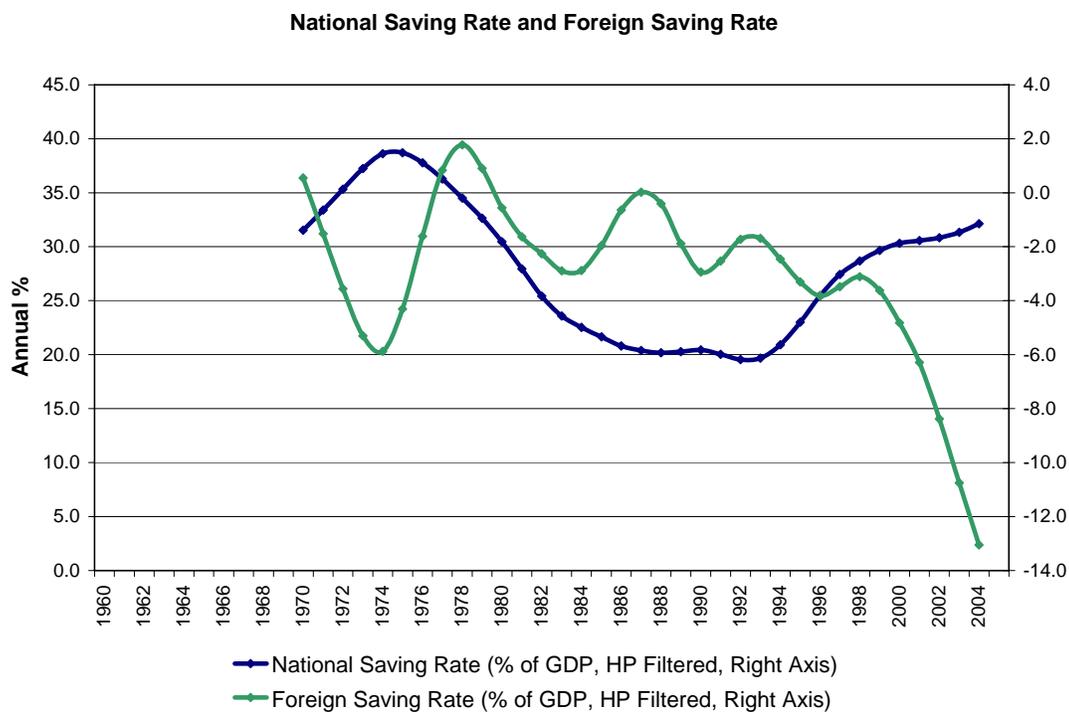
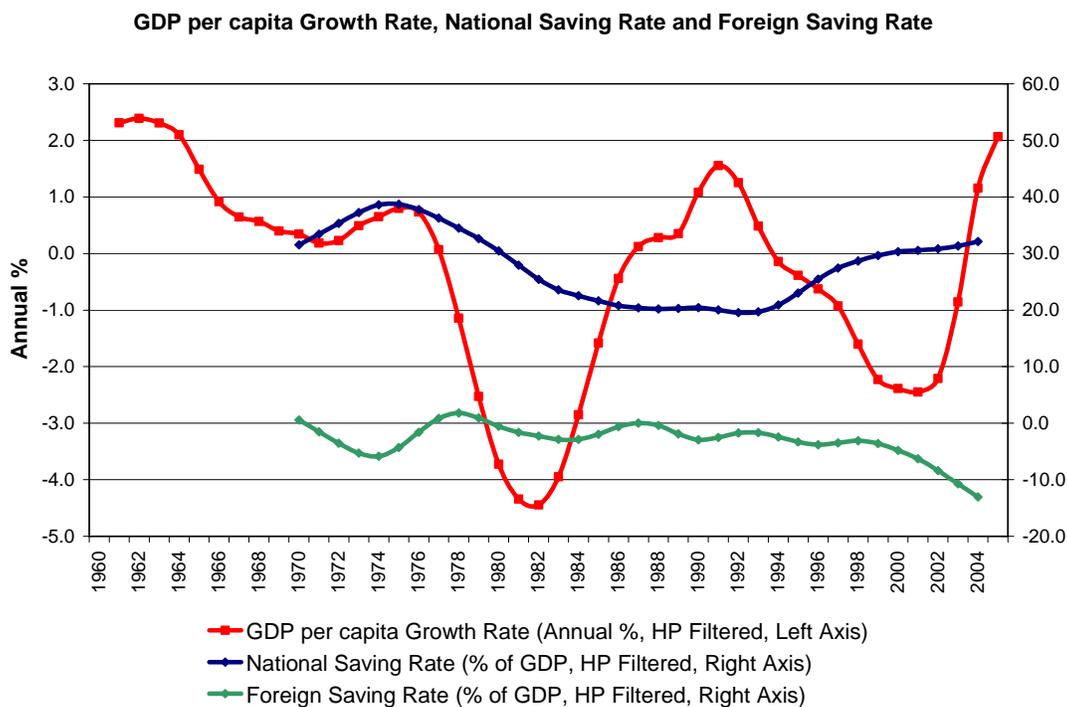


Figure A.10 (conclusion)



Source: author's elaboration.

Table A.27

VENEZUELA: ACCELERATIONS AND DECELERATIONS SUMMARY

Year	Venezuela: Accelerations and Decelerations				Venezuela and Latin America & Caribbean: Common Accelerations and Decelerations			
	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)	GDP per capita growth (annual %)	Gross capital formation (% of GDP)	National Savings (% of GDP)	Foreign Savings (% of GDP)
1960		A						
1961	S	A			S			
1962	S	A			S			
1963	S	A			S			
1964	D	A				A		
1965	D	A				A		
1966	D	A				A		
1967	D	A				A		
1968	D	A				A		
1969	D	A				A		
1970	D	A	A	D		A	A	
1971	D	A	A	D		A	A	
1972	A	A	A	D		A	A	
1973	A	A	A	D		A	A	
1974	A	A	A	D		A	A	
1975	A	A	A	A		A	A	
1976	D	A	D	A	D	A	D	
1977	D	A	D	A	D	A	D	
1978	D	D	D	A	D	D	D	A
1979	D	D	D	D	D	D	D	
1980	D	D	D	D	D	D	D	
1981	D	D	D	D	D	D	D	D
1982	D	D	D	D	D	D	D	D
1983	A	D	D	D		D	D	D
1984	A	D	D	A	A	D	D	
1985	A	A	D	A	A			
1986	A	A	D	A	A	A		
1987	A	A	D	A		A		
1988	A	D	D	D				D
1989	A	D	A	D				
1990	A	D	A	D	A			
1991	A	A	D	A	A			A
1992	D	A	D	A		A		A
1993	D	A	A	A		A		A
1994	D	A	A	D		A		
1995	D	A	A	D	D	A		
1996	D	A	A	D	D	A		
1997	D	A	A	A	D	A		
1998	D	A	A	A	D			A
1999	D	A	A	D	D			D
2000	D	D	A	D	D	D		D
2001	D	D	A	D	D	D	A	D
2002	A	D	A	D	A	D	A	D
2003	A	D	A	D	A	D	A	D
2004	A	D	A	D	A		A	D
2005	A				A			

A Acceleration D Deceleration S Stability

Source: author's elaboration.
 Note: All series have been HP filtered.

Table A.28

VENEZUELA: GRANGER-CAUSALITY TESTS

VENEZUELA: HP Filtered Series		Series Definitions			
Pairwise Granger Causality Tests		GDP: GDP per capita growth (annual %, HP filtered)			
Sample: 1960-2005		INV: Gross capital formation (% of GDP, HP filtered)			
Lags: 3		FS: Foreign Savings (% of GDP, HP filtered)			
		NS: National Savings (% of GDP, HP filtered)			
Null Hypothesis:	Obs	F-Statistic	Probability	Conclusion	
INV does not Granger Cause GDP	41	2.89437	0.04936	**	At 5% significance level, INV Granger Cause GDP
GDP does not Granger Cause INV		8.41979	0.00025	*	At 1% significance level, GDP Granger Cause INV
NS does not Granger Cause GDP	31	1.02747	0.39803		NS does not Granger Cause GDP
GDP does not Granger Cause NS		2.36132	0.09654	***	At 10% significance level, GDP Granger Cause NS
FS does not Granger Cause GDP	33	2.10252	0.12431		FS does not Granger Cause GDP
GDP does not Granger Cause FS		1.82398	0.16757		GDP does not Granger Cause FS
NS does not Granger Cause INV	30	2.08471	0.13006		NS does not Granger Cause INV
INV does not Granger Cause NS		0.45695	0.71498		INV does not Granger Cause NS
FS does not Granger Cause INV	32	10.2883	0.00014	*	At 1% significance level, FS Granger Cause INV
INV does not Granger Cause FS		2.53337	0.07983	***	At 10% significance level, INV Granger Cause FS
FS does not Granger Cause NS	31	1.13085	0.35644		FS does not Granger Cause NS
NS does not Granger Cause FS		0.33758	0.7983		NS does not Granger Cause FS

Note: Significance level: (*) 1%, (**) 5%, (***) 10%.

Table A.29

VENEZUELA: PROBABILITY OF GROWTH TRANSITIONS OCCURRENCE, COUNTRY SPECIFIC AND COMMON WITH LATIN AMERICA & CARIBBEAN, 1960-2005

Period 1960-1989	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	72.73%	0.00%	53.33%	27.27%	100.00%	46.67%
Gross Capital Formation	23.81%	..	22.22%	76.19%	..	77.78%
National Savings	14.29%	..	38.46%	85.71%	..	61.54%
Foreign Savings	87.50%	..	66.67%	12.50%	..	33.33%
Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	0.00%	..	30.00%	100.00%	..	70.00%
Gross Capital Formation	22.22%	..	33.33%	77.78%	..	66.67%
National Savings	69.23%	..	100.00%	30.77%	..	0.00%
Foreign Savings	0.00%	..	40.00%	100.00%	..	60.00%
Period 1990-2006	Country Specific Growth Transitions			Common Growth Transitions		
	Country Specific Acceleration	Country Specific Stability	Country Specific Deceleration	Common Acceleration	Common Stability Period	Common Deceleration
GDP per capita	0.00%	..	30.00%	100.00%	..	70.00%
Gross Capital Formation	22.22%	..	33.33%	77.78%	..	66.67%
National Savings	69.23%	..	100.00%	30.77%	..	0.00%
Foreign Savings	0.00%	..	40.00%	100.00%	..	60.00%

Source: author's elaboration.

Appendix B

Description and sources of information

Per capita GDP growth (annual %): Annual percentage growth rate of per capita GDP based on constant local currency. Per capita GDP is the gross domestic product divided by the mid-year population. GDP at purchasers' prices is the sum of the gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. *Source:* World Bank national accounts data.

Gross capital formation (% of GDP): Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains and so on); plant, machinery and equipment purchases; and the construction of roads, railways and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress." According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. *Source:* World Bank national accounts data.

Foreign saving (% of GDP): **Foreign saving** consists of the current account balance (% of GDP) with negative sign, with that balance being the sum of net exports of goods and services, net income and net current transfers. *Source:* Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Monetary Fund data files and *Balance of Payments Statistics Yearbook*, various years; and World Bank GDP estimates.

National saving (% of GDP): National saving is the difference between gross capital formation and foreign saving (as defined above). *Source:* Economic Commission for Latin America and the Caribbean (ECLAC) estimates on the basis of World Bank national accounts data; OECD national accounts data files; and International Monetary Fund data files and *Balance of Payments Statistics Yearbook*, various years.



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