TRADE POLICY, EXCHANGE
RATES AND GROWTH

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ABSTRACT

This paper analyzes the relationship between trade policy and economic performance. The paper is divided in two fundamental parts. The first one uses a cross country data set to investigate the relationship between trade policy and productivity growth. It is found that countries that are more open to the rest of the world have experienced faster growth in total factor productivity than countries with high trade barriers. In the second part the recent Latin American experiences with trade liberalization reforms are investigated. It is shown that in the last few years the Latin American countries have gone from having one of the most distorted external sectors, to having very low degrees of protectionism. The extent of the liberalization efforts is documented and the effect on productivity and exports is investigated.

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I. Introduction

After decades of protectionist policies, most of Latin America began to open up to the rest of the world in the late 1980s. This process, pioneered by Chile, is perhaps the most impressive achievement of the structural adjustment programs of the last decade. It has effectively put an end to more than four decades of generalized import substitution policies aimed at encouraging an industrial sector, that turned out to be largely inefficient.[1]

The process leading to these trade reforms has not been easy. As recently as in the mid-1980s the protectionist view was still dominant in many parts of Latin America. In fact, the debt crisis of 1982 provided a new impetus to the protectionist paradigm. Initially, many analysts interpreted the crisis as a failure of "the world economic order", and argued that the only way for Latin America to avoid the recurrence of this type of shocks was to further isolate itself from the rest of the world, through selective protectionism and government intervention. This sentiment was compounded by the fact that a number of observers considered the experiences of the Southern Cone countries -- Argentina, Chile and Uruguay -- with liberalization reforms during the 1970s as a failure. This view has been clearly synthesized by Lance Taylor (1991, p. 119) who has argued that the "trade liberalization strategy is intellectually moribund" and that there are "no great benefits (plus some costs) in following open trade and capital market strategies" (p. 141). From here he goes on to say that "development strategies oriented internally may be a wise choice towards the century's end" (p. 141).

Immediately following the eruption of the debt crisis it seemed that increased protectionism was indeed the path that Latin countries had chosen as a possible way out of their problems. Even Chile, the strongest supporter of free trade, tripled its import tariffs.[2] As a result of this, in the mid-1980s Latin America had one of the most distorted external sectors in the world with extremely high import tariffs and, in some cases, quantitative restrictions that covered every single import item (see Table 1).

However, by 1987-88 it became increasingly apparent that a permanent solution to the region's economic problems would require a fundamental change in its development strategy. In particular, policymakers began to realize that the long-stand-ing protectionist trade policy was central to the region's problems. The poor performance of the Latin American countries offered a dramatic contrast to the rapidly growing East-Asian countries that had aggressively implemented outward-oriented strategies. With the help of the multilateral institutions, a larger and larger number of countries began to reduce their levels of protection during the late 1980s and early 1990s. This trade reform process has been supplemented with broad deregulation and privatization, and is proceeding at an increasingly rapid pace. Tariffs have been drastically slashed, in many cases import licenses and prohibitions have been completely eliminated, and a number of countries are actively trying to sign free trade agreements with the United States.

Latin America's long tradition with protectionist policies molded the region's economic structure in a fundamental way, creating a largely inefficient manufacturing

sector.[3] Tariffs and prohibitions also generated a severe anti-export bias that discouraged both the growth and diversification of exports.[4] This process took place through two main channels: first, tariffs and other forms of protection increased the cost of imported intermediate materials and capital goods used in the production of exportable, reducing their effective rate of protection. Second, and perhaps more important, the maze of protectionist policies resulted in massive real exchange rate "overvaluation" that reduced the degree of competitiveness of exports.[5] Paradoxically, the policies which were supposed to reduce Latin America's dependency on the world-wide business cycle, ended up creating a highly vulnerable economic structure where the sources of foreign exchange were concentrated on a few products intensive in natural resources (Fishlow, 1985).

The trade liberalization programs implemented during the last decade have two basic policy objectives: first, these reforms have sought to reduce the anti-export bias of commercial policies. It is expected that once negative effective rates of protection and overvalued exchange rates are eliminated exports will not only grow rapidly, but will also become more diversified.

The second fundamental objective of trade reforms is to transform international trade into "the engine of growth". The new literature on "endogenous" growth has stressed the role of openness in explaining cross country growth differentials over the long run.[6] For example, Romer (1989) has argued that more open economies can take advantage of larger markets, increasing their degree of efficiency and their rate of growth. Other authors, including Grossman and Helpman (1990, 1991) and Edwards

(1992), have recently argued that openness affects the speed and efficiency with which small countries can absorb technological innovations developed in the industrial world. This idea, based on an insight first proposed by John Stuart Mill, implies that countries with a lower level of trade distortions will experience faster total factor productivity growth and, thus, will grow faster than countries that inhibit international competition.[7]

The purpose of this paper is to explore, from different perspectives, the relationship between trade liberalization and growth. The analysis deals both with long run and with transitional issues. I first concentrate (in Section II) on the long run relation between trade regimes and productivity growth. I use a broad 54 countries data set to investigate the way in which trade distortions have affected productivity growth in the 1971-82 period. The results obtained support the view that more open economies tend to have faster rates of productivity growth than countries that have distorted international trade. In Sections III and IV, I discuss some of the most important problems faced during the transition by countries engaged in trade liberalization programs. While in Section III, I focus on general transitional issues at an analytical level, in Section IV, I deal with the recent Latin American trade reforms. I first document the extent of trade liberalization. Second, I investigate whether, as predicted by some authors, these reforms have been associated with faster productivity growth. In Section V, I discuss the recent behavior of real exchange rates in Latin America, emphasizing the way in which they are likely to affect the sustainability of the trade reforms. Finally, in Section VI, I present a summary of the paper and I discuss some of the unresolved issues related to Latin American trade policy.

II. Openness and Growth: Cross Country Evidence

II.1 A Simple Model

A number of researchers have found that factor accumulation explains between one half and two thirds of long run growth (Fischer, 1988). The large unexplained residual in growth accounting exercises has been attributed to "technological progress" or "productivity gains". From a policy perspective a key question is what determines these productivity improvements. In particular, it is important to understand whether national domestic policies -- including financial and trade policies -- can affect the pace of productivity growth. If this is the case, policymakers will have additional degrees of freedom to pursue those avenues that will enhance long run performance.

The recent interest on "endogenous" growth models has generated a revival in applied research on the determinants of growth. Some authors have emphasized the role of openness in determining the pace at which countries can absorb technological progress originating in the rest of the world.[8] Edwards (1992), for example, has recently assumed that there are two sources of total factor productivity (TFP) growth: (1) a purely domestic source stemming from local technological improvements (innovation); and (2) a foreign source related to the absorption of inventions generated in other nations (imitation). More specifically, assume that the country's ability to appropriate world technical innovations (or to imitate) depends on two factors: positively on the degree of openness of the economy, and also positively, on the gap between the country's level of TFP and "the World's" stock of TFP. The first channel is the "openness effect" discussed by Lewis (1955): more open countries have

an advantage in absorbing new ideas generated in the rest of the world. In this context "more open" should be interpreted as referring to a less distorted foreign trade sector. The second channel is a "catch up" effect, common to growth models based on "convergence" notions.

If the aggregate production function is defined as $y_t = Af(K_t, L_t)$, then total factor productivity is $A_t = y_t/f(\bullet)$, and total productivity growth is (A/A). The role of the two sources of technical progress discussed above -- innovation and imitation -- can be captured by the following simple expression:

$$\frac{\overset{\bullet}{A}}{A} = \alpha + \left[\beta\omega + \gamma\left(\frac{A*-A}{A}\right)\right] \tag{1}$$

where α and γ are positive parameters, $A*$ is the level of world's (appropriable) TFP, and ω is the rate of growth of world's TFP (that is $A_t^* = A_0^* e^{\omega t}$). β is a parameter between zero and one that measures the country's ability to absorb productivity improvements originating from the rest of the world, and is assumed to be a negative function of the level of trade distortions in the economy (δ).

$$\beta = \beta(\delta); \ \beta' < 0, \tag{2}$$

where δ is an index of trade distortions that takes a higher value when international trade, both in imports and/or exports, becomes more distorted.

Parameter α is the basic rate of domestic productivity growth or innovation, which for simplicity is assumed to be exogenous. On the other hand, $(\gamma(A*-A)/A)$ is the "catch-up" term that says that domestic productivity growth will be faster in nations

whose stock of knowledge lags further behind the world's accumulated stock of appropriable knowledge.[9]

In this setting the path through time of domestic TFP will be given by:[10]

$$A_t = \left[A_0 - \left(\frac{\gamma}{\gamma + \omega(1-\beta) - \alpha} \right) A_0^* \right] e^{-(\gamma - \alpha - \beta\omega)t} + \left(\frac{\gamma}{\gamma + \omega(1-\beta) - \alpha} \right) A_0^* e^{\omega t}. \qquad (3)$$

It follows from equation (3) that the long run rate of growth of domestic TFP will depend on whether $(\gamma - \alpha - \beta\omega) \gtrless 0$. If $(\gamma - \alpha - \beta\omega) > 0$, in the steady-state TFP will grow at the rate of world's productivity ω. This means that the level of domestic TFP (and of GDP) will be a function of the degree of trade intervention, with higher trade distortions resulting in a lower level of real income. A key implication of this result is that countries that engage in trade liberalization programs will be characterized, during the transition between two steady states, by higher rates of productivity growth and thus, by faster rates of GDP growth.

A second case appears when $(\gamma - \alpha - \beta\omega) < 0$. Long run TFP growth (A/A) will depend on how large the world's rate of growth of TFP (ω) is relative to the domestic rate of productivity improvement. If $\omega > (\alpha - \delta)/(1-\beta)$, domestic TFP will grow in the steady state at the world rate ω. If, however, $\omega < (\alpha - \gamma)/(1-\beta)$, and $(\gamma - \alpha - \beta\omega) < 0$, the long run equilibrium rate of TFP growth will be equal to $(\alpha + \beta\omega - \delta)$,[11] and will depend negatively on δ, the country's level of trade distortions. That is, in this case more open countries (those with low δ) will grow faster during steady state equilibrium. This is because in this case the domestic source of technological

inventions is strong enough as to drive, even in the steady state, the aggregate rate of technological innovations.[12]

The model developed above suggests that TFP growth will depend on the degree of trade distortions in the economy, and on a catch-up term that measures the gap between the country's and "the world's" level of productivity. I constructed a cross country data set to test these implications of the model. More specifically, I estimated equations of the following type:

$$\rho_n = b_0 + b_1\delta_n + b_2g_n + \Sigma a_i \, x_{in} + \mu_n, \tag{4}$$

where ρ_n is the average rate of growth of TFP in country n; δ_n is, as before, an index of trade distortions; g_n is the catch-up term; the x_i's are other possible determinants of TFP growth; and μ is an error term.

Recently, Barro (1991), Edwards (1992), and Roubini and Sala-i-Martin (1992), among others, have suggested that in addition to the degree of openness, productivity growth will also be affected by the following factors: (a) human capital, usually measured by schooling attainment; (b) the importance of government in the economy measured by the ratio of government expenditure to GDP; (c) the degree of political instability; and (d) the inflation rate.[13] In the estimations of equation (4) reported below, I have incorporated these variables as possible determinants of productivity growth.

II.1 Data Definitions and Sources

TFP Growth: A problem faced in the estimation of equations of the type of (4) refers to the measurement of TFP growth. In particular, it is difficult to obtain long time series of capital stocks for a large number of countries. In this paper I deal with this problem by constructing three measures of TFP growth from the residuals of country-specific GDP growth regressions. These indices are denoted TFP1, TFP2 and TFP3. The specific methodology used in constructing each of these indices is presented in the Appendix.[14]

Trade Distortions: Traditionally, studies that have investigated the relationship between trade policy and economic performance have had difficulties measuring the extent of trade distortions. In this paper I tackle this problem by using two variables: first, in most of the basic estimates I use the ratio of total revenue from taxes on foreign trade -- import tariffs plus export taxes -- over total trade as a proxy for trade distortions. This variable is measured as an average for 1971-82. Since this variable, denoted TRADETAX, measures the "true" extent of trade distortions with error, in the estimation of the TFP growth equation I also use an instrumental variable technique that tries to correct for measurement error. The second proxy I use is the 1971-82 average trade dependency ratio -- imports plus exports as a percentage of GDP. These two indices of trade distortions were constructed with raw data obtained from the IMF.

Catch-Up Term: Following the recent literature on endogenous growth (Barro 1991; Edwards 1992), I use initial GDP per capita -- for year 1971 in this case -- as a measure of the gap between a particular country's level of productivity and that of the

world. This variable is denoted as GDP71; the data were obtained from Summers and

Heston (1989). The coefficient of this variable is expected to be negative, indicating

that countries with a lower initial per capita GDP have more "catching up" to do and,

thus, will grow faster.

Human Capital: I used two indices. The first one is the attainment of

secondary education in 1981. The second one is the increase in secondary education

coverage between 1961 and 1981. When alternative indices, such as secondary and

higher education were used, the results obtained were not altered. The data were

obtained from the World Bank's World Development Report. The coefficient of this

variable is expected to be positive.

Role of Government: This index is defined as the share of government over

GDP, and is taken from Summers and Heston (1989). Barro (1991) has argued that

this coefficient should be negative, capturing the effect that greater government

activities tend, in general, to crowd-out the private sector.

Political Instability: This variable was defined as the average perceived

probability of government change, and was obtained from Cukierman, Edwards and

Tabellini (1992).[15] Its coefficient in the TFP growth equations is expected to be

negative, reflecting the fact that in politically unstable situations economic agents do

not devote their full energies to pursue economic objectives.

Inflation Tax: This variable was defined as the average collection of inflation

tax for 1971-82 and was computed as πm, where π is the rate of inflation and m

is the ratio of M1 to GDP. The coefficient of this variable is expected to be negative, reflecting the effects of higher inflation on uncertainty and economic activity.

II.2 Econometric Results

Tables 2 and 3 summarize the results obtained from the estimation of several versions of equation (4). While Table 2 contains weighted least squares estimates -- with population in 1971 as weight -- for all three measures of TFP growth;[16] Table 3 presents instrumental variables regressions for the TFP1 definition of productivity growth. (When the other two indices were used, the results were not altered significantly.)

As can be seen from these tables, the results are highly satisfactory. Almost every coefficient has the expected sign and is significant at conventional levels. Particularly important for the discussion pursued in this paper is the fact that in every regression the proxies for trade distortions and openness are highly significant. Moreover, the computation of standardized beta coefficients indicate that trade impediments are the second most important explanatory variable of TFP growth, after the "catch-up" term.[17]

As pointed out above both the TAXTRADE coefficient and the trade dependency ratio are imperfect proxies of trade distortions. In particular, they do not capture directly the role of quantitative restrictions on trade. In order to deal with this measurement error problem I estimated instrumental variables versions of some of these equations. In re-estimating equations (4.1) and (4.2) I used the trade penetration ratio of imports to GDP as instruments for TAXTRADE.[18] The results obtained are

presented in Table 3. As can be seen they confirm those discussed previously, and provide additional support to the view that, after controlling for other factors, countries with more open and less distorted foreign trade sectors have tended to exhibit a faster rate of growth of total factor productivity, over the long run, than those nations with a more distorted external sector. The results presented in Tables 2 and 3, however, provide no information on the transition from a closed economy to one that is more open and integrated to the rest of the world. I turn to those issues in the next three sections.

III. Policy Issues During a Trade Liberalization Transition

The analysis presented in the preceding section provides support for the hypothesis that in the long run more open economies have experienced faster productivity growth than countries that distort international trade. However, as the former communist countries have recently found out, designing a strategy for moving from a controlled to a liberalized economy is not an easy task.

Two fundamental problems have to be addressed in the transition towards freer trade: first, it is important to determine what is the adequate speed of reform. For a long time analysts argued for gradual liberalization programs (Little et al. 1971, Michaely, 1985). The reason for this is that, according to these authors, gradual reforms would give firms time for restructuring their productive processes and, thus, would result in low dislocation costs in the form of unemployment and bankruptcies. These reduced adjustment costs would, in turn, provide the needed political support for

the liberalization program. Recently, however, the gradualist position has been under attack. There is an increasing agreement that slower reforms tend to lack credibility, inhibiting firms from actually engaging in serious restructuring. Moreover, the experience of Argentina in the 1970s has shown that a gradual (and preannounced) reform allows those firms negatively affected by it to (successfully) lobby against the reduction in tariffs. According to this line of reasoning, faster reforms are more credible, and thus tend to be sustained through time (Stockman, 1982).

The thinking on the speed of reform has also been influenced by recent empirical work on the short run unemployment consequences of trade liberalization. Contrary to the traditional conventional wisdom, a study directed by Michaely et al. (1991) on liberalization episodes in 19 countries strongly suggests that, even in the short run, the costs of reform can be small. Although contracting industries will release workers, those expanding sectors positively affected by the reform process will tend to create a large number of employment positions. The Michaely et al. (1991) study shows that in sustainable and successful reforms the net effect -- that is the effect that nets out contracting and expanding sectors -- on short run employment has been negligible. A key question, then, is what determines a successful reform? Most historical studies on the subject have shown that maintaining a "competitive" real exchange rate during the transition is one of, if not the most, important determinant of successful trade reforms. A competitive, that is depreciated, real exchange rate encourages exports, and helps maintain external equilibrium at the time the reduction in tariffs has made imports cheaper.

The second problem that has to be addressed when designing a liberalization strategy refers to the sequencing of reform (Edwards, 1984). This issue was first addressed in the 1980s in discussions dealing with the Southern Cone experiences, and emphasized the macroeconomic consequences of alternative sequences. It was generally agreed that resolving the fiscal imbalance and attaining some degree of macroeconomic reform should constitute the first stage of a structural reform. On subsequent steps, most agreed that the trade liberalization reform should precede the liberalization of the capital account, and that financial reform should be implemented simultaneously with trade reform.

The behavior of the real exchange rate is at the heart of this policy prescription. The central issue is that liberalizing the capital account would, under most conditions, result in large capital inflows and in an appreciation of the real exchange rate (McKinnon, 1982; Edwards, 1984; Harberger, 1985). The problem with this is that an appreciation of the real exchange rate will send the "wrong" signal to the real sector, frustrating the reallocation of resources called for by the trade reform. The effects of this real exchange rate appreciation will be particularly serious if, as argued by Edwards (1984), the transitional period will be characterized by "abnormally" high capital inflows, and the economy is characterized by high adjustment costs. If, however, the opening of the capital account is postponed, the real sector will be able to adjust and the new allocation of resources will be consolidated. According to this view, only at this time should the capital account be liberalized.

More recent discussions on the sequencing of reform have expanded the analysis, and have included other markets. An increasing number of authors has argued that the reform of the labor market -- and in particular the removal of distortions that discourage labor mobility -- should precede the trade reform, as well as the relaxation of capital controls. It is even possible that the liberalization of trade in the presence of highly distorted labor markets will be counterproductive, generating overall welfare losses in the country in question (Edwards, 1992).

As the preceding discussion has suggested, there is little doubt that the behavior of the real exchange rate is a key element during a trade liberalization transition. According to traditional manuals on "how to liberalize", a large devaluation should constitute the first step in a trade reform process. Bhagwati (1978) and Krueger (1978) have pointed out that in the presence of quotas and import licenses a (real) exchange rate depreciation will reduce the rents received by importers, shifting relative prices in favor of export-oriented activities and, thus, reducing the extent of the anti-export bias.[19]

Maintaining a depreciated and competitive real exchange rate during a trade liberalization process is also important in order to avoid an explosion in imports growth and a balance of payments crisis. Under most circumstances a reduction in the extent of protection will tend to generate a rapid and immediate surge in imports. On the other hand, the expansion of exports usually takes some time. Consequently, there is a danger that a trade liberalization reform will generate a large trade balance disequilibrium in the short run. This, however, will not happen if there is a

depreciated real exchange rate that encourages exports and helps maintain imports in check. However, many countries have historically failed to sustain a depreciated real exchange rate during the transition. This has mainly been the result of expansionary macroeconomic policies, and has resulted in speculation, international reserves losses and, in many cases, in the reversal of the reform effort. In the conclusions to the massive World Bank project on trade reform Michaely et al. (1991) succinctly summarizes the key role of the real exchange rate in determining the success of liberalization programs: "The long term performance of the real exchange rate clearly differentiates "liberalizers" from "non-liberalizers" (p. 119). Edwards (1989) used data on 39 exchange rate crises and found that in almost every case real exchange rate overvaluation ended up drastic increases in the degree of protectionism.

In the next section I address in some detail the recent liberalization experiences in Latin America, I document the extent and depth of the reforms and I investigate their impact on productivity growth and exports behavior. In Section VI, I deal with the recent evolution of real exchange rates in Latin America.

IV. Recent Trade Liberalization Reforms in Latin America

During the last few years trade liberalization reforms have swept through Latin America; every country in the region has today a significantly more open trade sector than in the early and mid-1980s. The pioneer in the liberalization process was Chile, which between 1975 and 1979 unilaterally eliminated QRs and reduced import tariffs to a uniform level of 10%. After a brief interlude with higher tariffs (at the uniform

level of 30%) Chile currently has a uniform tariff of 11% and no licenses or other
forms of quantitative controls. Uruguay implemented a reform in 1978, and after a
brief reversal, push forward once again in 1986. Bolivia and Mexico embarked on
their reforms in 1985-86, followed by a series of countries in the late 1980s. At the
current time a number of countries, including Brazil, are proceeding steadily with
scheduled rounds of tariff reduction and the dismantling of quantitative restrictions.
However, it is still unclear whether all these reforms will be sustained, becoming a
permanent feature of the Latin economies, or whether some of them will be reversed.
Recent (October 1992) developments in Argentina indeed suggest that in some
countries higher tariffs may be implemented, once again, in the near future.

The Latin American trade reforms have been characterized by four basic
elements: (1) The reduction of the coverage of non-tariff barriers, including quotas
and prohibitions; (2) The reduction of the average level of import tariffs; (3) The
reduction of the degree of dispersion of the tariff structure; (4) The reduction or
elimination of export taxes. In this section I document the extent of the recent
liberalization programs, and I provide a preliminary evaluation of the effects of these
reforms on productivity growth and exports expansion.

IV.1 The Policies

IV.1.1 Non-Tariff Barriers

A fundamental component of the trade reform programs has been the
elimination, or at least the severe reduction, of non-tariff barriers coverage. During
the early and mid-1980s in some countries, such as Colombia and Peru, more than

50% of import positions were subject to licenses or outright prohibitions. In Mexico NTBs coverage reached almost 100% of import categories in 1984, as was the case in most of Central America in 1984 (Table 1).

Table 4 contains data on protectionism in 1985-87 and 1991-92, and shows that in almost every country the coverage of NTBs has been dramatically reduced.[20] In fact, in a number of cases NTBs have been fully eliminated. The process through which NTBs have been eased has varied from country to country. In some cases, such as Honduras, they were initially replaced by (quasi) equivalent import tariffs, and then slowly phased out. In other countries, like Chile, NTBs were rapidly eliminated without a compensating hike in tariffs.

As Table 4 shows, in spite of the progress experienced in the last few years, significant NTB coverage remains in a number of countries. In most cases these non-tariff barriers correspond to agricultural products. For example, in Mexico approximately 60% of the agriculture's sector tariff positions are still subject to import licenses in mid-1992. In fact, an important feature of the region's liberalization programs is that they have proceeded much slower in agriculture than in industry. This has largely been the result of the authorities desire to isolate agriculture from fluctuations in world prices, and unfair trade practices by foreign countries.[21] However, as a recent study by Valdes has shown (1992) this approach based on NTBs entails serious efficiency costs. Slowly, however, more and more countries are addressing these concerns by replacing these quantitative restrictions by variable levies.[22]

IV.1.2 Tariff Dispersion

The import substitution development strategy pursued for decades in Latin America created highly dispersed protective structures. According to the World Bank (1987), Brazil, Chile and Colombia had some of the broadest ranges of effective rates of protection in the world during the 1960s. Also, Heitger (1987) shows that during the 1960s Chile had the highest rate of tariff dispersion in the World -- with a standard deviation of 634% -- closely followed by Colombia and Uruguay. Cardoso and Helwege (1991) have pointed out that highly dispersed protective structures generate high welfare costs, by increasing uncertainty and negatively affecting the investment process. These highly dispersed tariffs and NTBs were the result of decades of lobbying by different sectors to obtain preferential treatment. As the relative power of the different lobbies changed, so did their tariff concessions and the protective landscape.

An important goal of the Latin trade reforms has been the reduction of the degree of dispersion of import tariffs. Table 4 contains data on the tariff range for a group of countries for two points in time -- mid-1980s (1985-87) and 1991-92 -- and clearly document the fact that the reforms have indeed reduced the degree of tariff dispersion.

In many cases reducing tariff dispersion has meant increasing tariffs on goods that were originally exempted from import duties. In fact, Table 4 shows that in the many countries the minimum tariff was zero percent in the mid-1980s. Generally, zero tariffs have been applied to intermediate inputs used in the manufacturing pro-

cess.[23] From a political economy perspective the process of raising some tariffs, while maintaining a pro-liberalization rhetoric, has not always been easy. Those sectors that had traditional benefitted from the exemptions, suddenly saw their privileged situation come to an end and tried to oppose them strongly.

An important question addressed by policymakers throughout the region, is by how much should tariff dispersion be reduced? Should the reforms implement a uniform tariff, or is some (small) degree dispersion desirable? From a strict welfare perspective uniform tariffs are only a advisable under very special cases. However, they have a political-economy appeal. More specifically, a uniform tariff system is very transparent, making it difficult for the authorities to grant special treatments to particular firms or sectors (Harberger, 1990).

IV.1.3 Average Tariffs

Reducing the average degree of protection is, perhaps, the fundamental policy goal of trade liberalization reforms. Traditional policy manuals on the subject suggest that once the exchange rate has been devalued and quantitative restrictions have been reduced or eliminated, tariffs should be slashed in a way such that both their range and average is reduced.[24] Table 4 contains data on average total tariffs (tariffs plus paratariffs) in 1985 and 1991-92. As can be seen, the extent of tariff reduction has been significant in almost every country. Even those nations that have acted somewhat cautiously in the reform front, such as Brazil and Ecuador, have experienced important cuts in import tariffs, allowing a more competitive environment, and reducing the degree of anti-export bias of the trade regime.

Countries that have embarked on trade liberalization in recent years have moved at a much faster speed than those nations that decided to open up earlier. There has, in fact, been a clear change in what is perceived to be our abrupt and rapid removal of imports impediments. What only 15 years ago were seen as brutally fast reforms, are now looked at as mild and gradual liberalizations. When Chile initiated the trade reform in 1975 most analysts thought that the announced tariff reduction from an average of 52% to 10% in four and a half years was an extremely aggressive move that would cause major dislocations, including large increases in unemployment. The view on the speed of reform has become very different in the early 1990s, when an increasing number of countries have been opening up their external sectors very rapidly. For instance, Colombia slashed (total) import tariffs by 65% in one year, reducing them from 34% in 1990 to 12% in 1991. This fast approach to liberalization has also been followed by Argentina and Nicaragua who eliminated quantitative restrictions in one bold move and slashed import tariffs from an average of 110% in 1990 to 15% in March of 1992. As suggested previously, the speed of trade reforms has been directly related to the belief that faster reforms are more credible and, thus, more likely to be sustained through time.

IV.1.4 Exchange Rate Policy

In the vast majority of the countries the first step in the trade reform process was the implementation of large (nominal) devaluations. In many cases this measure represented a unification of the exchange rate market. Most countries implemented large exchange rate adjustments as early as 1982 in order to face the urgencies of the

adjustment process. The purpose of these policies was to generate <u>real</u> exchange rate devaluations, as a way to reduce the degree of anti-export bias of incentives systems.

Many countries adopted crawling peg regimes to protect the real exchange rate from the effects of inflation. Although these systems helped avoid the erosion of competitiveness, they also added fuel to the inflationary process. They introduced a certain degree of inflationary inertia, and have contributed in many countries to the slow reduction of the rate of inflation. More recently, a number of countries has begun to use the exchange rate as an anchor in order to bring down inflation. This has resulted in the slowing down of the rate of crawl below inflation differentials or, in some cases, in the fixing of the exchange rate as in Argentina.

Table 5 contains data on real exchange rates for a group of LAC countries for 1980, 1987 and 1991. As is customary in Latin America, an increase in the index represents a real exchange rate <u>depreciation</u> and thus an improvement in the degree of competitiveness. As can be seen between 1980 and 1987 almost every country in the sample experienced very large real depreciations. In many cases, however, these have been partially reversed in the last few years. This has been the consequence of a combination of factors, including the inflow of large volumes of foreign capital into these countries since 1990, and the use of the exchanger rate as the cornerstone of the disinflation policies. This issue is addressed in greater detail in Section V.

IV.2 <u>Adjustment and Productivity</u>

The relaxation of trade impediments has had a fundamental impact on the region's economies. Suddenly, Latin America's industry which, to a large extent had

developed and grown behind protective walls, was forced to compete. Many firms have not been able to survive this shock, and have become bankrupt. Others, however, have faced the challenge of lower protection by embarking on major restructuring, and increasing their level of productivity.

The ability (and willingness) of firms to implement significant adjustment depend on two main factors: the degree of credibility of the reform, and the level of distortions in the labor market. If entrepreneurs believe that the reform will not persist through time, there will be no incentives to incur in the costs of adjusting the product mix and of increasing the degree of productive efficiency. In fact, if the reform is perceived as temporary the optimal behavior is not to adjust; instead it is profitable to speculate through the accumulation of imported durable goods. This was, as Rodriguez (1982) has documented, the case in Argentina during the failed Martinez de Hoz's reforms.[25]

Labor market conditions affect the adjustment process in several ways. First, in order to survive, firms facing stiffer foreign competition have to increase labor productivity, which in many cases means reducing the number of workers. This reduction in employment will tend to be offset by new hires in expanding firms in the sectors with comparative advantage. Many times, however, existing labor market regulations are extremely cumbersome, inhibiting the adjustment process, and forcing out of business firms that are structurally viable in the long run. Additionally, labor market distortions negatively affect the investment process, including direct foreign investments.[26]

In their studies on the interaction between labor markets and structural reforms Krueger (1980) and Michaely et al. (1991) found that most successful trade reforms have indeed resulted in major increases in labor productivity. This has been the case in some of the early Latin American reformers for which there are data. For example, according to Edwards and Edwards (1991) labor productivity in the Chilean manufacturing sector increased at an average annual rate of 13.4% between 1978 and 1981. On the other hand, the available evidence suggests that the increases in labor productivity in the Mexican manufacturing sector in the post reform period has been moderate. According to World Bank (1992) data, labor productivity in Mexico barely increased between 1988 and 1981 -- the index went from 92.7 to 105.1. In a recent study Ibarra (1992) has calculated that labor productivity in the Mexican manufacturing sector -- excluding the maquiladora sector -- has increased at an average rate of 2.3% per annum.

As discussed in Section II, recent models of growth have suggested that countries that are more open to the rest of the world will exhibit a faster rate of technological improvement. From an empirical point of view this means that countries that open up their external sectors, and engage in trade liberalization reforms, will experience an increase in total factor productivity growth relative to the pre-reform period. Table 6 contains data on the change in total factor productivity growth in the period following the implementation of trade liberalization reform in six Latin Countries.[27] As can be seen, Chile and Costa Rica, two of the earlier reformers, experienced very large increases in TFP growth in the post reform period. The results

for Chile coincide with those obtained by Edwards (1985), who found that in the late 1970s, after the trade reforms had been completed, TFP growth was approximately three times higher than the historical average.[28] Although the outcome has been less spectacular, Argentina and Uruguay still exhibit substantial improvements in productivity growth in the period following the opening up. Bolivia, on the other hand, presents a flat profile of TFP growth. Sturzenegger (1992) argues that the very slow improvement in Bolivian productivity growth has been, to a large extent, the result of negative terms of trade shocks and, in particular of the collapse of the tin market.

Perhaps the most interesting and puzzling result in Table 6 is the slight decline in aggregate TFP growth in Mexico after the reforms. Martin (1992) shows that this finding is robust to alternative methods of measuring TFP growth, including different procedures for correcting for capacity utilization. Also, Harberger (1992) finds a slowing down of TFP growth in Mexico in 1986-90 relative to 1975-82. However, the aggregate nature of the TFP growth data in Table 6 tends to obscure the actual sectoral response to the trade reform. According to new theories on endogenous growth, faster productivity will be observed in those sectors where protectionism has been reduced, and not in those still subject to trade barriers or other forms of regulations.

A distinctive characteristic of the Mexican reform is that, contrary to the Chilean case, it has been uneven. In particular, while most of the manufacturing sector -- with the exception of automobiles -- has experienced a significant reduction in protection, agriculture continues to be subject to relatively high tariffs and substantial

nontariff barriers. Moreover, until very recently the Mexican land tenure system was subject to substantial distortions that, among other things, severely restricted the market for land -- the Ejido system. Additionally, during much of the post-debt crisis period large fragments of services sector -- including telecommunications and financial services -- were under direct government control and subject to distortions.

Table 7 contains data on TFP growth in Mexico's manufacturing sector for 1940-89.[29] Interestingly enough, these figures indicate that in the post-trade reform period the rate of productivity growth in the Mexican manufacturing sector has exceeded every subperiod since 1940, for which there are data. This provides some evidence in favor of the view that, once the sectors actually subject to increased competition are considered, Mexican productivity growth has indeed improved after the trade reform. It should be noted, however, that recent TFP growth in manufacturing in Mexico (see Table 8 for disaggregated data) has not been as large as in Chile's post-reform period, where some sectors experienced growth in TFP of the order of 15% in 1978-82.[30] There are a number of possible explanations for this marked difference in behavior, including the uncertainties about NAFTA's approval resulted in the postponement of investment in some of the key manufacturing sectors subject to increased foreign exposure.

By and large, however, the data analyzed in this subsection provides broad support to the position that total factor productivity growth has tended to increase in the period following major trade reforms in Latin America.

IV.3 Trade Reforms and Exports

An important goal of the reforms has been to reduce the traditional degree of anti-export bias of Latin American trade regimes, and to generate a surge in exports. This reduction of the bias is expected to take place through three channels: a more competitive -- that is more devalued -- real exchange rate; a reduction in the cost of imported capital goods and intermediate inputs used in the production of exportable; and a direct shift in relative prices in favor of exports.

The volume of international trade in Latin America, and in particular of exports, increased significantly after the reforms were initiated.[31] For example, while for the region as a whole the volume of exports grew at an annual rate of only 2.0% between 1970 and 1980, it grew at a rate of 5.5% between 1980 and 1985, and at an annual average of 6.7% between 1986 and 1990.[32] Although, strictly speaking, it is not possible to fully attribute this export surge to the opening up reforms, there is significant country-specific evidence suggesting that a more open economy, and in particular a more depreciated real exchange rate, has positively affected exports growth.[33] Some countries, especially Costa Rica, have accompanied the opening up process with the implementation of a battery of export promotion schemes, including tax credits -- through the "Certificado de Abono Tributario" -- duty free imports, and income tax exemptions. However, some authors, including Nogues and Gulati (1992), have argued that these systems have not been an effective way of encouraging exports.

Table 9 presents detailed country level data on the rate of growth of the total value of exports (in constant dollars) for three different periods. Table 10, on the

other hand, contains information on the evolution of exports volume throughout the period. A number of facts emerge from these tables. First, while there has been a rapid growth in exports for the region as a whole, there are nontrivial variations across countries; in some cases there has even been a decline in the real value of exports -- this is the case, for example, of Peru. Second, exports performance during the two sub-periods (1982-87 and 1987-90) has not been homogeneous. In the majority of the countries exports performed significantly better during 1987-90, than in the previous five years reflecting, among other things, the fact that it takes some time for exports to actually respond to greater incentives.

An interesting fact that emerges from these tables is that in the country that has lagged behind in terms of trade reform -- Ecuador -- the performance of exports volume has been, in the recent years, below the 1970-80 historical average. On the other hand, in two of the early reformers -- Bolivia and Chile -- exports have had a very strong behavior in the 1987-90 subperiod.

The case of Chile is particularly interesting. Since most of its liberalization effort was undertaken prior to 1980, there are enough data points as to provide a more detailed evaluation of export response to the new regime. Between 1975 and 1980 -- when tariffs were reduced to a uniform 10% and NTBs were completely eliminated -- the behavior of Chilean exports was spectacular, growing (in volume terms) at an average of 12% per year -- many times higher than the historical average of 1960-70 of only 2.6% per annum. What is particularly impressive is that most of the exports

surge has taken place in the nontraditional sector, including manufacturing, agriculture and fishing products (CEPAL, 1991).

Among the early reformers, Mexico exhibits a rather slow rate of growth of total exports in the post reform period than during 1970-80. This, however, is largely an illusion stemming from the fact that during the 1970s Mexico's oil production increased substantially -- at a rate exceeding 18% per year. When nontraditional exports are considered the post-reform performance is remarkable with an annual average rate of growth for 1985-91 exceeding 25%.[34]

A stated objective of trade reforms has been to increase the degree of diversification of exports. Tables 11 and 12 contain data on the share of nontraditional exports and manufacturing exports for a large number of countries, and show that in the period following the trade reforms their importance has increased steadily. Also, in the majority of the countries the share of the ten more important export goods in total exports has declined significantly in the last few years (CEPAL, 1991).

A critical question is whether the rapid growth and diversification of exports in Latin America will be sustained, or whether it will be a temporary phenomenon. To a large extent this will depend on the policies undertaken, and on the behavior of variables such as the real exchange rate. This is the subject of the next section.

V. Recent Real Exchange Rate Behavior In Latin America

In the last years, competitive real exchange rates have been at the center of the vigorous performance of most of Latin America's external sectors. Recently,

however, in most Latin countries real exchange rates have experienced rapid real appreciations (Figure 1). These developments have generated considerable concern among policymakers and political leaders. A number of observers have, in fact, argued that the reduction in exports competitiveness are negatively affecting the most dynamic sectors in these economies, reducing growth and employment expansion.[35]

These real appreciations have been the result of two basic factors: first, the use, in many countries of the exchange rate policy as an anti-inflationary tool and, second, massive capital inflows into Latin America that have made foreign exchange "overabundant".

In the late 1980s some analysts, including the staff of the IMF, argued that the crawling peg regimes adopted by most of Latin America after the debt crisis had become excessively inflationary. In particular, it was argued that crawling pegs introduce substantial inflation inertia. According to this view exchange rate policy in the developing countries should move towards greater rigidity -- and even complete fixity -- as a way to introduce financial discipline, provide a nominal anchor, and reduce inflation.[36]

A number of Latin countries have, in fact, decided to use an exchange rate anchor as a way to reduce inflation. In practice they have done this by either slowing down the rate of the crawl -- as in Mexico and Chile, to some extent -- or by adopting a completely fixed nominal exchange rate -- as in Argentina and Nicaragua. Much of the recent enthusiasm for fixed nominal exchange rates is intellectually rooted on the modern credibility and time consistency literature.[37] According to this approach,

which was pioneered by Calvo (1978), and Kydland and Prescott (1977), governments that have the discretion to alter the nominal exchange rate -- as in the crawling peg system -- will tend to abuse their power, introducing an inflationary bias into the economy. The reason for this is that under a set of plausible conditions, such as the existence of labor market rigidities that preclude the economy from reaching full employment, it will be optimal for the government to "surprise" the private sector through unexpected devaluations.[38]

By engineering (unexpected) devaluations the government hopes to induce a reduction in real wages and, thus, an increase in employment and a boost in output. Naturally, in equilibrium the public will be aware of this incentive faced by the authorities, and will react to it by anticipating the devaluation surprises and, hence, rendering them ineffective. As a consequence of this strategic interaction between the government and the private sector, the economy will reach a high inflation plateau. What is particularly interesting about this result is that this inflationary bias will be present even if it is explicitly assumed that the government has an aversion for inflation. This is because the government perceives that the marginal benefits of higher inflation -- associated with the increase in employment once nominal wages have been set -- outweigh its marginal costs.[39]

An important feature of the credibility literature is that under most circumstances policy commitment is welfare-superior to discretionary policy. If the government can credibly commit itself to low (or no) inflation, society will be better off: employment will be the same as in the discretionary policy case, but inflation will

be lower. The problem, however, is that governments have a hard time making credible commitments. In the absence of effective constraints that will tie the government's hands, any promise of low inflationary policy will not be credible and, thus, will be self-defeating.

A key policy implication of this literature is that defining (and implementing) constraints that will make government pre-commitments credible, will result in an improvement in society's welfare. It is here where fixed (or predetermined) exchange rates come into the picture. It has been argued that the adoption of a fixed exchange rate will constrain governments ability to surprise the private sector through unexpected devaluations. Promises of fiscal discipline will become credible and private sector actions will not elicit successive rounds of inflationary actions.[40] In particular, it has been argued that fixed exchange rates provide a reputational constraint on government behavior. The authorities know that if they undertake overly expansive credit policy they will be forced to abandon the parity and devalue. As the recent (mid-1992) crisis of the ERM has shown, exchange rate crises can indeed shatter the reputation of politicians.

In spite of its elegant appeal, this view has, in its simplest incarnation, some serious problems. First, in these simple settings exchange rate policy has a very limited role. In fact, in most of these models its only effect is to alter the domestic rate of inflation and, through it, the government perceives it as altering real wages. However, in most modern exchange rate models, nominal devaluations can also help accommodate shocks to real exchange rate fundamentals -- including shocks to the

terms of trade -- helping to avoid RER misalignment.[41] Second, in economies with stochastic shocks, contingent exchange rate rules can, at least in principle, be superior to fixed rates (Flood and Isard 1988). Third, it is not clear why a country that can credibly commit itself to unilaterally fixing the exchange rate, cannot commit itself to providing a monetary anchor.

However, one of the most serious limitations of the nominal exchange rate anchor policy is that, under almost every circumstance, once the exchange rate is fixed, other prices -- including wages -- will continue to increase, generating a change in relative prices in favor of nontradables. This has indeed been the case in both Argentina and Nicaragua, the two countries in Latin America that in the early 1990s adopted strictly fixed exchange rates as a way to drastically reduce inflation. In both cases the stabilization programs were based on a severe fiscal correction that virtually eliminated the fiscal deficit, in restrictive credit, and in a nominal exchange rate anchor. Although this policy succeeded in both countries in greatly reducing inflation, it has resulted in serious relative price misalignment. In Argentina this has been reflected in the fact that wholesale price inflation, which is heavily influenced by tradables, is only 3% per year, while consumer price inflation -- highly dependent on nontradables -- exceeds 18% per year. In Nicaragua tradable-related inflation rates have been very low (in the order of 2-3 percent) while nontradable inflation has exceeded 30% in the last 12 months.

Mexico followed a variant of the exchange rate anchor policy, announcing a predetermined rate of devaluation at a pace deliberately below ongoing inflation. The

purpose of this policy has been to both anchor tradables prices and reduce expectations. However, since domestic inflation has systematically exceeded the pre-determined rate of devaluation, Mexico has experienced a sizable real appreciation which has exceeded 35% between 1985 and mid-1992.

The second cause behind the generalized real appreciations in Latin America has been the large increase in capital inflows into the region in the last two years. As Table 13 shows, after eight years of negative resource transfers, there has been a significant turnaround in 1991-92 (see Table 14 for more disaggregated data). This increased availability of foreign funds has affected the real exchange rate through increased aggregate expenditure. A proportion of the newly available resources has been spent on nontradables -- including in the real estate sector -- putting pressure on their relative prices and on domestic inflation. An interesting feature of the recent capital movements is that a large proportion corresponds to portfolio investment and, relatively little is direct foreign investment.

Real exchange rate appreciations generated by increased capital inflows is not a completely new phenomenon in Latin America. In the late 1970s most countries in the region, but especially the Southern Cone nations, were flooded with foreign resources that led to large real appreciations. The fact that this previous episode ended in the debt crisis has added dramaticism to the current concern on the possible negative effects of these capital flows.

Whether these capital movements are temporary -- and thus subject to sudden reversals as in 1982 -- is particularly important in evaluating their possible

consequences. In a recent study Calvo, Leiderman and Reinhart (1992) argue that the most important causes behind the generalized inflow of resources are external. In particular, their empirical analysis suggests that the recession in the industrialized world and the reduction in U.S. interest rates are the two main reasons that have triggered these capital movements. These authors suggest that once these world economic conditions change, the volume capital of capital flowing to Latin America will be reduced. This means that at that point the pressure over the real exchange rate will subside and a real exchange rate depreciation will be required.

The countries in the region have tried to cope with the real appreciation pressures in several ways. Colombia, for instance, tried to sterilize the accumulation of reserves by placing domestic bonds (OMAs) in the local market in 1991.[42] However, in order to place these bonds the local interest rate had to increase, making them relatively more attractive. This generated a widening interest rate differential in favor of Colombia, which attracted new capital flows that, in order to be sterilized, required new bond placements. This process generated a vicious cycle that contributed to a very large accumulation of domestic debt, without significantly affecting the real exchange rate. This experience shows vividly the difficulties faced by the authorities wishing to handle real exchange rate movements. In particular, this case indicates that real shocks -- such as an increase in foreign capital inflows -- cannot be tackled successfully using exclusively monetary policy instruments.

Argentina has recently tried to deal with the real appreciation by engineering a "pseudo" devaluation through a simultaneous increase in import tariffs and export

subsidies. Although it is too early to know how this measure will affect the degree of competitiveness in the country, preliminary computations suggest that the magnitude of the adjustment obtained via tariffs-cum-subsidies package may be rather small. Mexico has followed a different route, and has decided to postpone the adoption of a completely fixed exchange rate. In October of 1992 the pace of the daily nominal exchange rate adjustment was doubled to 40 cents. As in the case of Argentina, it is too early to evaluate how effective these measures have been in dealing with the real appreciation trend.

Chile has tackled the real appreciation by implementing a broad set of measures, including conducting exchange rate policy relative to a three currencies basket, imposing reserve requirements on capital inflows and undertaking limited sterilization operations. In spite of this multi-front approach, Chile has not avoided real exchange rate pressures. Between December of 1991 and July 1992 the Chilean bilateral real exchange rate appreciated almost 10%. As a result of this, exporters and agriculture producers have been mounting increasing pressure on the government for special treatment, arguing that by allowing the real exchange rate to appreciate an implicit contract has been broken. This type of political reaction is, in fact, becoming more and more generalized throughout the region, adding a difficult social dimension to the real exchange rate issue.

Although there is no easy way to handle the real appreciation pressures, historical experience shows that there are, at least, two possible avenues that the authorities can follow. First, in those countries where the dominant force behind real

exchange rate movements is price inertia in the presence of nominal exchange rate anchor policies, the adoption of a pragmatic crawling peg system will usually help. This means that, to some extent, the inflationary targets will have to be less ambitious as a periodic exchange rate adjustment will result in some inflation.[43] However, to the extent that this policy is supplemented by tight overall fiscal policy there should be no concern regarding inflationary explosions. Second, the discrimination between short term (speculative) capital and longer term capital should go a long way in helping resolve the preoccupations regarding the effects of capital movements on real exchange rates. To the extent that capital inflows are genuinely long term, and especially if they help finance investment projects in the tradables sector, the change in the RER will be a "true equilibrium" phenomenon, and should be recognized by such by implementing the required adjustment resource allocation.

VI. Concluding Remarks

In this paper I have dealt with trade policy and growth. The analysis has focused on the long run relationship between trade orientation and productivity improvements, as well as on some of the most important transitional issues. With regard to the latter, the analysis has focused on the recent Latin American experiences.

In Section II, I argued that more open economies will experience faster rates of productivity growth than countries that distort their external sectors. A regression analysis based on a broad cross country data set provided support for this view. The analysis of the recent Latin reforms presented in Section IV also supports the

hypothesis that those countries that have embarked in trade liberalizations programs have experienced an acceleration in the rate of productivity growth. However, the data on Mexico indicates that in order for productivity increases to be widespread it is necessary to implement broad reforms and deregulation programs that affect a wide range of sectors. In Section VI, I discuss the evolution of real exchange rates in the region, and I point out that the recently observed generalized real appreciations have become a cause of concern among policymakers. A key element in determining the effects of these flows, and in designing policy response packages, refers to whether these movements are temporary or permanent. If the latter it is difficult to justify an activist stance in economic policy.

ENDNOTES

1. Even though the experiences of the individual Latin countries varied during the 1950-80 period, in the majority of them some variant of inward-looking development was the dominant policy. Since the early 1960s a number of trade liberalization attempts took place in the region. Almost every one of them ended up in frustration. In fact, until the late 1970-80s very little progress was made in this area.

2. However, as I argued in Edwards (1988) in many countries this increase in protectionism was dictated by necessity.

3. There is a long literature documenting the consequences of protectionism in the Latin American economies. For recent studies, see the Latin American cases covered in the Michaely et al. (1991) project.

4. In the 1960s some countries decided to implement export promotion schemes based on government support and adjustable exchange rates. To some extent this was partially successful in Brazil. However, as Fishlow (1991) has pointed out this development did little to reduce Brazil's vulnerability to foreign shocks.

5. Krueger (1978) documents these developments for a large number of countries. Diaz-Alejandro (1975, 1978) argued that real exchange overvaluation was one of the most negative economic developments in Argentina. For an analysis of a large number of Latin countries see Bianchi (1988). For an early discussion on the Chilean case, see Behrman (1972). Since 1967 Colombia pursued a crawling peg exchange rate policy explicitly aimed at avoiding overvaluation. The overall degree of protection, however, remained high (Garcia-Garcia, 1991).

6. Traditional neoclassical growth models concentrated on the effect of national economic policies on the **level** of income per capita. The new generation of endogenous growth models have shifted the attention to relationship between different policies and the rate of growth of the economy. See Lucas (1988).

7. In Chapter 17 of his Principles of Political Economy (1848) Mill said that "a country that produces for a larger market than its own can introduce a more extended division of labor, can make greater use of machinery, and is more likely to make inventions and improvements in the process of production". Arthur Lewis makes a similar proposition in his 1955 classical book on economic growth. See Tybout (1992) for a survey on the early empirical work in this area.

8. Grossman and Helpman (1992) provide a series of elegant models along these lines.

9. I assume that not all inventions generated in the world can be freely appropriated. In that sense, A^* could be interpreted as the accumulated stock of innovations in the more advanced countries that have spilled over to the rest of the world.

10. This, of course, is the solution to differential equation (1).

11. Of course, in this case, $(\alpha + \beta\omega - \delta) > \omega$.

12. In Grossman and Helpman's (1990) micro model of technological progress it is also possible that, under some circumstances, more open economies will exhibit higher long-run growth.

13. See, for example, Barro (1990).

14. Naturally, these indices are at best proxies for TFP growth. Formally, we can think that they measure TFP growth with error. To the extent that this measurement error term is additive, it can be collapsed into disturbance μ in equation (4).

15. These authors computed this index from a probit analysis on government change using pooled data for 1948-81.

16. In simple OLS estimates heteroskedasticity was detected. Barro (1991) and Edwards (1992), among others, also use weighted least squares in equations of this type.

17. In equation (4.1) the standardized beta coefficient of TAXTRADE is -0.75; that of GDP71 is -0.78.

18. The instruments themselves don't have to be measured free of error. Of course, the use of instrumental variables is not the only way of dealing with measurement error. In Edwards (1992) I use reversed regressions to construct intervals for a different proxy of openness in standard growth equations for a group of 30 countries.

19. See Krueger (1978, 1981) and Michaely et al. (1991).

20. These are unweighted averages, and thus are not comparable to those presented on Table 5.1. There has been a long discussion in applied international trade theory on whether tariffs and NTBs should be measured as weighted or unweighted averages. Both views have some merits and some limitations. An obvious problem of the weighted average approach (where the weights are the import shares) is that more restrictive distortions will tend to have a very small weight. In the extreme case, prohibitive tariffs that effectively ban the importation of a particular item will have a

zero weight! Corden (196?) provides an early, and still highly relevant discussion on these issues.

21. The issue of protecting local producers from "dumping" is an important one in the design of the new liberalized trade regimes. The crucial problem is to enact legislation that is able to distinguish true cases of unfair trade practices from simple cases of increased foreign competition stemming from more efficient productive processes. At this time the approval of a dynamic and flexible anti-dumping legislation should be high in the region's agenda for legal and institutional reform.

22. See Valdes (1992).

23. This system with very low (or zero) tariffs on intermediate inputs and high tariffs on final goods generated very high rates of effective protection or protection to domestic value added. In recent years a number of authors have argued that the use of effective protection is misleading. The reason for this is that ERPs are unable to provide much information on the general equilibrium consequences of tariff changes (Dixit, 1986). In spite of this, ERP measures are still useful, since they provide an indication on the degree of "inefficiency" a country is willing to accept for a particular sector.

24. However, "tariffs" is sometimes a misleading term, since many countries have traditionally relied on both import duties (that is tariffs proper) and import duty surcharges or paratariffs.

25. See Corbo et. al. (1985) for a detailed microeconomic account of the process of adjustment in a large group of Chilean manufacturing firms.

26. See Cox Edwards (1992).

27. The original TFP growth data comes from Martin's (1992) study on sources of growth in Latin America. The countries in Table 6 are those that initiated the reform before 1988. In order to compute series on total factor productivity (TFP) growth Martin (1992) analyzed the contributions of capital and labor, and explicitly incorporated the role of changes in the degree of capital utilization. The countries considered in this study are: Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Uruguay and Venezuela. Harberger (1992) presents data on TFP growth before and after a series of historical trade reform episodes. He finds that in the majority of the cases productivity growth increased after the liberalization process.

28. It may be argued, however, that the major increase in TFP growth in Chile has been the result of the complete structural reform package implemented in that country.

29. Since these figures come from two different sources they may not be fully comparable and, thus, should be interpreted with care.

30. Fuentes (1992).

31. Trade liberalization aims at increasing a country's total volume of trade. Under textbook conditions it is expected that at the end of the reform trade will be balanced. However, there are a number of circumstances, including the need to pay the country's foreign debt, under which trade will not grow in a balanced way after a reform. This has been the case in the majority of the Latin American countries.

32. The real <u>value</u> of exports, however, has evolved at a somewhat slower pace. The reason for this is that terms of trade have experienced, in every subgroup of countries, a significant deterioration during 1980-91 (see CEPAL 1992). These data are from ECLAC (1991).

33. See, for example, Nogues and Gulati (1992).

34. A large percentage of this growth, however, has been in the maquiladora or in-bond sector.

35. See Calvo, et al. (1992).

36. For a flavor of the discussion within the IMF see, for example, Burton and Gillman (1991), Aghevli et al. (1991), Flood and Marion (1991) and Aghevli and Montiel (1991). In Edwards (1992b) I deal with some of these issues.

37. The new impetus for fixed rates has strongly emerged in the International Monetary Fund. See Aghevli et al. (1991).

38. This assumes that wages are set before the government implements the exchange rate policy, but after it has been announced.

39. See Persson and Tabellini (1990).

40. Aghevli et al (1991).

41. See, for example, Edwards (1988).

42. An important peculiarity of the Colombian case is that the original inflow of foreing exchange came through the <u>trade account</u>.

43. More specifically, with this option the <u>one digit</u> inflationary goal will be postponed.

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APPENDIX

A. TFP Growth Computations

One of the difficulties in computing TFP growth series for a large number of countries is that capital stock series are rarely available. One way to deal with this problem is to use data on investment-GDP ratios (Harberger 1992). The problem with this approach, however, is that it requires data on the capital-output ratio. Although these are not generally available, they can be obtained using alternative procedures.

TFP growth (ρ) is defined in the following way:

$$\rho = (\overset{\bullet}{y}/y) - \alpha(\overset{\bullet}{k}/k) - (1-\alpha)(\overset{\bullet}{L}/L) \qquad (A.1)$$

where z is real GDP, k is the stock of capital, L is employment, and α is the share of capital in GDP. Since $(\overset{\bullet}{k}/k)$ is equal to gross investment (I), equation (A.1) can be rewritten as follows:

$$\rho = (\overset{\bullet}{y}/y) - [\alpha(y/k)(I/y) + (1-\alpha)(\overset{\bullet}{L}/L), \qquad (A.2)$$

(I/y) is the gross investment to GDP ratio, and is readily available. (y/k) on the other hand is the inverse of the capital output ratio and has to be estimated.

In order to obtain data on ρ, in this paper I have used the following procedure: first, I used specific country time series data for 1950-88 to estimate GDP growth equations with (I/y) and rate of growth of population (a proxy $\overset{\bullet}{L}/L$) as regressors. From these regressions I obtained estimated values for parameters $[\alpha(y/k)]$ and $[1-\alpha]$ in equation (A.2). In the second stage, I used these coefficients to construct TFP data using equation (A.2). In the third stage I averaged the estimated TFPs for 1971-82 for

each country. This average corresponds to variable TFP1 used in the regression analysis in Section II.

A limitation of the procedure described above is that it assumes a constant capital-output ratio (K/y) in computing $[\alpha(y/k)]$ in (A.2). However, it is likely that this ratio will change through time. In particular, we can assume that $(y/k) = (y/k)_0 + \gamma$ time. In this case (A.2) can be rewritten as:

$$\rho = (\dot{y}/y) - [\alpha(y/k)(I/y) + [\alpha\gamma](I/y) \times \text{time} + (1-\alpha)(\dot{L}/L)] \qquad (A.3)$$

This equation was estimated for each of the 54 countries to compute the TFP2 variable in Section II.

Finally, TFP3 was constructed using cross-country estimates of $[\alpha(I/y)]$ in equation (A.2). A shortcoming of this approach is that it assumes the same coefficient across countries. In that regard, TFP3 can be considered as a less desirable measure of TFP growth.

APENDIX B

Countries In Sample

United States

United Kingdom

Austria

Denmark

France

Germany

Italy

Netherlands

Norway

Sweden

Canada

Finland

Greece

Ireland

Portugal

Spain

Turkey

Australia

Brazil

Dominican Republic

Honduras

Mexico

Nicaragua

Paraguay

Venezuela

Jamaica

Trinidad and Tobago

Iran

Kuwait

Oman

Burma

Sri Lanka

India

Malaysia

Pakistan

Singapore

Thailand

Burundi

Cameroon

Central African Republic

Chad

Congopeo

Zaire

Ethiopia

Cote d'Ivoir

Lesotho

Mauritan

Morocco

Nigeria

Zimbabwe

Rwanda

Tanzania

Togo

Tunisia

TABLE 1
IMPORT PROTECTION
IN THE DEVELOPING WORLD: 1985

(Percent)

	TOTAL TARIFF PROTECTION (a)	NON-TARIFF BARRIERS COVERAGE (b)
South America	51	60
Central America	66	100
Caribbean	17	23
North Africa	39	85
Other Africa	36	86
West Asia	5	11
Other Asia	25	21

(a) Includes tariffs and para-tariffs
(b) Measures as a percentage of import lines covered by non-tariff barriers. The data on both tariffs and NTBs reported here are weighted averages

Source: Erzan et al. (1989)

TABLE 2
TFP GROWTH REGRESSIONS:
CROSS COUNTRY RESULTS
(Weighted Least Squares) *

Definition of TFP growth (a)	Eq. 4.1 TFP1	Eq. 4.2 TFP1	Eq. 4.3 TFP2	Eq. 4.4 TFP2	Eq. 4.5 TFP3	Eq. 4.6 TFP3
Constant	-0.013 (-1.041)	-0.012 (-1.326)	-0.018 (1.418)	-0.005 (-0.439)	0.074 (6.163)	0.030 (1.772)
GDP71	-1.9E-06 (-3.433)	-7.3E-07 (1.929)	-1.8E-06 (-2.960)	-1.1E-06 (2.451)	-3.7E-06 (-3.673)	-1.5E-06 (-2.187)
TRADETAX	-0.076 (-3.033)	-	-0.074 (-2.620)	-	-0.199 (-4.902)	-
TRADE DEPENDENCY	-	0.017 (3.147)	-	0.025 (3.910)	-	0.025 (2.480)
GOVERNMENT	-6.1E-04 (-2.429)	-4.2E-04 (-1.708)	-6.5E-04 (-2.292)	-4.1E-04 (-1.433)	-2.0E-03 (-5.157)	-2.0E-03 (-4.827)
EDUCATION	1.19E-04 (1.536)	1.56E-07 (2.130)	5.90E-05 (0.675)	1.30E-04 (1.560)	-	1.20E-04 (0.895)
Δ EDUCATION	-	-	-	-	1.60E-04 (1.453)	-
POLITICAL INSTABILITY	-0.017 (-2.117)	-0.017 (-2.480)	-0.026 (-2.846)	-0.043 (-5.253)	-0.014 (-1.607)	-0.023 (-1.802)
INFLATION TAX	-	8.3E-05 (0.540)	-	8.8E-05 (0.487)	-	-2.7E-05 (0.921)
R2	0.400	0.351	0.492	0.487	0.598	0.416
N	54	52	54	52	52	52

(a) For exact explanations on how TFP1, TFP2, and TFP3 were constructed, see the Appendix.

* t-statistics in parenthesis. N is the number of observations; R2 is the coefficient of determination. See the Appendix for a list of the countries considered in this regression.

TABLE 3
TFP GROWTH REGRESSIONS: INSTRUMENTAL VARIABLES
(Dependent Variable TFP1)

	Eq. 4.7	Eq. 4.8
Constant	0.036	0.050
	(1.689)	(2.037)
GDP71	-3.4E-06	-3.7E-06
	(-2.766)	(-2.677)
TRADETAX	-0.171	-0.185
	(-2.432)	(-2.314)
GOVERNMENT	-4.9E-04	-5.5E-04
	(-1.708)	(-2.292)
EDUCATION	3.00E-05	4.80E-05
	(2.130)	(0.675)
POLITICAL INSTABILITY	-0.029	-0.040
	(-2.333)	(-2.823)
INFLATION TAX	-8.1E-05	-2.5E-05
	(0.776)	(-0.939)
R2	0.248	0.392
N	52	52

* t-statistics in parenthesis. N is the number of observations; R2 is the coefficient of determination. The following instruments were used: a constant, GDP71, Governmen Education, Trade Dependency, Imports/GDP ratio, Political Instability, and Inflation tax. These equations were weighted by population in 1971.

TABLE 4

THE OPENING OF LATIN AMERICA - SELECTED COUNTRIES

COUNTRY	TARIFF PROTECTION (tariffs plus paratariffs, unweighted averages)		COVERAGE OF NON-TARIFF BARRIERS (unweighted averages)		RANGE OF IMPORT TARIFFS					
					1980'S	% Min	Max	Current Year	% Min	Max
	1985	1991-92	1985-87	1991-92	Year					
Argentina	28.0	15.0	31.9	8.0	1987	0.0	55.0	1991	0.0	22.0
Bolivia	20.0	8.0	25.0	0.0	1985	0.0	20.0	1991	5.0	10.0
Brazil	80.0	21.1	35.3	10.0	1987	0.0	105.0	1992	0.0	65.0
Chile	36.0	11.0	10.1	0.0	1987	0.0	20.0	1992	11.0	11.0
Colombia	83.0	6.7	73.2	1.0	1986	0.0	200.0	1991	0.0	15.0
Costa Rica	92.0	16.0	0.8	0.0	1986	1.0	100.0	1992	5.0	20.0
Ecuador	50.0	18.0	59.3	na	1986	0.0	290.0	1991	2.0	40.0
Guatemala	50.0	19.0	7.4	6.0	1986	1.0	100.0	1992	5.0	20.0
Mexico	34.0	4.0	12.7	20.0	1985	0.0	100.0	1992	0.0	20.0
Nicaragua	54.0	na	27.8	na	1986	1.0	100.0	1990	0.0	10.0
Paraguay	71.7	16.0	9.9	0.0	1984	0.0	44.0	1991	3.0	86.0
Peru	64.0	15.0	53.4	0.0	1987	0.0	120.0	1992	5.0	15.0
Uruguay	32.0	12.0	14.1	0.0	1986	10.0	45.0	1992	10.0	30.0
Venezuela	30.0	17.0	44.1	5.0	1987	0.0	135.0	1991	0.0	50.0

Source: World Bank, UNCTAD, and Erzan et al. (1989)

TABLE 5
REAL EXCHANGE RATES IN
SELECTED LATIN AMERICAN COUNTRIES

1985=100

COUNTRY	1970	1980	1987	1991
Argentina	78.7	35.8	80.7	44.0
Bolivia	98.3	88.1	107.9	112.1
Brazil	51.9	70.7	78.0	51.4
Chile	29.4	55.3	94.8	83.0
Colombia	86.1	79.2	115.9	126.3
Costa Rica	58.4	65.8	94.9	97.2
Ecuador	118.6	105.6	153.3	173.7
Mexico	86.1	83.3	123.9	77.0
Paraguay	104.6	74.4	111.4	114.3
Peru	59.3	77.1	46.1	23.1
Uruguay	73.0	49.7	77.2	62.0
Venezuela	80.3	84.2	134.8	132.8

Source: International Financial Statistics, IMF

TABLE 6
CHANGES IN
TOTAL FACTOR PRODUCTIVITY GROWTH

(percent)

Argentina	1.91
Bolivia	0.11
Chile	4.96
Costa Rica	3.25
Mexico	-0.32
Uruguay	2.02

For all countries but Chile, computed as the difference of TFP growth for 1987-91 and 1978-82. For Chile the pre-reform period is 1972-78.

Source: Martin (1992)

TABLE 7

TOTAL FACTOR PRODUCTIVITY GROWTH
IN MANUFACTURING IN MEXICO: 1940-1990

	Manufacturing TFP Growth (percentage)
1940-50	0.46
1950-60	0.53
1960-70	3.00
1970-80	n.a.
1985-89	3.40

Sources: The data for 1940-80 are from Elias (1992). The figure
for 1985-89 is from Ibarra (1992).

TABLE 8

DISAGGREGATED PRODUCTIVITY GROWTH
IN MEXICO'S MANUFACTURING SECTOR
(1985-1990)

DIVISION	(percentage) LABOR PRODUCTIVITY	TOTAL FACTOR PRODUCTIVITY
Food, Beverages, and Tobacco	1.7	3.4
Textiles and Apparel	0.7	0.4
Wood Products	0.2	3.4
Paper and Printing	2.3	4.8
Chemicals, Rubber, and Plastics	2.3	2.3
Non-metallic Products	1.1	3.5
Metal Products	7.5	3.5
Machinery	4.4	4.7
Other Manufacturing	-4.8	n.a.
Total Manufacturing	2.3	3.4

Source: Ibarra (1992)

TABLE 9

VALUE OF EXPORTS OF GOODS
AND NON-FACTOR SERVICES
ANNUAL GROWTH RATES

CONSTANT 1990 PRICES, US$

COUNTRY	1972-80	1982-87	1987-91
Argentina	7.1	2.6	10.3
Bolivia	-1.8	0.6	11.4
Brazil	8.8	9.7	3.4
Chile	15.2	6.5	10.5
Colombia	4.9	10.2	6.6
Costa Rica	4.3	3.8 (*)	9.1
Ecuador	6.7	3.3	9.2
Mexico	7.9	6.0	5.1
Paraguay	6.7	4.8	20.2
Peru	2.6	-3.7	0.9
Uruguay	10.0	4.2	7.1
Venezuela	-7.3	3.6	5.6

(*) Changes over period 1981-87

Source: World Bank, ECLAC

TABLE 10

VOLUME OF EXPORTS
ANNUAL GROWTH RATES

COUNTRY	1972-80	1982-87		1987-91
Argentina	2.1	0.8		15.2
Bolivia	-1.7	-5.2		16.5
Brazil	8.2	8.0		2.4
Chile	7.4	7.6		7.5
Colombia	3.6	14.8		6.3
Costa Rica	3.8	6.2	(*)	8.6
Ecuador	14.6	6.8		7.6
Mexico	10.2	6.1		5.2
Paraguay	7.3	9.2		27.1
Peru	2.3	-4.0		1.3
Uruguay	5.4	-0.5		8.1
Venezuela	-5.8	2.1		8.3

(*) Changes over period 1981-87

Source: World Bank, ECLAC

TABLE 11
COMPOSITION OF EXPORTS OF GOODS
NON-TRADITIONAL EXPORTS / TOTAL

COUNTRY	1980	1982	1985	1987	1990
Argentina	0.27	0.31	0.28	0.31	0.39
Bolivia	0.15	0.09	0.05	0.19	0.47
Brazil	0.57	0.59	0.66	0.69	0.70
Chile	0.38	0.22 ·	0.35	0.39	na
Colombia	0.41	0.42	0.41	0.55	0.64
Costa Rica	0.36	0.38	0.37	0.42	0.54
Ecuador	0.24	0.09	0.12	0.14	0.10
Mexico	0.13	0.20	0.18	0.38	0.43
Paraguay	0.58	0.71	0.82	0.68	0.65
Peru	0.21	0.23	0.24	0.27	0.29
Uruguay	0.61	0.58	0.66	0.67	0.63
Venezuela	0.04	0.07	0.09	0.13	0.19

Source: ECLAC, Economic Survey of Latin America, several issues

TABLE 12
COMPOSITION OF EXPORTS OF GOODS
EXPORTS OF MANUFACTURES / TOTAL EXPORTS

COUNTRY	1970	1980	1982	1985	1987	1990
Argentina	0.14	0.23	0.24	0.21	0.31	0.29
Bolivia	0.03	0.02	0.03	0.01	0.03	0.05
Brazil	0.15	0.37	0.38	0.44	0.50	0.52
Chile	0.04	0.09	0.07	0.11	0.09	0.10
Colombia	0.11	0.20	0.24	0.17	0.19	0.25
Costa Rica	0.19	0.28	0.25	0.22	0.24	na
Ecuador	0.02	0.03	0.03	0.01	0.02	0.02
Mexico	0.33	0.11	0.10	0.21	0.38	0.43
Paraguay	0.08	0.04	0.09	0.06	0.10	0.10
Peru	0.01	0.17	0.16	0.13	0.17	na
Uruguay	0.15	0.38	0.32	0.35	0.55	0.50
Venezuela	0.01	0.02	0.02	0.10	0.06	0.15

Source: ECLAC, Statistical Yearbook for Latin America, several issues

TABLE 13
CAPITAL INFLOWS AND NET RESOURCE TRANSFERS
LATIN AMERICA 1981-1992

	NET CAPITAL INFLOWS	INTEREST AND PROFIT INCOME	NET RESOURCE TRANSFERS
1982-85	55.3	-111.7	-56.4
1986-89	33.5	-138.7	-105.2
1990	17.0	-35.7	-18.7
1991	36.3	-31.1	5.2
1992 (a)	42.8	-21.2	21.6

(a) Projection

Source: Jaspersen (1992)

TABLE 14

NET CAPITAL INFLOWS AS PERCENTAGE OF GDP
IN SELECTED LATIN AMERICAN COUNTRIES

COUNTRY	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Argentina	2.4	0.5	3.0	2.9	1.8	2.6	3.9	0.2	1.0	6.3
Brazil	4.2	2.1	1.8	0.1	0.6	1.3	-0.5	0.4	1.3	0.2
Chile	4.4	2.3	8.3	5.0	3.0	3.7	3.7	4.3	7.8	2.5
Colombia	6.5	4.1	2.6	5.9	2.9	0.0	2.1	1.0	0.0	2.8
Mexico	5.6	-1.5	-0.6	-1.2	0.7	-0.7	-0.8	0.8	5.0	10.6
Peru	5.7	2.4	3.4	1.1	2.1	2.3	3.5	1.5	2.4	9.5
Venezuela	-2.5	-6.6	-3.6	-1.8	-1.9	0.8	-1.5	-5.7	-4.1	4.9

Source: Economic and Social Progress in Latin America, IDB, 1992.
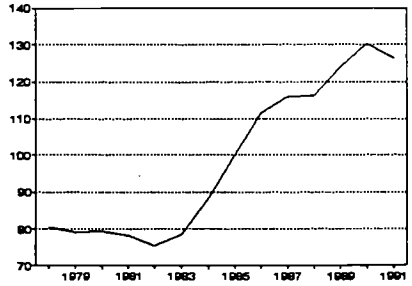
FIGURE 1
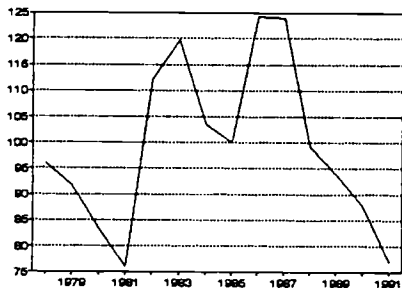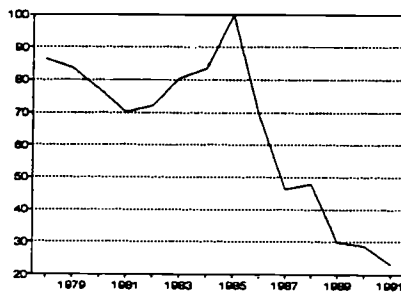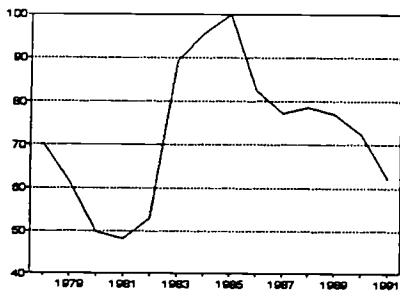# REAL EXCHANGE RATES IN LATIN AMERICA
1985 = 100
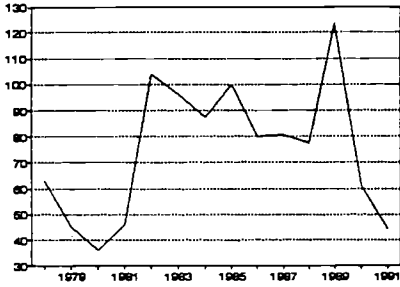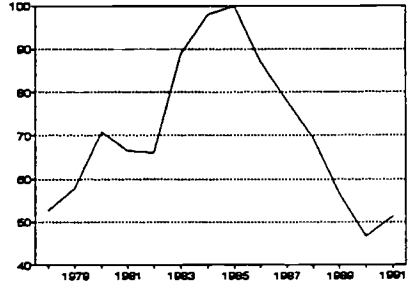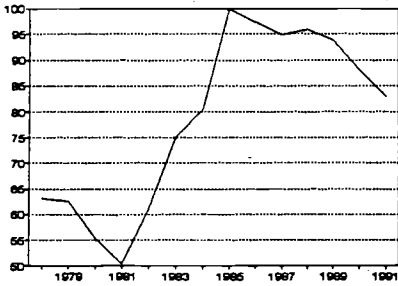
FIGURE 1
# REAL EXCHANGE RATES IN LATIN AMERICA
1985 = 100

MEXICO

PERU

URUGUAY

VENEZUELA