

Economic growth with foreign savings?

Crescimento Econômico com Poupança Externa?

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RESUMO: Os países altamente endividados, particularmente os latino-americanos, apresentaram resultados econômicos negativos na década de 1990, que são a consequência da “estratégia de crescimento com poupança externa”, ou o Segundo Consenso de Washington. Juntamente com a liberalização dos fluxos financeiros internacionais, tal estratégia, que não fez parte do primeiro consenso, levou os países, na onda de um novo ciclo mundial de fluxos de capital, a déficits elevados em conta corrente e aumento da dívida externa, ignorando a restrição da solidez e o limiar da dívida. Em termos práticos, envolvia moedas supervalorizadas (baixas taxas de câmbio) e altas taxas de juros; em termos políticos, a tentativa de controlar o déficit orçamentário enquanto o déficit em conta corrente foi ignorado. A consequência paradoxal foi a adoção, pelos países altamente endividados, do “populismo cambial”, uma forma menos óbvia, mas mais perigosa, de populismo econômico.

PALAVRAS-CHAVE: Desenvolvimento; poupança externa; déficit em conta-corrente; fluxos de capitais.

ABSTRACT: Highly indebted countries, particularly the Latin American ones, presented dismal economic outcomes in the 1990s' which are the consequence of the “growth *cum* foreign savings strategy”, or the Second Washington Consensus. Coupled with liberalization of international financial flows, such strategy, which did not make part of the first consensus, led the countries, in the wave of a new world wide capital flow cycle, to high current account deficits and increase in foreign debt, ignoring the solvency constraint and the debt threshold. In practical terms it involved overvalued currencies (low exchange rates) and high interest rates; in policy terms, the attempt to control de budget deficit while the current account deficit was ignored. The paradoxical consequence was the adoption by highly

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indebted countries of “exchange rate populism”, a less obvious but more dangerous form of economic populism.

KEYWORDS: Development; foreign savings; current-account deficit; capital flows.

JEL Classification: O11; F43.

In this paper we evaluate the growth strategy that most developing countries adopted in the 1990s with the support of the developed countries and the international financial agencies – a strategy based on opening capital accounts and financing growth with foreign savings. We do not repeat the typical critiques, which emphasize tight monetary and fiscal policies in detriment of employment. On the contrary, our main contention is that the dominant conventional orthodoxy adopted a soft current account constraint and resulted in low growth rates and persistent threat of balance of payments crisis. By abandoning the mutually agreed regulations on controls of international capital flows, such policy inverted the foreign exchange constraint. In the past, such constraint meant that developing countries did not have sufficient access to international financial markets; in the 1990s, such constraint evaporated as easy access to such markets was offered to developing countries.

Since the 1980s, developing countries, including highly indebted Latin American ones, have been learning the basic message from the rich countries which stylized form is approximately the following: “we understand that you don’t have sufficient domestic resources to finance your growth, but don’t worry: just control the budget deficit, open and reform your economy (including the capital account), and we will finance your growth”. The better you behave, – it is added – such foreign savings will come in the form of direct investments rather than loans.

This view, coming from the developed countries, from the IMF, the World Bank, from multinational corporations investing abroad, and from the international financial system, seems reasonable – so reasonable that in the early 1990s, when international financial flows resumed after the foreign debt crisis, it turned into a firm belief, or a conventional wisdom, in developed and developing countries. Yet, we will argue in this paper that, given the high indebtedness of most developing countries, this ‘growth *cum* foreign savings’ policy represented a flawed economic policy based on poor economics.

In the 1970s the analogous expression was ‘growth *cum* debt’. As long as countries accepted it, they suffered serious economic losses. Today, as no systematic critique of this kind of policy has been undertaken, it continues to have detrimental effects on highly indebted developing countries – although, since the late 1990s some major mainstream economists began to express some concern about it. This is particularly the case of the Meltzer Commission’s report, which realized that there is a moral hazard problem involved in this growth with foreign savings strategy: that the American Treasury and the IMF cannot indefinitely bail

out the commercial banks that make irresponsible loans, and the local governments that accept them.¹

The argument that low income and low savings rate countries should grow faster with foreign inflow seems logical and reasonable. In fact, if capital inflows finance current account deficits due to an increase in the imports of capital goods, and if the rate of investment rises, the economy will grow faster. So, this strategy of dependent growth has been accepted as ‘true’ uncritically by almost everyone in Latin America, and became an assumption behind the reasoning of economists, politicians, businessmen as well as underlying all government decisions. On the other hand, fiscal adjustment was seriously undertaken and the reforms listed in the first Washington Consensus, particularly privatization and trade liberalization advanced everywhere, with the support of multilateral organizations and the applause of international financial markets.

Yet, most countries that followed this recipe faced deep trouble in the last decade. The empirical records of this liberalization policy and dependent growth strategy have been disappointing: stagnation, and continuing macroeconomic instability, leading to major balance of payment crises. In Argentina, which is the best example of such policy, the outcome was unprecedented economic collapse, deep political crisis, and social tragedy². What went wrong?

In discussing these questions, we are thinking particularly of the large Latin American countries, like Brazil, Mexico, and Argentina, which have stabilized prices after the debt crisis with the adoption of an exchange rate anchor, although it also applies, in different measure, to other countries like Russia, Turkey, Malaysia and Indonesia. As long as such countries showed price stability, international financial organizations understood that macroeconomic stability had been achieved, and re-established their credit. The ‘emergent markets’ were born. Countries were allowed to again incur in large current account deficits, financed only partly by foreign direct investment: mostly by short term loans. The exchange rate was kept low, and interest rates, usually, high. What happened to investment rates and growth? Why did the investment rate not increase and GDP per capita tend to stagnate? What eventually happened to macroeconomic stabilization itself? Is it true that the 1990s’ dependent growth strategy debilitated macroeconomic stability?

The paper tries to offer some answers to such questions. It is divided into seven sections, besides the conclusion and an appendix with the econometric test. In the first section, we discuss the assumptions behind the conventional orthodoxy, which, in the 1990s, adopted the growth *cum* foreign saving strategy. In the second section, we bring to debate the Feldstein-Horioka ‘puzzle’, which eventually is not a puzzle, except for the conventional orthodoxy. In the third, we analyze the foreign debt threshold. In the fourth, we present an econometric test that shows that foreign

¹ The Meltzer Commission was created by the US Congress to study the international financial system’s architecture.

² See Caballero, 2001.

savings have little or no impact on growth when countries are heavily indebted. In the fifth section we relate the growth *cum* foreign savings strategy to two different types of cycles: the populist cycle and the capital flows cycle. In the sixth section we evaluate the growth with foreign savings strategy, particularly taking into consideration Mexico, Brazil and Argentina. Finally, in the seventh section we show how such a strategy perpetuates macroeconomic instability, and eventually leads the country to domestic and debt crisis, as it possesses a built-in mechanism maintaining the local currency overvalued. Considering that this is not a policy paper, we will not discuss the alternatives for the present situation, although in the conclusion we offer some thoughts about such alternatives.³

SOFT CURRENT ACCOUNT CONSTRAINT

Conventional growth theory asserts that the lower the capital intensity and per capita income of a country the faster it will grow, because such countries will display higher returns to capital. Free capital flows promote efficient international allocation of resources, with capital flowing from countries with high capital/labor ratios to countries with low capital/labor ratios. If there is no restriction on capital mobility, savings will move and increase investment and growth in these countries. The precondition are that developing countries open their economies, take care of macroeconomic stability, keep markets functioning freely, and develop an institutional system that guarantees property rights and contracts. As capital would move quickly to equalize its marginal productivity, the convergence on output per capita should inevitably occur.

The assumption behind this model – that developing countries do not have enough domestic savings to finance their economic development – got stronger after the 1980s' debt crisis. Yet, as we will argue in this paper, it is a false assumption. Extremely poor countries, such as most sub-Saharan and a few Latin American ones like Haiti, indeed did not complete their capitalist revolution and remain unable to finance growth. All countries of intermediate level of economic development, however, although hurt by the international debt crisis and a domestic fiscal crisis, remain able to finance their investments, and do that. In fact, given the solvability constraint, they have no alternative but to finance their growth through their own savings. The central question they face is not the lack of savings, but how to achieve macroeconomic stability and to create a secure economic environment, where entrepreneurs can invest, expand industrial capacity, and generate the required savings.

Yet, the international solvability question is ignored by the conventional orthodoxy, today dominant in the international financial organizations and interna-

³ In relation to Brazil, our analysis and policy proposals are in Bresser-Pereira and Nakano (2002). This document is available at www.bresserpereira.org.br, and was written at the request of the house representative José Aníbal, president of PSDB.

tional financial markets. The conventional argument goes as follows: free capital movement disciplines governments, creating rational constraints to their behavior. Populist fiscal policies and state intervention distorting market allocation will prove unsustainable as they result in capital outflow. To attract foreign capital into the country, governments have to follow policies considered exemplary by potential investors. 'Credibility' derived from a confidence building strategy becomes a necessary condition for growth.

The central foundation of a credible macroeconomic policy is a responsible fiscal policy, or budget equilibrium. Populist fiscal policies should be avoided and the primary surplus should be such as to keep the government's domestic debt to GDP ratio under control. Based on a sound fiscal foundation, the country should adopt fixed-exchange rate regime (currency board or dollarization would be a good alternative...). Thus, monetary policy would just respond to capital mobility respecting the interest rate parity relationship. The domestic interest rate is viewed as endogenous, depending on the international interest rate and the country risk. The distinction between an exogenous basic interest rate defined by the central banks and an endogenous or market interest rate is ignored.

Given the 1990s' successive international financial crises, contagion effects, and speculative attacks, conventional orthodox economists revised their opinion and are now accepting floating exchange rate regime. In this case, as central banks recover some discretion in adopting an active monetary policy, they should follow a 'conservative policy', often translated into high interest rates, and should have independence in order to conquer the credibility of foreign and domestic investors.

Under such conditions, and given capital account mobility or the opening of the economies to world financial markets, foreign savings would be the key factor for faster growth. The fact that foreign savings correspond to current account deficits is not usually mentioned. When it is, the rationale that the IMF uses to play down its role is a typical mainstream assumption: the twin deficits theory. Keeping under control the budget deficit would automatically entail the control the current account, since both deficits would have the same cause: excess demand. The fact that unemployment and an overvalued exchange rate falsify the twin deficits assumption is ignored.

THE FIRST AND THE SECOND CONSENSUS

Some authors tried to provide empirical evidence for such reasoning. They argued that restrictions to capital mobility existing since 1930 explained Latin American countries' unsatisfactory economic performance as compared to the Asian ones.⁴ Such an argument is incorrect. Latin American countries did restrict capital mobility before the 1990s, but all other countries did the same. This was an as-

⁴ See, for instance, Taylor, 1999.

sumption of the Bretton Woods agreements. Capital mobility would be kept under control allowing countries to have freedom to manage monetary and exchange rate policy. As Bluestone and Harrison observed, “Article VI of Bretton Woods Articles of Agreement *required* members to institute such controls as would be deemed necessary to maintain global economic stability”.⁵ Even in the 1980s the Washington Consensus did not challenge capital controls. It was for trade liberalization, not for capital liberalization. It was only in the early 1990s, profiting the positive climate for market oriented reforms that existed at that moment that capital mobility was included in the Washington standard advice.

In the first fifty years after Bretton Woods, the results of restriction to capital mobility were favorable. In most cases rates of growth were satisfactory; in Brazil they were excellent. Yet, distortions began to accumulate already in the 1970s, and, in the early 1980s, the debt crisis and the fiscal crisis of the state signaled the collapse of the developmental strategy that they had adopted since the 1930s. Since the mid 1980s Latin American countries implemented badly needed fiscal adjustment and market oriented reforms that came to be known as the Washington Consensus. Yet, such consensus should be distinguished from what could be called the Second Washington Consensus, based on financial liberalization and the growth *cum* foreign savings strategy.⁶ The first consensus did not challenge capital controls; it did not include the liberalization of the capital account, nor suggested that increased indebtedness was the best strategy for developing countries. Commenting Sebastian Edwards’ proposal of concomitant liberalization of domestic capital markets and international capital flows, Williamson remarked in the book where he defines the consensus that “restrictions on international capital flows should be maintained until after the domestic capital markets had been liberalized and trade reform had been largely completed”. Second, according to Williamson, the consensus “disfavor both negative and (because of the discouragement of investment and the implications for government and corporate solvency) excessively positive interest rates”. Third, exchange rates should be competitive, since “there is now a very wide consensus in Washington that export led growth is the only kind of growth that Latin America stands any chance of achieving in the next decade.”⁷

⁵ Bluestone and Harrison, 2001: 135.

⁶ We don’t think necessary to substantiate with facts Washington’s and particularly the IMF’s support of such a strategy. Just look the limit case, Argentina. While an overvalued peso was producing high current account deficits and leading the foreign debt to unimaginable level, the IMF was concerned with the budget deficit and domestic debt. If one wants substantiation for this claim, he will have just to read what the newspapers published about Argentina and the IMF from early 1999, when the crisis began to take full form, to 2001, when it blew up. The budget deficit and the domestic debt are always emphasized while the current account deficit and the foreign debt are ignored.

⁷ Williamson, 1990: 18, 21, 72. The ten areas of policy reform included by Williamson in the consensus are fiscal discipline, public expenditure reform, tax reform, domestic financial liberalization, competitive exchange rates, trade liberalization, welcoming attitude to foreign direct investment, privatization, deregulation, property rights guarantee.

Thus, the first consensus should be distinguished from the second one, which is a phenomenon of the 1990s, after the Brady Plan disentangled the debt crisis. Only then did full capital mobility become part of the conditionality to lend to these countries. On the other hand, the growth *cum* savings strategy made little sense while the countries were immersed in the debt crises. At the moment, however, that this crisis appeared 'solved' by the Brady Plan, a new wave of capital outflow set off in the early 1990s – the 'emerging markets' wave – the growth *cum* foreign savings strategy appeared obvious. Yet, in practical terms it involved overvalued currencies and correspondingly high interest rates, with detrimental consequences for macroeconomic stabilization and growth.

The first consensus was criticized by the Latin America Left, although most of its propositions – which added to macroeconomic adjustment and market oriented reforms – were quite sensible policies provided that they were executed with moderation.⁸ After sinking into deep crisis in 1982 (when the debt crisis broke), Latin American economies recovered gradually due to exchange rate devaluation and fiscal adjustment, which began immediately after, and to the market oriented economic reforms proposed by the Baker Plan (1986). The second consensus, however, was more ambitious, since it suggested a growth strategy, and its consequences were disastrous: economic quasi-stagnation and financial crises. Today there is in Latin America a general resistance to reforms, which derive from people mixing up the detrimental consequences of the Second Washington Consensus with the generally positive outcomes deriving from the first one. When well designed and implemented the market oriented reforms and the macroeconomic adjustment involved in the first consensus were favorable to economic growth. What was really detrimental to stabilization and growth was financial liberalization and the growth *cum* foreign savings strategy.

Dependency theory had been exhaustively discussed in the 1970s in order to understand the obstacles that Latin America had faced to grow, but, paradoxically an effectively dependent strategy of growth – fully dependent on foreign savings – was only adopted in the early 1990s. Most Latin American countries, with the notable exception of Chile, which established clear limits to the capital inflows, have followed the dependent growth strategy described in the previous section. The international agencies in Washington presented each country that adopted such strategy as an example to the others. Yet, each major country ended in a crisis: Mexico, in 1994; Brazil, in 1998 and 2002; Argentina, in 1995 and 2001/2002. None, except Mexico which enjoys privileged relations with the United States and is today in a more favorable economic situation, solved their foreign account unbalances and resumed sustained economic growth.⁹

As Latin American countries are more open to foreign influence than the oth-

⁸ For instance, provided that did not involve privatization of natural monopolies. Or that labor regime flexibilization did not involve offense to basic social rights.

⁹ It is interesting to note that the rates of growth in Argentina after stabilization proved to be artificial, as the 1995 contagion crisis and the 2001/2002 dramatic end-of-cycle crisis demonstrated.

ers, such growth *cum* foreign savings strategy was more widespread in such countries. Yet, it was not limited to Latin America. All severely indebted countries were victims of the same soft current account constraint turned into a growth strategy. Even the Asian tigers, although not so much indebted, suffered growth losses as a consequence of the 1997 crisis, which highlighted the instability of international capital flows. The countries that better resisted to such policies in Asia, like China and India, are the ones that continue to grow steadily.

We ask again, what went wrong? Why is it not true that capital mobility and foreign savings inflow will lead to higher capital accumulation? In what conditions are foreign savings favorable or unfavorable? And what type of foreign savings? Should we distinguish direct investments leading to patrimonial indebtedness from financial indebtedness? Why did the exchange rate tend to be overvalued in Latin American countries just after they stabilized their prices? Is the adoption of an exchange rate anchor the explanation? Does the twin deficits theory authorize the policymakers concern themselves primarily with the budget deficit, counting with the assumption that if this deficit is under control, the current account deficit will also be? How consistent is macroeconomic stability with the dependent growth strategy?

THE SOLVENCY CONSTRAINT AND THE DEBT THRESHOLD

The inflow of foreign savings will be favorable to a country provided that it is not excessively indebted and that the expected rates of return in this country are considerably higher than the market interest rate for such country. A country is excessively indebted when it overcomes the debt threshold. On the other hand, the existence in a country of an expected high return on investments normally depends on a large development process in action, in which externalities play a major role. When such conditions do not hold, current account deficits will rather reduce the motivation to investment in real assets, while it will increase the country's consumption and the international debt ratios. We will argue about what was just said in the following session. We will argue that the Second Washington Consensus proved a misguided strategy because it ignored in which particular conditions capital mobility and foreign savings are favorable to growth.

According to conventional orthodox reasoning, if capital flows from high to low per capita income countries, the corresponding current account deficits in the recipient country should imply an increase in its rate of investment. From the national accounting identity, we know that investment is equal to domestic plus foreign savings, and that the latter equals the current account deficit. Thus, a country receiving foreign savings should display a higher rate of investment than if it were not. On the other hand, the conventional wisdom on international global markets and dependent growth, that we previously sketched, and its assumption related to free capital mobility, tells us that a higher savings rate in one country does not imply a higher rate of investment in this same country. Such wisdom

confirms the conclusion derived from the accounting identity: savings will flow from mature countries with a low return on investment to developing ones, and growth in the later will follow.

Feldstein and Horioka, using a sample of sixteen OECD countries, have tested these hypotheses, but ‘surprisingly’ found a strong correlation between domestic savings and rate of investment.¹⁰ Other studies have shown that this savings-investment correlation is highly stable, and holds for developing countries even in recent periods, after their financial liberalization. Yet, this robust Feldstein-Horioka empirical correlation was considered as a ‘puzzle’ by conventional neoclassical economics as it apparently contradicted the standard theory.

Recently other authors have argued that this correlation is not a puzzle, but is a long-run relationship reflecting the intertemporal budget constraint, or the solvency constraint, to which each country is subject.¹¹ A country cannot borrow or lend indefinitely: current account deficits have to be followed by surpluses, or vice versa. In the long run the current account balances have to add up to equilibrium. For some period, and up to a certain debt ratio, a country can have current account deficits issuing new debt, but after a given indebtedness level the debt overhang has negative effects on macroeconomic stability and economic growth, so that the country should better bring down its debt ratios. Although receiving increasing interests for the accrued risk, after a certain level foreign lenders stop accepting the Ponzi game of issuing new debt to pay old debt, and the possibility of a balance of payment crisis becomes concrete. On the other hand, domestic economic agents demand higher interest, and the budget deficit increases while domestic investments fall. In other words, when we are analyzing a macroeconomic problem we should not forget that there are flows and stocks. Flow of foreign capital becomes a stock of debt, which has its own dynamics over time. The Feldstein-Horioka findings hold because developed countries tend to be cautious and respect the solvency constraint – a constraint that the dependent growth strategy ignored in the 1990s.

There is a debt threshold that developing countries should not ignore. In the 1970s in Brazil, when Mario Henrique Simonsen was finance minister, this outstanding Brazilian economist used to say that the foreign debt to exports ratio should not exceed 2. Later, in an academic text, after Brazil had long surpassed the 2 limit, he made his view more precise: a debtor country with the debt to exports ratio below 2 is in comfortable situation, between 2 and 4 in a doubtful situation, and in a critical situation if this ratio is above 4.¹² In fact, the debt to exports ratio seems the fundamental indicator of external solvency. Foreign investors may be

¹⁰ See Feldstein and Horioka, 1980.

¹¹ See Rocha and Zerbini (2002) for a survey and further evidence. The authors quote studies by Sinn (1992) and Coakley et al. (1996) as evidence that the Feldstein-Horioka correlation is not a puzzle but just express a solvency constraint.

¹² See Simonsen and Cysne, 1995.

risk-taking, but they charge for the risk, and may, at any time, stop rolling over a debt that they understand too big.

Simons's intuition was correct. Although difficult to clearly define, recent empirical research points out the existence of a threshold beyond which debt the debt has negative consequences for the economy. The World Bank has found that most episodes of debt crisis and renegotiations took place when the debt/export ratio reaches 220% and the debt/GDP ratio reaches 80%. Cohen finds lower numbers: when the debt/export ratio reaches 200% and the debt/GDP ratio, 50%, the probability of rescheduling becomes great and the effect on the growth becomes significantly negative.¹³ A recent detailed empirical study by three IMF economists provides a similar conclusion. They find a nonlinear effect of increasing debt on growth, "the average impact of debt on per capita growth appears to become negative for debt levels above 160-170 percent of exports and 35-40 percent of GDP". Their study also suggests that "doubling debt slows per capita growth by about half to full percentage point", so when the debt ratio raises from 100 to 300 percent, per capita growth declines by full 2 percentage points per annum.¹⁴

It is possible that over a long period a country benefits from foreign savings, provided that, in the borrowing phase, it invests and increases its potential growth rate in a permanent way, so that the lower rate of growth in the debt payment phase is more than compensated. But this is true only if we analyze the short-term dynamics of savings, investment and debt, and reverse the causality between investments and savings. Instead of saying, with neoclassical economics and conventional wisdom, that higher savings will increase investments, we should say, with Keynes that, in a closed economy, the rate of investment determines the savings rate. In an open economy, the investment rate depends on imported capital goods, and so the investment rate faces foreign exchange constraint. Thus, if the existing incentives to invest are strong in a given economy, i.e., if the exchange rate is relatively devalued, creates profit opportunities in export industries, or, if externalities deriving from other investments are high so that the expected rate of profit is considerably higher than the market rate of interest, the strategy of growth *cum* foreign savings may work. Foreign savings, preferably in the form of direct investments, will complement domestic savings. The pressure in the exchange rate to go down will occur, but consumption will not go up too much because local businessmen are actively investing. In this case, foreign savings makes the investment financially viable. If the growth of external debt is kept under control (i.e., the debt ratios are kept within prudent limits), the incoming foreign savings will foster the growth rate of the economy. Thus, under these conditions, if in the borrowing phase the country has a reasonable macroeconomic stability, an investment program, and strong incentive to invest on the part of domestic entrepreneurial class, and its foreign debt did not overcome the debt

¹³ See Cohen, 1993.

¹⁴ See Pattillo, Poirsin and Ricci, 2002.

threshold, the availability of foreign savings will represent a positive factor in promoting economic growth. None of these conditions existed in Latin America and in most highly indebted developing countries in the 1990s.

CAPITAL LIBERALIZATION, FOREIGN SAVINGS, AND GROWTH

A large macroeconomic literature was oriented not to directly criticize a growth *cum* foreign savings strategy, but to study the possible correlation between capital liberalization and economic growth. Following the neoclassical assumptions behind the growth *cum* foreign savings strategy, the conclusion was that such liberalization was as sound as trade liberalization. Yet, the empirical studies do not confirm such deduction. In 1994, Alesina, Grilli and Milesi-Ferreti, studying 20 developed economies between 1950 and 1990, found no significant correlation between capital openness and economic growth.¹⁵ A 1998 paper by Rodrik concludes that there is no evidence that countries without capital controls have grown faster, invested more, or experienced lower inflation.¹⁶ Such conclusions have not been challenged by new evidence. Capital controls are essentially uncorrelated with long-term economic performance once we control for other determinants. On the contrary, there is evidence that some countries that relied on foreign capital inflows have experienced financial debacle that combines balance-of-payment collapse and a banking crisis (Mexico in 1994, Thailand in 1997, Argentina in 2001).¹⁷ In 2000, Armijo discussed the political economy implications of capital liberalization, emphasizing the differences with trade liberalization.¹⁸ In contrast, Quinn reported in 1997 a positive correlation, but the possibility that the results had an inverse causation – countries showing higher rates of growth tending to be more open – could not be excluded.¹⁹ Arteta, Eichengreen and Wyplosz questioned the robustness of such uneven correlation for developed countries.²⁰ Finally, Eichengreen and Leblang (2002), studying the impact of capital liberalization on growth between 1880 and 1997 on 21 countries, found that “capital controls are associated with *faster* growth”. More generally they conclude that capital controls may be negative in microeconomic terms, as they may distort resource allocation, but are positive in avoiding macroeconomic crises.²¹

Following our interest in the impact of foreign savings on growth, we esti-

¹⁵ Alesina, Grilli and Milesi-Ferreti, 1994.

¹⁶ Rodrik, 1998: 61.

¹⁷ Goldenstein, 1998; Radelet and Sachs, 2000.

¹⁸ Armijo, 2000.

¹⁹ Quinn, 1997.

²⁰ Arteta, Eichengreen and Wyplosz, 2001.

²¹ Einchengreen and Leblang, 2002: 4.

mated the econometric impact caused by an increase in such foreign savings rate on GDP per capita growth. We used a sample of 51 countries for which the data were available. The period studied was 1979 to 1998. The results are clear, and consistent with the just reviewed literature. For the total sample, a 1 percent increase in foreign savings in relation to GDP had a long-term impact of just 0.005 percent in GDP per capita growth, that is, the income elasticity of foreign savings is only 0.005. Considering just Latin America countries, most of which are highly indebted, the impact of foreign savings in the same period, as expected, is still smaller: 0.001 percent, a result that is not statistically different from zero. In the Appendix, we present the econometric model, the source of data, the sample of countries, and the econometric test.

This study, as most of the previous ones, demonstrates that growth is made at home. If this is true for all countries in the period studied, it is particularly true for the ones already severely indebted. When the country is highly indebted, additional current account deficits will only make their economies more unstable, turning growth negative.

In other words, we are not contending that investment is in the long run constrained by domestic savings and the capacity to import capital goods. The current account deficit may be a way of overcoming this constraint, to the extent that the corresponding foreign savings turns into investment, not into consumption. When one correlates inflow of foreign savings with increases in domestic capital accumulation, he is presuming that all the resources available through domestic and foreign savings are productively invested in the economy in each period. This is possible only if the country, besides having strong domestic entrepreneurial class and a government engaged in active and competent industrial, technological, and trade policies, has reached macroeconomic stability, and such stability is not been threatened by the additional indebtedness.

Macroeconomic stability here is not understood as price stability. Macro stability involves also long run equilibrium of the public and the foreign accounts. It requires relatively low interest rates, consistent with debt ratios kept under control, and a 'realistic' exchange rate, which assures sufficient trade surpluses to finance the interests and dividends due on the financial and patrimonial indebtedness.

In Latin America, during the recent episode of large capital inflow, such conditions have not been present. Thus, much of the foreign savings turned into domestic consumption. The rate of total domestic investment did not increase, or increased only slightly, and economic growth did not accelerate, as foreign savings had as trade-off reduced domestic savings. The inflow of capital appreciated the local currencies, increased wages, spurred consumption, reduced exports and increased imports, causing increased macroeconomic instability. Figure 1 shows clearly the capital inflow cycle and the investment rate in Brazil. It is interesting to observe that in the 1970s the investment rate increases as the net capital inflow soars until 1974. In contrast, in most of the 1980s, when the country turned highly indebted, having exceeded the debt threshold, the investment rate and the capital

flow are inversely related. In 1992 a new inflow cycle begins, but the investment rate, after increasing slightly, stabilizes and then goes slightly down.

Figure 1: Brazil: Capital Inflow Cycle and Rate of Investment - % GDP (Moving Average 3 years)

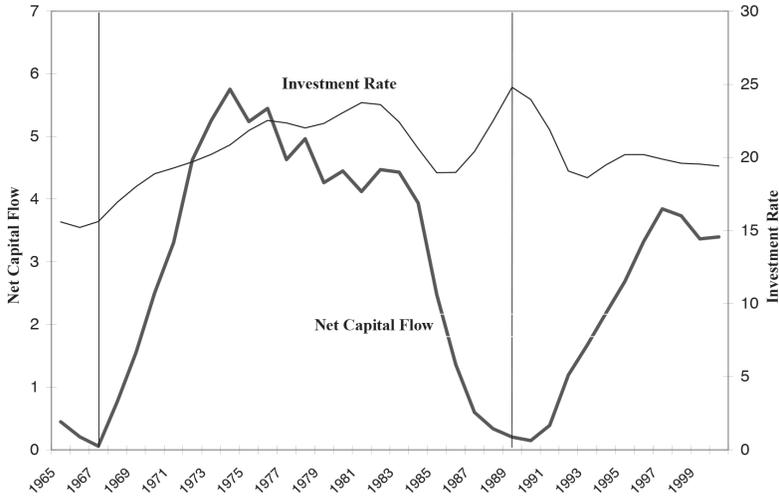
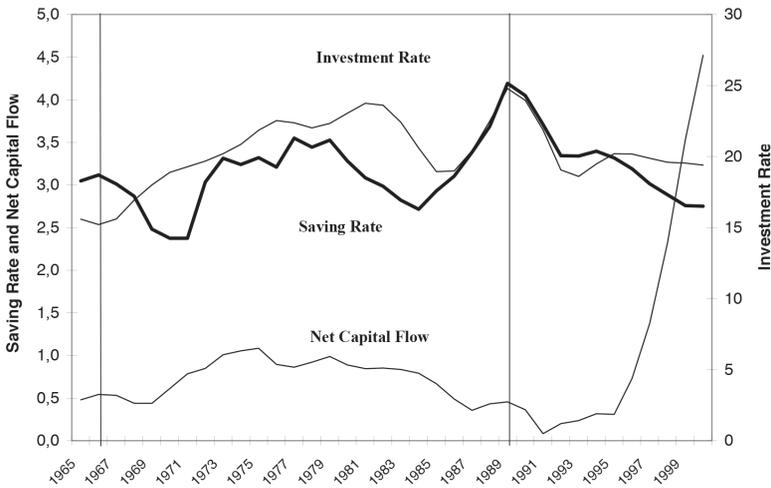


Figure 2 shows another view of the problem, in which the Feldstein-Horioka constraint appears, as the investment rate and domestic savings follow similar paths. In this figure we can see foreign savings as the difference between the two lines. Between 1968 and 1983 foreign savings is positive and the investment rate is increasing. After a transition the current deficit is near zero, while the investment rate increases sharply till 1989 as a consequence of classical populist expending, to fall in the same proportion immediately after. With price stabilization and the capital inflow cycle, current account becomes again negative, but the correspondent positive foreign savings does not cause the increase in the investment rate. At the same time, foreign direct investment surges, financing the current accounting deficit, but not promoting increase in investments.

Summing up, we see that in the long-run the inflow of foreign savings does not necessarily increase the investment rate as long as there is a debt threshold; second, that such inflow often turns unstable with the foreign accounts leading the developing countries to international financial crises. The identification of capital liberalization with trade liberalization is misplaced. Trade liberalization was necessary for Latin American countries, but involves a continual negotiation process. Financial liberalization involves much higher risks. Its critics often emphasize the intrinsic instability that characterizes financial markets. We are accentuating a different aspect: the risk, in the long-run, of excessive foreign indebtedness – a risk that the market mechanism does not avoid, and that the multilateral organizations, beginning with IMF, do not take into consideration as they should.

Figure 2: Brazil: Investment and Domestic Savings Rate (Foreign Savings), and FDI



THE POPULIST CYCLE AND THE CAPITAL INFLOW CYCLE

Why does the debt threshold tend to be ignored? Why were the Feldstein-Horioka findings viewed for long as a puzzle instead of a solvency constraint? To understand what happened in Latin American economies since the early 1990s, we have to look more closely at the facts, and specifically to two types of related cycles: the populist cycle and capital inflows cycle. From the debtor countries' point of view, the explanation lies in the populist cycle. In relation to the creditor countries and the international financial system, it lies in the dynamics of the capital flows cycle. The strong demand for price stabilization is a third explanation, as long as the use of an exchange rate anchor is a permanent (and populist) temptation.

The classical work on the populist cycle was written by Canitrot (1975), who described the populist cycle having as inspiration Díaz-Alejandro's (1963) seminal analysis of the impact of exchange rate devaluation on distribution.²² Being Argentinean, he was well acquainted with Peronist economic populism, and was able to develop an economic model from three attempts to distribute income in the short run through wage increase and exchange rate appreciation, two of which under a Peron administration (1946-52 and 1973-75).²³

The populist cycle may be described with stylized facts. It begins with high inflation and recession. The populist administration raises nominal wages, increases state

²² See Canitrot (1975), Díaz-Alejandro (1963,1981). Observe that economic populism should be distinguished from political populism – the direct relation of a political leader with voters without political parties' intermediation.

²³ Later, Sachs (1989) also offered a significant contribution to the matter. Dornbusch and Edwards, and Bresser-Pereira edited in the same year, 1991, books on the subject.

expenditures, and fixes the exchange rate. Soon, the exchange rate gets overvalued, the inflation rate goes down, real wages go up, consumption and imports soar, and exports decline. The episode ends with a balance of payments crisis, exchange rate devaluation, and the adoption of tight fiscal and monetary policies. In the beginning of the cycle, nominal wage increases are restricted, in principle, to civil servants. Thus, we derive that we can have three types of economic populism: fiscal populism, when government expends more than its revenues permit; exchange rate populism, when we have exchange rate overvaluation; and the sum of both: total economic populism. The second type is directed related to the capital inflow cycles.

While the populist cycle has a political origin, the capital inflow cycles are, on the perspective of the lending countries, an economic phenomenon. From abundant recent empirical studies, we can derive some new stylized facts about the inflow of foreign capital to developing countries, which have a clear relationship with the populist cycle. First, these studies show that these events are also cyclical, and mostly initiated by exogenous factors like low interest rates or current account surpluses in developed countries, rather than domestic conditions or domestic policies attracting private capital inflow. More important, inflows have been characterized by strong lending boom and sudden reversals. Factors affecting developed countries' economies and finance are a main cause for these lending booms.

From the developing countries' point of view, however, the capital flows cycle is part of a populist cycle. It is the exchange rate aspect of it. Frequently the populist cycle is defined by an irresponsible increase in public expenditures, so that the state is expending more than it is able to collect. This is the 'fiscal populism', characterized by large budget deficits. 'Exchange rate populist' happens when the nation is expending more than it is able to gain, and huge current account deficits develop.

In a typical episode of capital inflow cycle the average duration is of about six years and the macroeconomic indicators are affected in the following way:²⁴ • The real exchange rate appreciates significantly;

- The domestic real interest rate increases, while the international real interest rate incurred by country increases, but less significantly;
- There is an overall turnaround in the current account from surplus (or low deficit) to high deficit in the peak of capital inflow boom;
- The government budget surplus or deficit worsen significantly;
- The rate of investment rises above the previous trend, but declines subsequently;
- There is a consumption boom with its ratio to GDP rising during the whole episode;
- There is a temporary output gain perversely compensated by significant and long-lasting decline in potential output growth;

²⁴ See Calvo, Leiderman and Reinhart, 1993, 1995; Gourinchas, Valdés e Landerretche 2001.

- The episode ends with international financial markets suspending suddenly the rollover of the debt, a strong domestic adjustment following.

Observe that differently from the fiscal populist cycles, there is no increase in nominal wages, or pro-cyclical expending binge. Populism appears in exchange rate evaluation and the corresponding increase in real wages and salaries, particularly of the middle classes, whose consumption displays a higher import coefficient.

The upsurge of capital flows create the opportunity for the growth *cum* foreign savings strategy, or, in other words, to increased international indebtedness. The debt crisis produced many studies and an important literature on the relationship between debt and patterns of growth.²⁵ Yet, it seems that economists in Latin America, Washington and New York, have not yet learned the lessons. It is unambiguously the fact that the debt accumulated in the 1970s generated the crisis of the 1980s, when the domestic investment rates of these highly indebted countries fell much below the historical trend. The debt overhang was interpreted as a 'tax on domestic resources', with negative effect on the rate of investment and growth. We have seen above, among our stylized facts, that the potential rate of growth of the economies subjected to capital inflow boom declines significantly. Why do this happen? What is the transmission mechanism?

Conventional orthodoxy assumes that in an open economy, markets will be an efficient mechanism to impose discipline on macroeconomic policy. Thus, to the extent that this policy responds to market signals, we will have macroeconomic stability. A simpler version of such wisdom teaches that economic and financial liberalization plus fiscal responsibility will produce macroeconomic or price stability. Thus, if the government controls the budget deficit, markets will consider the macroeconomic policy exemplary, deserving credibility. Key words in this view are price stability and credibility. Fiscal policy would be the only relevant economic policy, given that monetary policy, i.e., the rate of interest and exchange rate would be endogenous variables. More recently, when fixed exchange rate regimes failed, monetary policy regained importance, so that, besides fiscal policy, a tight monetary policy, defined by high interest rates, turn out to be the only two relevant economic policies. To manage the exchange rate, no fluctuating, was still not recommended.

Most Latin American governments, in the 1990s, followed this prescription, or tried to do their best to follow it. Thus, the IMF and other international institutions, that viewed Mexico as an example in the early 1990s, considered Argentina and Brazil exemplary for most of the decade. In practice, the macroeconomic policy in these countries responded most of the time to financial markets' signals. First, because financial markets respond more quickly to any information, and try to anticipate the events and behave based on expectations. Second, because in the dependent growth strategy capital flows are what matters: the real sector of economy is already taken care by the market. The economic policy has a clear financial bias.

²⁵ See, for instance, Cohen, 1994.

Yet, the predictions of the growth *cum* foreign savings strategy did not work. Not because markets were not free, or because fiscal adjustment was not enough (although always could be better), but because such strategy does not lead to macroeconomic stability and credibility. On the contrary, it leads to continuing instability derived from financial fragility of the external sector. Such mainstream economic policy intrinsically destabilizes the economy for at least two reasons: the growth dynamics of the foreign (and domestic) debt combined with markets' shortsightedness, and the tendency to the over-evaluation of the local currency. Macroeconomic policy reacts to a short-term strategy, not to a long-term one; and capital inflow tends then to evaluate the local currency and eventually causes financial crisis.

Moreover, it is well known that it is impossible to have together fixed or controlled exchange rate, autonomous monetary policy, and capital mobility. We have to choose any two from three policy variables. As the growth *cum* foreign savings strategy just discussed emphasizes capital mobility, and as foreign investors search to reduce the exchange rate risk, it originally included fixed exchange rate regimes (currency board or, preferably, dollarization). That meant, according to the macroeconomic trilemma, that countries would not have autonomous monetary policy. Developing countries, anyway, would be incompetent to apply such policies. The domestic interest rate is determined by the 'country risk' and by other conditions prevailing in the international capital markets, and would tend to be high so as to attract capital inflows. But, as interest rate grows, the foreign and the public debts increases and the country risk becomes higher and higher.

The alternative, that countries such as China, India and Chile adopted in order to keep control of their economies, was to establish some controls to capital inflows, while outflows were kept basically free. In doing that these countries were able to practice active and autonomous monetary and exchange rate policies. They were, specially, able to avoid that the exchange rate appreciate – a condition for avoiding current account deficits and balance of payments or international financial crises.

THE OVERVALUED EXCHANGE RATE

The growth *cum* foreign savings strategy has a built-in mechanism that tends to keep the exchange rate relatively overvalued. Current account deficits mean that the supply of foreign money is higher than it would be if current indebtedness was kept constant. And so, it means that the exchange rate will be overvalued when compared with the one consistent with zero current account deficits. On the other hand, the growth *cum* foreign savings strategy usually began in each country with the adoption of an exchange rate anchor to control inflation. These two factors lead to an overvalued exchange rate, which tends to perpetuate as long as such rate, on one side, responds to the political interests of the middle and upper classes. In order to understand this, let us examine the recent capital inflow to Latin America, which began in the early 1990s. The stylized facts above tell us that low interna-

tional interest rates (or current account surpluses in the developed countries) promote a capital flow boom to 'emerging markets'.²⁶

After the debt crisis of the 1980s, most Latin American countries have engaged in fiscal adjustment and implemented liberalizing reforms. In the early 1990s most of them had already opened up their economies and controlled the inflation using exchange rate anchor. Brazil was the last major country to achieve price stability, in 1994. Most of these countries adopted a fixed exchange rate regime, or some sort of pegged system. Capital inflows brought additional pressure on the real exchange rate, appreciating it, while the price of domestic assets increased with demand. Central banks, in order to avoid the explosive increase in money supply and in credit, had to implement a sterilizing policy, which resulted in higher domestic interest rates. This rise in the interest rate attracted more capital, creating a vicious cycle of current account deficits and borrowing boom. As long as the real domestic interest rate is above the international rate, there is strong attraction of short-term capital inflows, interested in arbitrage gains. Thus, with the exception of Chile, that implemented a short-term capital control mechanism, this policy created a bias in favor of short-term capital inflows.

With abundant supply of foreign exchange and the consequent exchange rate appreciation, the demand for foreign goods increases, causing a turnaround in the trade balance from surplus to deficit. Yet, despite the current account deficit, the overall rate of investment increases only slightly because most of the trade deficit is due to a consumption boom, which increases imports of goods and services. The consumption of domestic goods also increases with the exchange rate appreciation, augmenting domestic output. The overall investment rate increases just slightly because only the firms having access to international financial markets have the possibility of obtaining cheap credit, and because this sort of growth strategy rewards consumption, not investment. The inflow of foreign capital does not affect much the rate of investment. In some cases, the previous downward trend of investment rate is not altered. When, instead of short-term portfolio and arbitrage investments, we have direct foreign investments, such investments consist mostly of mergers and acquisitions.

On the other hand, the exchange rate evaluation and the consequent artificial increase in wages and salaries reduce domestic savings in such a way that it perversely compensates foreign savings resulting from current account deficits. In a country like Brazil, in the late 1990s, foreign savings represented about 4% of GDP: it was almost in the same proportion that domestic savings to GDP decreased in the decade.

Evidently, this policy of appreciating the exchange rate, increasing in real wages and consumption, while inflation is under control, is a form of populism: exchange rate populism, or neo-populism. As the country presents a small primary deficit, or even a primary surplus, the budget deficits seem under control, and the

²⁶ See Calvo, Leiderman and Reinhart, 1993, and Gavin, Hausmann and Leiderman, 1996.

overall policy has the support of financial markets, mainstream economists, and the IMF. In the period of capital inflow boom, governments are able to finance their budget deficits, which, in spite of government's attempts to control expenditures, in practice increase, leading to a high internal debt. Such increase takes place in spite of the achievement of the primary surpluses demanded by IMF because domestic interest rates remain high, applying over a large public debt.

After some years of huge accumulation of foreign and domestic debts, financial conditions deteriorate. Such deterioration raises negative expectations on the part of local and international enterprises, as it has happened in Argentina since 1999, and the investment rate decreases, leading to recession. The consequent reduction in government's revenues perversely increases the budget deficit. On the other hand, creditors become increasingly uneasy. The country risk increases, as external debt to exports ratio increases much beyond a debt threshold. Speculative attacks are essayed. The reversal of capital flows can start by contagion, herd behavior, and self-fulfilling prophecy. The country is then prone to international default and domestic crisis.

It is interesting to observe that the capital inflow boom of the 90s was mostly of private capital. And so the defendants of the growth *cum* foreign savings strategy argue that there is no such thing like debt problem. As debt was issued by private sector there will be some market solution. The problem is not that simple, because, with the strong pressure from private sector, it is the government that finally provides hedge for holders of foreign currency liabilities. As the demand for foreign currency for hedging increases, the exchange rate goes up, and the central bank, before the foreign creditors suspend the rollover of the debt, has to sell its reserve of foreign currencies and obtain financing from international financial organizations. This is done to avoid the explosive increase of the exchange rate (which would theoretically resume the rollover of the debt and return capital flows to equilibrium), and, so, avoid inflation. As the loans from international organizations are insufficient to stabilize the exchange rate, the government also has to issue debts indexed to foreign exchange. This creates an additional debt problem, because now a large proportion of domestic debt depends on the exchange rate, and this proportion tends to increase, as an increasing number of domestic investors prefer government bonds indexed to foreign exchange. The resistance to a realistic exchange rate becomes stronger as the foreign account unbalance gets worse.

At different moments, in the 1990s or early 2000s, each Latin American country suffered speculative attacks started by different reasons. In all cases, the growth *cum* foreign savings strategy was behind the problem. All had devalued their exchange rate and had no other alternative but to ask for IMF support. In the late 1990s, after the 1997 Asian crisis, when those countries were in a much better fiscal situation than the Latin Americans, concern about the 'international financial architecture' began to rise in Washington. The report of the Meltzer Commission, created by the American Congress, was a first signal that it was time to revise the growth *cum* foreign savings strategy. Its main recommendation was that developing countries should show more transparency in their financial reports, and that IMF

should cease to bail out the commercial banks. It was an indirect but major denunciation of the growth strategy of the 1990s. When Anne Krueger, at the end of 2001, became the new IMF's chief economist, she proposed the bankruptcy mechanism, or article 11 system, to countries unable to rollover their sovereign foreign debts. It was, again, a clear signal, by a second outstanding mainstream economist (the first being Allan Meltzer) that it was time to reexamine the IMF's alliance with the commercial banks and more generally with the international markets. Its role is to control such system, not to be coopted by it. Yet, one should not conclude that the United States and the international agencies changed their policies in relation to the developing countries. Kenneth Rogoff, IMF's Chief Economist, writing by invitation of *The Economist*, wrote that developed countries, whose population is aging, should have large current account surpluses with developing countries:

Isolationists in industrialized countries should stop and look at their populations' advancing age structure. As the dependency ratio explodes later this century, who is going to provide goods and services for all the retirees? There are many elements to a solution, not least allowing expanded immigration from the developing world, with its much younger population. Regardless, one desirable element has to be for the industrialized countries to save abroad by running large current-account surpluses vis-à-vis the developing world. These cumulated surpluses, while facilitating much-needed investment in poorer countries right now, could later be drawn down as the baby-boomers stop working.²⁷

Rogoff may be right that there is a potential welfare gain in allowing the North to save more than it invests and exporting the capital to the South. The question to developing countries is how to achieve that gain without running into debt crises that more than negate the potential benefits. The solution would be equity rather than debt investments, but real equity investments, not just portfolio investments that are as liquid and as dangerous, if not more, as financial debt.

CONCLUSION

In conclusion, the Latin American countries are subject to cyclical process of capital inflow booms. The cycles are mostly initiated by low interest rates or a surplus in the current account of developed countries. Adopting, in the 1990s, the dependent growth or growth *cum* foreign savings strategy – a revised version of the 1970s growth *cum* debt strategy –, the inflow of foreign savings increases slightly the investment rate at first, but does not create the conditions for the payment of the increased debt in the future. Most of the foreign savings are channelled into consumption. The immediate rate of growth may increase, but the long run rate of growth declines significantly. With the accumulation of debt, and the increase in interest rates, the interest payments absorb larger and larger portion of

²⁷ Kenneth Rogoff, 2002.

exports revenues. On the other hand, the increase in domestic interest rates lead to increasing internal debt, and to the reduction of investments and finally to recession. The countries that hoped they had achieved macroeconomic stability when they achieved price stability began to realize that real macroeconomic stability was further and further away.

Is there a way out of the crisis before the country loses control of the economy? The way out involves a stronger fiscal adjustment combined with a reduction of the domestic interest rate, and devaluation of the local currency combined with capital controls on capital inflows (not outflows) to keep the exchange rate in the equilibrium level. This rate will be such that guarantees intertemporal equilibrium in foreign accounts.

Given their high foreign indebtedness, the central obstacle faced by the countries that adopted the growth *cum* foreign savings strategy is the external constraint, but this does not mean that they will overcome it by additional lending. On the contrary, these countries need to increase exports or to engage in competitive import substitution in order to reduce the foreign debt ratios and achieve foreign account balance. As the commitment made by the Latin American countries in the late 1980s to fiscal responsibility and to the control of inflation, they have now to make a similar commitment to a reasonably stable and rewarding exchange rate to exporters. The strategy of fighting inflation with an exchange rate anchor will have to be abandoned for good. The related growth *cum* foreign savings strategy must have the same fate. Foreign domestic investments continue to be extremely interesting to highly indebted countries like Latin American ones, as long as they help the country to reduce its financial debt. The exchange rate commitment, that will represent a major incentive for firms to invest in export capacity, must be accompanied by an active trade policy, since the increase of exports is now the major goal – the only way out of a crisis triggered by a mistaken dependent growth strategy.

APPENDIX

Following the standard growth model and adding the assumption that $I = S + CAD$, where I is investment, S is domestic savings and CAD is current account deficit, we can get the following equation:

$$\ln(Y/L) = \alpha + \frac{\alpha}{1-\alpha} \ln s + \frac{\alpha}{1-\alpha} \ln(1+\gamma) - \frac{\alpha}{1-\alpha} \ln(n+g+d) + \mu$$

where (Y/L) is the Gross Domestic Product per worker; s is the domestic savings per effective work; $\gamma = \frac{CAD}{S}$; n is the population growth rate; g is the innovation rate; d is the depreciation of the capital.

Taking the partial derivative with respect to s and CAD , we get $\frac{\partial y}{\partial s} \frac{s}{y} = \beta_1 - \beta_2 \cdot \frac{cad}{S+CAD}$, where $cad = CAD$ per effective-labor, and $\frac{\partial y}{\partial CAD} \frac{CAD}{y} = \beta_2 \cdot \frac{CAD}{S+CAD}$.

To estimate the effect of the current account deficit on the GDP, we used a panel data set of 51 countries for the period 1979-1998. The data source is *World Development Bank – CD ROM 2001*. The first-difference estimated equation is:

$$\Delta \log(ypc)_{it} = \alpha_0 + \beta_1 \Delta \log(s)_{it} + \beta_2 \Delta \log(1 + \gamma)_{it} + \beta_3 \Delta \log(n + g + d)_{it} + \beta_4 d80_t + \dots + \beta_{22} d98_t$$

where *ypc* is the Gross Domestic Product per capita; *s* is domestic savings/GDP, *n* is population growth rate; *g* is innovation rate (2%); *d* is depreciation of the capital (3%)²⁸; $\gamma = cad / s$ (with *cad* being the current account deficit); and *d80-d98* are time dummies. The group of countries is shown in table A.1.

Table A.1

1	Argentina	18	Ghana	35	Norway
2	Australia	19	Guatemala	36	Pakistan
3	Austria	20	Honduras	37	Paraguay
4	Bangladesh	21	Hong Kong	38	Peru
5	Belgium	22	Iceland	39	Philippines
6	Bolivia	23	India	40	Portugal
7	Brazil	24	Ireland	41	South Africa
8	Canada	25	Italy	42	Spain
9	Chile	26	Jamaica	43	Sweden
10	Colombia	27	Japan	44	Switzerland
11	Costa Rica	28	Kenya	45	Thailand
12	Dominican Republic	29	Korea	46	Trinidad and Tobago
13	Ecuador	30	Malaysia	47	Tunisia
14	Egypt.	31	Mauritius	48	United Kingdom
15	El Salvador	32	Mexico	49	United States
16	Finland	33	Netherlands	50	Uruguay
17	France	34	New Zealand	51	Venezuela

At the first step, OLS - Ordinary Least Squares- estimates of all parameters were computed. The quantities in parentheses are the usual OLS standard errors; the quantities in brackets are standard errors robust to both serial correlation and heteroscedasticity. Testing for AR(1) serial correlation yields $\hat{\rho} = 0.394$, $t = 13,34$, so serial correlation exists. Then, estimates of β 's were computed by FGLS – Feasible General Least Squares.

²⁸ The *g* and *d*.were calculated by Mankiw, Romer and Weil, 1992.

Table A.2 - OLS

$\Delta \log(\text{ypc}_{it}) =$.00548	+ .2530241 $\Delta \log(s)$	+ .0294989 $\Delta \log(1 + \gamma)$	- .128073 $\Delta \log(n+g+d)$
	(.005)	(.032)	(.006)	(.063)
	[.005]	[.036]	[.008]	[.061]
		$n = 969$	$R^2 = 0.18$	

White test to heteroscedasticity: $F = 4.42$; $p\text{-valor} = .0123$.

Serial correlation test to serial AR(1): $\rho = .3942$; $t = 13.34$.

Table A.3 - FGLS

$\Delta \log(\text{ypc}_{it}) =$	-.00210	+ .206784 $\Delta \log(s)$	+ .024251 $\Delta \log(1 + \gamma)$	- .182154 $\Delta \log(n+g+d)$
	(.004)	(.039)	(.005)	(.072)
		$n = 918$	$R^2 = 0.15$	

test $\Delta \log(s) = \Delta \log(1 + \gamma)$; $\Delta \log(s) - \Delta \log(1 + \gamma) = 0.0$ $F(1, 897) = 22.39$, $\text{Prob} > F = .0000$

Table A.4

$\frac{\partial y}{\partial CAD} \frac{CAD}{y} = \beta_2 \cdot \frac{CAD}{S + CAD}$	= .005
$\frac{\partial y}{\partial CAD} \frac{CAD}{y} = (\beta_2 + \beta_{23}) \cdot \frac{CAD}{S + CAD}$	= .001*

(*) Estimated with an interaction between CAD and Latin American countries.

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