ECONOMIC GROWTH IN LATIN AMERICA: CHALLENGES FOR A NEW ERA*

By

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I. Introduction

During the last decade economic performance in Latin America was mediocre. For the region as a whole GDP grew at a rather disappointing 3.3% per year during 1990-2000. This is significantly lower than the World Bank’s target for the region of 6% per annum and markedly below the average for the 1960-1982 period. If this rate of growth is maintained in the years to come, Latin America will hardly make any progress in improving social conditions, and catching up with the more advanced nations. At the center of Latin America’s modest performance is an overall low rate of productivity growth. Indeed, with the exception of Chile, total factor productivity (TFP) growth has been very low during the last two decades. In Brazil, for example, TFP growth was merely 0.7% per year during the 1990s. There is little doubt that an acceleration of the region’s rate of economic growth will require a significant boost in productivity.

Chile and Mexico provide two interesting examples. In both countries and until not too long ago, the government authorities had set a target for GDP growth of 7% per year. Although today these goals seem out of reach, they do reflect the wide gap between expectations and reality. Moving close to these ambitious rates of growth will require very significant jumps in productivity. In Chile this will mean exceeding the 2% rate of TFP growth attained during the 1990-2000 period. This will not be easy, as the sources of faster productivity growth that are associated with the first wave of modernization reforms have largely been exhausted. In the case of Mexico, achieving the 7% GDP growth proposed by President Vicente Fox will require turning the negative rate of productivity growth of the last decade into a healthy 2.5% per year. Although during 1998-2000 Mexico’s TFP growth improved remarkably, and averaged 1.2%, it is still significantly below what is required to meet President Fox’s target.

There is little doubt that, as disappointment with market reforms and globalization settles in, the question of how to achieve rapid growth is becoming increasingly urgent. In this paper I tackle three issues central to the growth challenge of the next decade or so. I first deal with macroeconomic stability and growth. Avoiding macroeconomic crisis is a fundamental element of any reasonable pro-growth strategy; there is ample evidence that currency crises...
have had devastating effects on economic well being, and have greatly retarded growth. I concentrate on two related aspects of macroeconomics stability, crisis and growth: First, I deal with the opening of the capital account. While a number of authors -- including officials at the IMF -- have argued that greater mobility of capital will affect growth positively, others have taken the position that it increased capital mobility creates instability. Some have gone as far as arguing the opening of the capital account has been at the center of many of the crises of the 1990s. Second, I deal with foreign savings, current account deficits, capital accumulation and growth. I argue that excessive reliance on foreign savings -- whose counter part are large current account deficits -- is highly risky, as capital flows may come to an abrupt end forcing the country to face a major and costly current account reversal. Finally, in the final section I move away from macroeconomics and provide some reflections on the determinants of long-term growth. Here I discuss issue as disparate as culture, technology and the new economy.

II. Globalization Critics and the Opening of the Capital Account

Many globalization critics -- including Joe Stiglitz and Paul Krugman -- have argued that for economic liberalization to succeed, it is essential that reform is implemented at the right speed and in the right sequence (see, for example, Stiglitz 2002, pages 73-78). This is a very important principle, and these authors are right in emphasizing it. They are particularly on target when they argue that opening the capital account too soon is likely to generate serious dislocations and eventually contribute to the unleashing of major crises.

What is interesting, however, is that this emphasis on speed and sequencing is not new in policy discussions. In fact, since the beginning of the economics profession, it has been dealt with over and over again. Adam Smith, for example, argued in The Wealth of Nations that determining the appropriate sequencing was a difficult issue that involved, primarily, political considerations (see the Cannan Edition, Book IV, Chapter VII, Part III, page 121). Moreover, Smith supported gradualism -- just as many globalization critics do --, on the grounds that cold-turkey liberalization would result in a significant increase in unemployment. Consider the following quote from The Wealth of Nations:

“[t]o open the colony trade all at once..., might not only occasion some transitory inconvenience, but a great permanent loss...[T]he sudden loss of employment..., might alone be felt very sensibly” (Vol. II, Ch. VII, pt. III, page 120).

This issue of speed and sequencing also became central in analyses on how to design a reform strategy for the former communist countries. In discussing the problems faced by Czechoslovakia during the early period of its
transition, Vaclav Klaus pointed out that one of the main problems was deciding on “sequencing as regards domestic institutional and price measures on the one hand, and liberalization of foreign trade and rate of exchange on the other” (*The World Bank Economic Review*, 1990, page 18).

In the early 1980s the World Bank became particularly interested in exploring issues related to sequencing and speed of reform. Papers were commissioned, conferences were organized, and different country experiences were explored. As a result of the discussion surrounding this work, a consensus of sorts developed on the sequencing and speed of reform. The most important elements of this consensus included: (1) trade liberalization should be gradual and buttressed with substantial foreign aid. (2) An effort should be made to minimize the unemployment consequences of reform. (3) In countries with very high inflation, fiscal imbalances should be dealt with very early on in the reform process. (4) Financial reform requires the creation of modern supervisory and regulatory agencies. And (5), the capital account should be liberalized at the very end of the process, and only once the economy has been able to expand successfully its export sector. Of course, not everyone agreed with all of these recommendations, but most people did. In particular, people at the IMF did not object to these general principles. For example, Jacob Frenkel, who was to become the IMF’s Economic Counsellor argued in a mid 1980s article in the *IMF Staff Papers* that the capital account should, indeed, be opened towards the end of the reform process. I think that it is fair to say that during the late 1980s, the idea of gradualism and a “capital account last” sequencing had become part of the received wisdom.

Sometime during the early 1990’s this received wisdom on sequencing and speed began to be challenged. Increasingly people in Washington began to call for simultaneous and very fast reforms. Many argued that politically this was the only way to move forward. Otherwise, the argument went, reform opponents would successfully block liberalization efforts. It was around this time that the U.S. government began pressuring the East Asian nations to liberalize their capital account restrictions and to allow capital to move more freely. Policy makers and academics in most of the region became extremely worried about these recommendations. They had two main concerns. On the one hand, they argued that – as had been the case in a number of Latin American countries during the early 1980s – liberalizing the capital account would result in massive real exchange rate appreciation. This, of course, was against the decades-old policy of maintaining a highly competitive real exchange rate as a way of encouraging exports. The main worry was based on a hysteresis-type argument: if capital flows suddenly declined, or worse yet reversed, the country would be left permanently with a smaller export sector. Their second concern was that that massive capital inflows were likely to feed a real estate boom and bubble that would make the economy particularly vulnerable to financial shocks.

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3 Much of this discussion is in Edwards (1984).
In 1992, and in response to what was perceived as U.S. pressure to lift capital controls, Yung Chul Park from Korea University organized a conference on capital account liberalization. The conference, which was held in Seoul, was particularly successful, and most participants agreed that following an appropriate sequencing was vital for the success of liberalization. There was also broad support for the idea that a premature opening of the capital account could entail serious danger for the country in question. In a paper presented at this conference, Robert Mundell captured succinctly the views of most participants. The following quote is illustrative:

“[U]nfortunately...there are some negative externalities [of an early capital account liberalization]. One is that the borrowing goes into consumption rather than into investment, permitting the capital-importing country to live beyond its means...without any offset in future output with which to service the loans. Even if the liabilities are entirely in private hands, the government may feel compelled to transform the unrepayable debt into sovereign debt rather than allow execution of mortgages or other collateral. (p. 20).”

What is particularly important about this quote is that Mundell acknowledges that the probability a government bail out of private borrowers constitutes a serious externality.

At the 1992 Seoul conference on capital liberalization one of the few dissenters was the late Manuel Guitian, then a senior official at the IMF, who argued in favor of moving quickly towards capital account convertibility. Yet, and in stark contrast to Stiglitz’s (2002) characterization of the IMF leadership, there was no dogma or arrogance in Guitian’s position. He listened to others’ arguments, provided counter-arguments, and carefully listened to the counter-counter-arguments. I believe that Guitian’s paper – suggestively titled “Capital Account Liberalization: Bringing Policy in Line with Reality” – is one of the first written pieces that documents the IMF’s change in views regarding sequencing and capital account convertibility. After discussing the evolution of international financial markets, and expressing reservations about the “capital-account-last” sequencing recommendation, Guitian summarized his views as follows:

“There does not seem to be an a priori reason why the two accounts [current and capital] could not be opened up simultaneously...[A] strong case can be made in support of rapid and decisive liberalization in capital transactions (p. 85-86).”

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4 The papers from this conference are in Edwards (1995).
During the second half of the 1990s the view that emerging and transition countries should lift capital controls and open up their capital account became dominant at the IMF and the Treasury. Partially as a result of this, starting in 1995 more countries began to relax their controls on capital mobility. In doing this, however, they tended to follow different strategies and paths. While some countries only relaxed bank lending, other only allowed long-term capital movements, and yet others – such as Chile -- used market-based mechanisms to slow down the rate at which capital was flowing into the economy. Many countries, however, did not need any prodding by the IMF or the U.S. to open their capital account. Indonesia and Mexico – just to mention two important cases – had a long tradition of free capital mobility, which preceded the events discussed in this book, and never had any intention of following a different policy.

But agreeing that sequencing is important is not the same as saying that capital controls should never be lifted. A difficult and important policy issue – and one that Stiglitz most globalization critics do not address –, is how and when to remove impediments to capital mobility. A first step in answering this question is determining the long-term consequences of capital mobility on economic performance. This is a difficult question, and one about which we have limited evidence. However, recent research that uses new and improved measures on the degree of openness of capital mobility suggest that a freer capital account has a positive effect on long run growth in countries that have surpassed a certain stage in the development process, and have strong institutions and domestic capital markets.

The issue of how to move towards greater capital mobility is highly complex, and requires additional research. There is some evidence, however, suggesting that price-based and transparent mechanisms, such as the flexible tax on short term inflows used by Chile during much of the 1990s, work relatively well as a transitional device. It allows for some capital mobility and discourages short-term speculative monies; at the same time it avoids arbitrary decisions by bureaucrats. But, as I have argued elsewhere, even Chile-style capital controls have costs, and they did not spare Chile from contagion or macroeconomic instability during the second half of the 1990s.

Most globalization critics argue that the experiences of China and India, two countries that did not suffer a currency crisis in the 1990s, and of Malaysia – which did not follow the IMF’s advice, and recovered quickly— support the views that capital controls are beneficial. This argument is rather unpersuasive, however. Anyone mildly informed knows that there are many reasons why India and China have not faced a crisis, and attributing this to the presence of capital controls is overly simplistic, if not plainly wrong. The case of Malaysia is a bit more complicated. It has recovered fast – although not as fast as South Korea —, but it is not clear if this recovery was the result of the imposition of capital controls and of fixing of the exchange rate. This is still an open question that will require additional research. What is true, however, is that Malaysia surprised
many observers by tightening controls only temporarily; after approximately a year, and once the economy had stabilized, the controls were lifted just as Dr. Mahatir had originally announced.

What makes Malaysia’s case particularly interesting is that historically the temporary use of controls is quite unique. The historical norm is closer to what happened in Latin America during the 1980s debt crisis, when what was supposed to be a temporary tightening of controls, became a long-term feature of the regional economies. Moreover, in Latin America the stricter controls on capital outflows did not encourage the restructuring of the domestic economies, nor did they result in orderly reforms. The opposite, in fact, happened. In country after country politicians experimented with populist policies that at the end of the road deepened the crisis. Mexico nationalized the banking sector and expropriated dollar-denominated deposits. Argentina and Brazil created new currencies — the *austral* and the *cruzado* —, at the same time as they controlled prices and expanded public expenditure. In Peru, tighter controls on outflows allowed President Alan Garcia’s administration to systematically erode the bases of a healthy and productive economy, as the country was rapidly consumed by a virtual civil war. Not surprisingly the result of these policies was, in all three countries, runaway inflation and a collapse in economic activity. And, to make things even worse, in none of them were controls on capital outflows successful in slowing down capital flight.

### III. Investment, Foreign Savings and Current Account Reversals

The Latin American economies have traditionally had a low domestic savings ratio — according to the World Bank, this has averaged 20% of GDO during the 1990s. Foreign savings, on the other hand, have tended to be very large, surpassing 5% of GDP during the 1970-1999 period. Many economists have argued that this reliance on foreign savings — and the resulting large current account deficits — is actually beneficial, as relatively poor countries have a very large marginal productivity of capital (Corden 1994, Sachs 1981). The problem with this reasoning, however, is that historically large current account deficits are not sustainable in time. Large deficits are usually followed by “reversals,” many times generated by “sudden stops” in capital inflows. In this section I discuss some of the evidence regarding current account reversals and their costs.

There are three fundamental questions regarding current account reversals. First, how common are large current account deficit reversals? Second, from a historical point of view, have these reversals been associated with currency or financial crashes? And third, how costly, in terms of economic performance indicators, have these reversals been? With respect to this third point, I argue that the most severe effect of current account reversals on economic performance take place indirectly, through their impact on investment.
The analysis presented in this subsection complements the results in a recent important paper by Milesi-Ferreti and Razin (2000).^5

I define a “current account reversal” as a reduction in the deficit of at least three percent of GDP in one year. The first question I ask is how common are reversals. A analysis using data for all countries with available information for 1970-1998 indicates that incidence of “reversals” was equal to 16.7% of the yearly episodes – the data set includes 149 countries with a total number of data points equal to 2,949 (see Edwards 2001 for details). This reversal occurrence varied across regions; not surprisingly, given the definition of reversals, the lowest incidence is in the industrialized countries (6%). The two highest regions are Africa and the Middle East, with 27 and 26 percent of reversals respectively. For Latin America the incidence of reversals corresponds to 19% of the yearly observations.

Both from a theoretical, as well as from a policy perspective, it is important to determine whether these reversals are short lived, or whether they are sustained. Short-term reversals may be the result of consumption smoothing, while more permanent ones are likely to be the consequence of policy-related external adjustments. I address this issue by asking in how many “reversal” cases the current account deficit was still lower three years after the reversal was detected. The answer is that for the sample as a whole, 45 percent of the “reversals” were translated into a medium term (three year) improvement in the current account balance. The degree of permanency of these reversals varied by region, however. In the advanced countries 75% of the reversals were sustained after three years; the smallest percentage corresponds to the Latin American nations where only 37% of the reversals were sustained after three years.

In their influential paper, Milesi-Ferreti and Razin (2000) analyzed the effects of current account reversals on economic performance, and in particular on GDP growth. They relied on two methods to address this issue: They first used a “before and after” approach, and tentatively conclude that “reversals in current account deficits are not necessarily associated with domestic output compression.” (page 302). Since “before and after” analyses are subject to a number of serious shortcomings, they also address the issue by estimating a number of multiple regressions on different samples. Their dependent variable is the rate of per capita output growth, and the independent variables include a measure of exchange rate overvaluation, an index of openness, the level of indebtedness, initial GDP and the investment to GDP ratio, among other. After analyzing the results obtained from this regression analysis the authors argue that “reversals…are not systematically associated with a growth slowdown.” (Milesi-Ferreti and Razin 2000, p. 303).

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^ My data set, however, is larger than that of Milesi-Ferreti and Razin (2000).
Milesi-Ferreti and Razin (2000) reach this conclusion after estimating growth equations that control for investment (among other variables). It is highly probable, however, that current account reversals affect investment itself, and that through this channel they impact on real GDP growth. The reason for this potential effect of reversals is rather simple: investment is financed by the sum of national and foreign savings. The latter, of course, is exactly equal to the current account deficit. Thus, any current account reversal will imply a reduction in foreign savings. What will happen to aggregate savings—and thus, to investment—will depend on the relationship between foreign and national savings. The existing empirical evidence on this matter strongly suggests that foreign savings partially, and only partially, crowd out domestic savings. Edwards (1996), for example, estimated a number of private savings equations for developing countries, and found that the coefficient of the current account deficit was significant and in the neighborhood of −0.4. Loayza et al (2000) used a new data set on private savings in emerging economies, and estimated that the coefficient of the current account deficit was −0.33 and highly significant. These results, then, suggest that a decline in foreign savings— that is, a lower current account deficit—will reduce aggregate savings and, thus, aggregate investment. Since there is ample evidence supporting the idea that investment has a positive effect on growth, the previous argument would suggest that, in contrast with Milesi-Ferreti and Razin’s (2000) claim, current account reversals will have a negative—albeit indirect—effect on growth.

In order to whether indeed current account reversals have affected aggregate investment negatively, I estimated a number of investment equations using panel data for a large number of countries for the period 1970-1997. The recent empirical literature on investment, including Attanasio et al (2000), indicates that investment exhibits a strong degree of persistence through time. This suggests estimating equations of the following type:

\[
\text{INVGDP}_{tj} = \beta \text{INVGDP}_{t-1j} + \delta \text{GOVCONS}_{tj} + \phi \text{TRADE_OPENNESS}_{tj} + \gamma \text{REVERSAL}_{tj} + \omega_{tj},
\]

Where INVGDP is the investment to GDP ratio, GOVCONS is the ratio of government expenditure to GDP, and TRADE_OPENNESS is an index that captures the degree of openness of the economy. And REVERSAL is a variable that takes the value of one if the country in question has been subject to a current account reversal, and zero otherwise. Finally, \(\omega\) is an error term, which takes the following form:

\[
\omega_{tj} = \varepsilon_{tj} + \mu_{tj},
\]

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6 On recent attempts to estimate investment equations using a cross section of countries see, for example, Barro and Sala-i-Marti (1995), and Attanasio et al (2000).

7 In principle, the log of initial GDP may also be included. However, because of the panel nature of the data, and given the estimation procedures used this is not possible.
where $\varepsilon_j$ is a country specific error term, and $\mu_{ij}$ is an iid disturbance with the standard characteristics.

The estimation of equation (1) presents two problems. First, it is well known from early work on dynamic panel estimation by Nerlove (1971) that if the error contains a country specific term, the coefficient of the lagged dependent variable will be biased upward. There are several ways of handling this potential problem. Possibly the most basic approach is using a fixed-effect model, where a country dummy (hopefully) picks up the effect of the country specific disturbance. A second way is to estimate the instrumental variables procedure recently proposed by Arellano and Bond (1991) for dynamic panel data. This method consists of differentiating the equation in question – equation (1) in our case --, in order to eliminate the country specific disturbance $\varepsilon_j$. The differenced equation is then estimated using instrumental variables, where the lagged dependent variable (in levels), the predetermined variables (also in levels), and the first differences of the exogenous variables are used as instruments. In this paper I report results from the estimation of equation (1) using both a fixed effect procedure as well as the Arellano and Bond method.

A second problem in estimating equation (1) is that, since current account reversals are not drawn from a random experiment, the REVERSAL $j_t$ dummy is possibly correlated with the error term. Under these circumstances the estimated coefficients in equation (1) will be biased and misleading. In order to deal with this problem I follow the procedure recently suggested by Heckman et al (1997, 1998) for estimating "treatment interventions" models. This procedure consists of estimating the equation in question using observations that have a common support for both the treated and the non-treated. In the case at hand, countries that experience a reversal are considered to be subject to the "treatment intervention." From a practical point of view, a two steps procedure is used: (1) The conditional probability of countries facing a reversal – this is called the propensity score -- is first estimated using a probit regression. (2) The equation of interest is estimated using only observations whose estimated probability of reversal fall within the interval of estimated probabilities for countries with actual reversals. I follow the Heckman et al (1997, 1998) sample correction both for the fixed effect and the Arellano and Bond procedures. In estimating the propensity scores I used a panel data probit procedure, and included as regressors the level of the current account deficit in the previous period, the level of the fiscal deficit, domestic credit creation, and time specific dummies. The results obtained from this first step are not presented here due to space consideration, but are available on request. Table 1 contains the results of estimating investment equation (1) on an un-balanced panel of 128 countries for period 1971-1997. In Table 1.a I present the results obtained from the estimation of the Arellano-Bond instrumental variables procedure. In Table 1.b I present the results from the fixed effect estimation. In both cases I have introduced the REVERSAL indicator both contemporaneously, as well as with a one period lag. In the Arellano-Bond estimates the standard errors have been computed using White’s
robust procedure that corrects for heteroskedasticity. The results obtained are quite interesting. In both panels the coefficient of the lagged dependent variable is relatively high, capturing the presence of persistence. Notice, however, that the coefficient is significantly smaller when the Arellano-Bond procedure is used. The coefficient of GOVCON is positive and non significant. The estimated coefficient of trade openness is significant and positive, indicating that after controlling for other factors, countries with a more open trade sector will tend to a higher investment to GDP ratio. More important for this paper, the coefficients of the contemporaneous and lagged reversal indicator are significantly negative, with very similar point estimates. Interestingly, when the REVERSAL variable was added with a two-year lag its estimated coefficient was not significant at conventional levels.

An important question is whether current account reversals have affected economic growth through other channels. I investigated this issue by using the large data set to estimate a number of basic growth equations of the following type.

\[
GROWTH_{tj} = \beta \text{INVGDP}_{tj} + \delta \text{GOVCONS}_{tj} + \phi \text{TRADE\_OPENNESS}_{tj} + \theta \text{LOGGDPO}_{j} + \gamma \text{REVERSAL}_{tj} + \xi_{tj}. 
\]

Where GROWTH_{tj} is growth of GDP per capita in country j during year t, and LOGGDPO_{j} is the initial level of GDP (1970) for country j. As Barro and Sala-i-Martin (1995) have pointed out, the coefficient of GOVCONS is expected to be negative, while that of openness is expected to be positive. If there is a catching-up in growth, we would expect that the estimated coefficient of the logarithm of 1970 GDP per capita will be negative. The main interest of this analysis is the coefficient of REVERSAL. If sharp and large reductions in the current account deficit have a negative effect on investment, we would expect the estimated \( \gamma \) to be significantly negative. The error \( \xi_{tj} \) is assumed to be heteroscedastic, with a different variance for each country (panel).

Equation (2) was estimated using the feasible generalized least squares procedure (FGLS) suggested by Beck and Katz (1995) for unbalanced panels. The samples in the different estimations were determined by the availability of data on the different regressors. The data were obtained from the World Bank and from the Summer and Hestons data set. In the base estimates I used the definition of current account reversals given above. The basic results obtained from the estimation of equation (2) are presented in Table 2. In addition to the regressors in equation (2) I introduced time specific dummy variables. As may be seen from the Table, the results obtained support the hypothesis that current account reversals have had a negative effect on GDP per capita growth, even after controlling by investment. Moreover, the coefficients for the other variables in the regression have the expected signs, and are significant at conventional
levels. When alternative estimation techniques were used, including fixed effects, the results obtained were very similar.  

IV. Concluding Remarks

The discussion in the proceeding two section has dealt with macroeconomic aspects of growth. There is little doubt that macroeconomics is important, and that avoiding major macro crisis contributes significantly towards achieving the goal of development and prosperity. Indeed, there is ample evidence suggesting that macros and currency crises affect the poor in a disproportionate way.

But macro is not everything. In this final section I provide some reflections on other aspects of long-term growth. In particular I deal with “culture” and with the potential role of the new economy.

Economic historian David Landes has recently stated that when it comes to explaining cross-country differentials in growth and performance, “culture makes almost all the difference” (2000, p. 2).

The notion that culture affects economic performance is, of course, not new. Max Weber made the point forcefully in his analysis of the origins of capitalism. More recently, the idea that culture, and in particular institutions, play a key role in development has been emphasized by scholars such as Douglas North, Francis Fukuyama and Robert Putnam. Nobel Laureate Douglass North has argued that countries that are able to develop strong institutions that protect property rights, and help solve disputes, have low “transaction costs” and can devote themselves fully to productive activities. Robert Putnam, has focused on the role of “social” capital, and has argued that different cultures treat this important form of capital differently. Francis Fukuyama has emphasized the role of trust. Building on this notion Ronald Inglehart (2000) has recently presented evidence suggesting that some cultures have a greater degree of trust than others. Those “high trust” cultures, in turn, have done better in terms of economic performance. Latin American countries do particularly badly in this trust dimension – with Argentina, Brazil, Chile and Mexico exhibiting significantly lower “trustiness” than the European and Asian nations.

This emphasis on culture helps put technology in perspective. In particular, it stresses the point recently made by some authors, in the context of the “new” economy and firm performance: Unless it is accompanied by “cultural” changes -- and by this I mean institutional, value, and deep economic changes --, information technology will have little effect of aggregate growth and performance. In terms of cliches, it is possible to state that “the information technology revolution requires a cultural revolution!”

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8 Naturally, when fixed effects are used it is not possible to include (the log of) initial GDP as a regressor.
9 Brynjolfsson, Renshaw and Van Alstyne (1997).
In the real world, economic and social relations are seldom one way. This means that while an effective adaptation of information technology requires a cultural revolution, information technology can itself help catalyze cultural and institutional change. Information technology can help increase transparency and reduce corruption. This is the case, for instance, in countries where government procurement has gone on line. Also, by reducing the costs of communications, information technology can reduce “economic distance” across countries. “Closeness,” in turn, increases international trade and helps blur cultural differences. Leamer and Storper (2001) have recently argued that, although the internet will not replace the basic mechanisms through which “trust-based” business relations are established, it will reduce the maintenance costs of this relations. This is likely to reduce transaction costs and will make economic relations more effective and productive. And to the extent that information technology helps improve the quality of education – through the use of computers in the classroom and the implementation of international Third International Math and Sciences Survey (TIMSS) type standardized tests for middle school children – it will also help introduce cultural changes among the young.

It is important to notice that when it comes to the use of the internet technology there are costs of taking “shortcuts.” Implementing major technology programs at the national level, without making changes in the complementary areas identified in this paper, may backfire and result in important social costs. More specifically public policies aimed at subsidizing the adoption or use of information technology may be very costly, yielding meager results. Beginning the effort at the educational level seems to be the correct strategy. If the information technology effort is indeed undertaken as a part of “system” of mutually reinforcing changes, it may indeed become a powerful tool in Latin America’s effort to move towards growth, development and prosperity.
### TABLE 1  
**INVESTMENT AND CURRENT ACCOUNT REVERSALS**

#### a. Arellano-Bond Instrumental Variables

|                   | Coef.     | Std. Err. | z   | P>|z|  | [95% Conf. Interval] |
|-------------------|-----------|-----------|-----|------|---------------------|
| **invgdp**        |           |           |     |      |                     |
| LD                | .6212481  | .0835012  | 7.44| 0.000| .4575887 - .7849075 |
| **govcon**        |           |           |     |      |                     |
| D1                | .0819257  | .1063111  | .77 | 0.441| -.1264401 -.2902916 |
| **rev**           |           |           |     |      |                     |
| D1                | -2.021207 | .2545002  | -7.94| 0.000| -2.520018 -1.522396 |
| **revlag**        |           |           |     |      |                     |
| D1                | -0.883478 | .2235849  | -3.95| 0.000| -1.321696 -.4452596 |
| **trade**         |           |           |     |      |                     |
| D1                | 0.0436178 | .0127593  | 3.42| 0.001| .0186101 .0686255  |
| **_cons**         | -0.048037 | .0169209  | -2.84| 0.005| -.0812014 -.0148727 |

Arellano-Bond test that average autocovariance in residuals of order 1 is 0:  
H0: no autocorrelation  
z = -4.46  
Pr > z = 0.0000  
Arellano-Bond test that average autocovariance in residuals of order 2 is 0:  
H0: no autocorrelation  
z = -1.08  
Pr > z = 0.2809

#### b. Fixed Effects Method

|                   | Coef.     | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|-------------------|-----------|-----------|------|------|---------------------|
| **invgdp**        |           |           |     |      |                     |
| invgdp1           | .7655012  | .0139967  | 54.69| 0.000| .7380497 .7929527  |
| **govcon**        |           |           |     |      |                     |
| govcon1           | .0326171  | .0186247  | 1.75 | 0.080| -.0039113 .0691455 |
| **rev**           |           |           |     |      |                     |
| rev1              | -2.05903  | .1622943  | -12.69| 0.000| -2.377336 -1.740724 |
| **revlag**        |           |           |     |      |                     |
| revlag1           | -0.840422 | .0518791  | -5.30| 0.000| -1.151441 -.5294026 |
| **trade**         |           |           |     |      |                     |
| trade1            | .0324689  | .0051885  | 6.26 | 0.000| .0222927 .042645  |
| **_cons**         | 3.266194  | .4745214  | 6.88 | 0.000| 2.335521 4.196867 |

F test that all u_i=0:  
F(127, 1794) = 2.61  
Prob > F = 0.0000
### TABLE 2

**GDP GROWTH AND CURRENT ACCOUNT REVERSALS**

Feasible Least Squares with Heteroskedastic Panels

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: heteroskedastic
Correlation: no autocorrelation

| Coefficients | Standard Errors | P>|z| | 95% Confidence Interval |
|--------------|-----------------|-----|-------------------------|
| **invgdp**   | .1732786        | .0129535 | 13.38 | 0.000 | .1478901 - .198667 |
| **govcon**   | -.044147        | .0129061 | -3.42 | 0.001 | -.0694425 - -.0188514 |
| **trade**    | .0066118        | .0021185 | 3.12 | 0.002 | .0024595 - .010764 |
| **loggpp0**  | -.7458834       | .0754805 | -9.88 | 0.000 | -.8938225 - -.5979443 |
| **rev**      | -.8387433       | .2063497 | -4.06 | 0.000 | -1.243181 - -.4343053 |
| **revlag**   | -.3106008       | .2014468 | -1.54 | 0.123 | -.7054293 - .0842277 |
| **d73**      | 1.270318        | .759329 | 1.67 | 0.094 | -2.2179398 - 2.758575 |
| **d74**      | -.342419        | .7482716 | -1.79 | 0.073 | -2.809004 - 1.241666 |
| **d75**      | -3.115973       | .7482444 | -4.16 | 0.000 | -4.582505 - 1.649441 |
| **d76**      | .6267746        | .7248618 | 0.86 | 0.387 | -.7939283 - 2.047478 |
| **d77**      | -.9757318       | .6522791 | -1.50 | 0.135 | -2.54175 - .3027116 |
| **d78**      | .1379759        | .5050662 | 0.27 | 0.785 | -2.819357 - 1.127887 |
| **d79**      | -.0996983       | .6317958 | -1.74 | 0.083 | -3.02582 - .1413142 |
| **d80**      | -2.362011       | .6280218 | -3.76 | 0.000 | -3.591101 - 1.129301 |
| **d81**      | -2.826354       | .624467 | -4.53 | 0.000 | -4.049855 - 1.602853 |
| **d82**      | -4.194326       | .6217559 | -6.75 | 0.000 | -5.412945 - 2.975707 |
| **d83**      | -2.900355       | .619746 | -4.82 | 0.000 | -4.205483 - 1.775227 |
| **d84**      | -1.221758       | .6185186 | -1.98 | 0.048 | -2.434032 - .0094836 |
| **d85**      | -1.784731       | .6187208 | -2.88 | 0.004 | -2.997401 - .5720605 |
| **d86**      | -1.75228        | .617261 | -2.84 | 0.005 | -2.962629 - .5430107 |
| **d87**      | -1.596635       | .6173792 | -2.59 | 0.010 | -2.806676 - .3865935 |
| **d88**      | -.7132081       | .6150168 | -1.16 | 0.246 | -1.918619 - .492027 |
| **d89**      | -1.492796       | .617887 | -2.43 | 0.015 | -2.697767 - .2878324 |
| **d90**      | -2.005303       | .6140373 | -3.27 | 0.001 | -3.208794 - .8018121 |
| **d91**      | -2.686583       | .6082038 | -4.42 | 0.000 | -3.878641 - 1.494526 |
| **d92**      | -2.38132        | .6155925 | -3.87 | 0.000 | -3.587859 - .117478 |
| **d93**      | -2.238038       | .6105288 | -3.63 | 0.000 | -3.435814 - 1.024945 |
| **d94**      | -.8790476       | .6164939 | -1.43 | 0.154 | -2.087353 - .3295282 |
| **d95**      | -.9938183       | .5940141 | -1.67 | 0.094 | -2.158065 - .170428 |
| **d96**      | -1.480438       | .6129868 | -2.42 | 0.016 | -2.68187 - .2790063 |
| **d97**      | -1.263988       | .6449348 | -1.96 | 0.050 | -2.528037 - .000061 |
| **cons**     | 7.826786        | .8179467 | 9.57 | 0.000 | 6.22364 - 9.429932 |

Estimated covariances = 111
Estimated autocorrelations = 0
Estimated coefficients = 32

Number of obs = 1856
Number of groups = 111
Obs per group: min = 1
avg = 19.28987
max = 26

Wald chi2(31) = 708.80
Log likelihood = -4913.651
Prob > chi2 = 0.0000
Bibliography


Edwards, S. 1984, The Order of Economic Liberalization, Princeton Essays in International Finance, 156


Leamer, Edward and Michael Storper (2001), “The Economic Geography of the Internet Age,” Anderson Graduate School of Management, UCLA, April


