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THE KNIFE'S EDGE OF EXCHANGE RATE BASED STABILIZATION IMPACTS ON GROWTH, EMPLOYMENT AND WAGES*

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Abstract:

This paper deals with the macroeconomic and labor market performances of the three major economies of Latin America, namely, Argentina, Brazil and Mexico since they adopted trade liberalization reforms followed by exchange rate stabilization policies. The first section is devoted to the analysis of the *macroeconomic* consequences of trade and financial liberalization coupled with exchange rate stabilization. It looks at the conditions for the sustainability of the adjustment process and for the resumption of a growth path taking into account the experiences Argentina, Brazil and Mexico in the 1990's. In a sense, it looks at the trade-off between stabilization and external imbalances which ultimately have negative effects on the prospects for economic growth. The second section examines the responses of industrial employment, unemployment, real wages and relative wages to the policies adopted. It shows that the negative impact on industrial employment of over-exposing these economies to external competition can be very significant and that, contrary to what is expected, the effect on the distribution of income --as far as wage differentials are concerned-- can be negative.

Section 1: Introduction

This paper deals with the macroeconomic and labor market performances of the three major economies of Latin America, namely, Argentina, Brazil and Mexico since they adopted trade liberalization reforms followed by exchange rate stabilization policies. These are obviously very different countries in many respects. But they all have emerged from a long period of import substitution strategy, high levels of inflation (hyperinflation in the case of Argentina), and low economic growth in the realm of the external debt crisis in the 1980's. They also have in common many of the policies adopted since the late 1980's, in particular, trade and financial markets liberalization.

For the first time after at least a couple of decades in the cases of Argentina and Brazil, chronic and creeping inflation has ceased to be the major economic problem. In Argentina, annual inflation has been below 5% for more than two years and in Brazil, the monthly rate of inflation has been stable around 1.5% for the last year and a half. In the case of Mexico, inflation had been reduced to very low levels until the crisis of December of 1994, then rebounding after the drastic devaluation of the peso.

In examining the experiences of these countries it becomes evident that inflation is not neutral with respect to variables such as relative prices and wages, the sectoral structure of output, the level of employment and external accounts. These variables have changed dramatically over the process of stabilization, and in many instances they have changed in undesirable and unexpected directions.

The major movements in the trade accounts (from surpluses to deficits) and the level of activity (from boom to contraction and recession), together with the structural changes which result from the opening of the economy, have affected in important respects labor market variables. Industrial employment has fallen, unemployment has increased and relative wages have moved in favor of the more educated workers.

The extent to which trade related or technologically related effects determine these movements is obviously an open question. It is also an open question the extent to which the changes in the economic variables are transitory or long lasting consequences of the reforms. It seems certain however that both trade and technological factors are relevant and that some of the changes have a permanent character.

This paper is divided into two major sections. Section 2 is devoted to the analysis of the *macroeconomic* consequences of trade and financial liberalization coupled with exchange rate stabilization. It looks at the conditions for the sustainability of the adjustment process and for the resumption of a growth path taking into account the experiences Argentina, Brazil and Mexico in the 1990's. In a sense, it looks at the trade-off between stabilization and external imbalances which ultimately have negative effects on the prospects for economic growth.

Section 3 examines the responses of industrial employment, unemployment, real wages and relative wages to the policies adopted. It shows that the negative impact on industrial employment of over-exposing these economies to external competition can be very significant and that, contrary to what is expected, the effect on the distribution of income --as far as wage differentials are concerned-- can be negative.

Section 4 provides some concluding comments.

Section 2: The knife`s edge of exchange rate based stabilization

The combination of trade liberalization and exchange rate based stabilization processes has imposed considerable adjustment pressures on the three major economies of Latin America. The boom in imports which follows such policy affects the structure of output, employment and income distribution. The adjustment process to the change in the competitive environment --if successful in the sense of bringing stabilization and growth-- might not only be long but also might imply output losses.

Hence, looking at the *transition process* through which these economies are going through --and in particular at the conditions for the *sustainability* of the transition towards stable and growing economies-- and then looking at alternative *cumulative processes* which might emerge from the reforms seems to be a fruitful exercise in order to evaluate the pros and cons of the stabilization cum trade and other structural reforms taking place in the main countries of the region.

2.1 Sustainability

The notion that trade liberalization should not be followed by an appreciation of the currency is well established in the literature. Liberalization may require a compensating devaluation to protect the trade balance. Using the nominal exchange rate to "coordinate" domestic prices during a process of trade liberalization tend to produce huge increases in imports --not matched by exports, at least in the short run-- and trade and current account imbalances.

The extent to which the increase in imports and external imbalances are sustainable depend on the speed in which domestic inflation converges to the international rate of inflation. The real appreciation of the exchange rate as well as the change in relative prices against the export and import competing sectors may lead to strong external imbalances. A more pessimistic view would see the external imbalances in Latin American countries as the result of the drastic trade liberalization and lack of investments in the tradable sector. Such view would see the real appreciation of the domestic currency as yet another element in crating external imbalances.

The convergence of domestic inflation to international inflation depends on the degree of dollarization of the economy and the share of the tradable sectors. In a dollarized economy with a large tradable sector the convergence process might be short and the side effects on the external accounts might be small and sustainable. The smaller the degree of dollatization and the smaller the share of the tradable sector, the longer the period of convergence. If convergence takes a long time, the level of appreciation of the currency might be such that the trade and current account deficits become too large, and the process might become unsustainable.

Hence, sustainability depends on the level of real exchange rate appreciation (given the levels of tariffs and non-tariffs barriers) and the resulting trade and current account balances. If devaluation is avoided in order to preserve stabilization one possible way to reduce the real appreciation of the exchange rate is through a *nominal deflation* of domestic wages and prices.

The case for the sustainability of simultaneous processes of trade liberalization and exchange rate based stabilization programs has been put forward by Rodrik (1993).\[1] Rodrik recognizes that there is a potential contradiction between the two processes but argues that such contradiction would disappear if nominal wages were flexible. He adds a sociological element to his conclusion by arguing that "the exchange-rate dilemma may be illusory when nominal rigidities and the inflationary bias both have the same root: a weak government facing cartelized labor and business groups". (p. 13)

Rodrik makes a distinction between two policy alternatives: one in which the government sets the exchange rate after the nominal wage is selected (*discretion case*) and another in which the government makes a credible exchange rate commitment prior to wage-setting (*commitment case*). A model is developed to show that real variables (aggregate employment and real wages) are not affected by the policy alternative chosen but that the rate of inflation depends on the commitment of the government in fixing the nominal exchange rate.

In the discretion case, unions know that the government will devaluate the exchange rate to compensate for the effects of trade liberalization on employment. Hence, wages are "rigid" and the exchange rate accommodates to wage and price inflation. With wages and the exchange rate indexed to inflation, stabilization fails.

In the commitment case, the government fixes the nominal exchange rate. If the policy is credible (in the sense that unions believe the exchange rate will be kept fixed), nominal wages will accommodate such as to make employment compatible with the union's utility function. Stabilization succeeds.

Rodrik's main argument is that nominal wage stickiness is endogenous to the policy regime:

> *What this framework has shown is that the circumstances under which a successful exchange-rate based stabilization will work (...) are the same as those under which nominal wage rigidity will disappear endogenously. Consequently, provided the nominal anchor is credible, the trade-off between using the exchange rate for disinflation and using it for competitiveness disappears also. In addition, trade liberalization can buy added disinflation, at no cost to employment or the trade balance. (p. 20)*

As an intellectual background, these conclusions sound like music to some policy makers in Latin America. However, the experiences of Chile in the 1970's, and Mexico, Argentina and Brazil in the 1990's do not fully corroborate Rodrik's view. Basically because even when the policy is credible, if the transition entails some degree wage stickiness (and stickiness of other elements in the formation of prices for that matter), it might end up leading to external imbalances. Hence, the issue is not one of wage flexibility as such but a question of the *timing* of the deflation vis-à-vis the exchange rate. Wages might be flexible but cost and price reduction --deflation in short-- takes time. And the side-effects of stickiness in the transition (specially on the trade and current account balances) might not be sustainable.\[2]

There are two caveats to Rodrik's arguments. One is that it relies on wage flexibility. Neglecting economic forces behind the timing of cost reductions and exploiting sociological arguments (such as "weak governments" and "cartelized labor and business groups") might detract economists from their own way of looking at the world and perhaps convince them that the problem lies outside their field. However, "market imperfections", "asymmetric information", "costs of adjustment" and a host of other "economic" reasons provide reasonable explanations for the fact that wages and profit margins take time to accommodate to falling employment and market shares. Hence, under close inspection, relying on the strength of market forces and sociological reasoning to make a case in favor of trade liberalization cum exchange rate based stabilization might not be very convincing.

The other problem is that Rodrik's exercise is static in the sense that it does not examine the transition between the two equilibria. Depending on the circumstances, the adjustment process might not converge to a new equilibrium with lower inflation. Both in the cases of Chile in the early 1980's and of Mexico in 1994, the combination of high current account deficits and changes in the international environment led to a non-convergent paths implying major adjustment changes in the exchange rate and the level of activity.

2.2 Buying stability with stagnation

The macroeconomic cycle associated with exchange rate based stabilization plans have been examined by Kiguel & Liviatan (1992).\[3] Looking at the experience of Israel and Mexico in the 1980's and the Southern-Cone economies in the late 1970's they show that the cycle starts with a consumption boom followed by deficits in the trade and current accounts. The boom then reverts into a recession.

The primary question is: what brings about the recession? \[4] Kiguel & Liviatan emphasize endogenous causes for the cyclical behavior of the economies. Credibility may play an important role. If agents see the stabilization plan as short-lived, they will tend to anticipate consumption and imports leading to trade deficits. Or, if agents see the plan as successful and stabilization as permanent, the reduction in uncertainty may boost agents' permanent income and consumption. Other endogenous explanations for the cycle exist. The boom may be fueled by the reduction of the inflation tax and forced saving and the expansion of credit associated with the stabilization itself and the inflow of foreign capitals and the ensuing recession may result from the increase in households indebtness.

However, given the initial boom, the recession may well be policy-induced. In order to reduce imports without resorting to a devaluation or greater protection, the government may use fiscal and monetary contrationary policies. The intention of such policies is to, on the one hand, reduce imports by reducing the level of activity and, on the other, put pressure on agents in an attempt to engender a nominal deflation. It could be argued that in some cases --the Brazilian case in 1995 being a notable example-- the recession results from a deliberate action of the government to avoid major external imbalances. In the case of Argentina the legal linkage between the level of international reserves and money supply makes aggregate demand policies

endogenous. A reduction in reserves immediately triggers a reduction in money supply with contrationary effects on aggregate demand and the level of activity.

The size of the recession tends to be proportional to the size of the external imbalance, or the projected external imbalance. If the expansion is strong and/or long such that the figures of the external accounts turn on the red light to external investors, the adjustment has to be strong as well. If, on the other hand, the government takes preemptive actions in order to avoid reaching the "critical" levels of trade and current account deficits, the level of the contraction might be milder. The experiences of Chile in 1982-3 and Mexico and Argentina in 1995 provides examples the first case; the experience of Brazil in 1995 is an example of the second case.

2.3 The cycle of sustainable adjustment

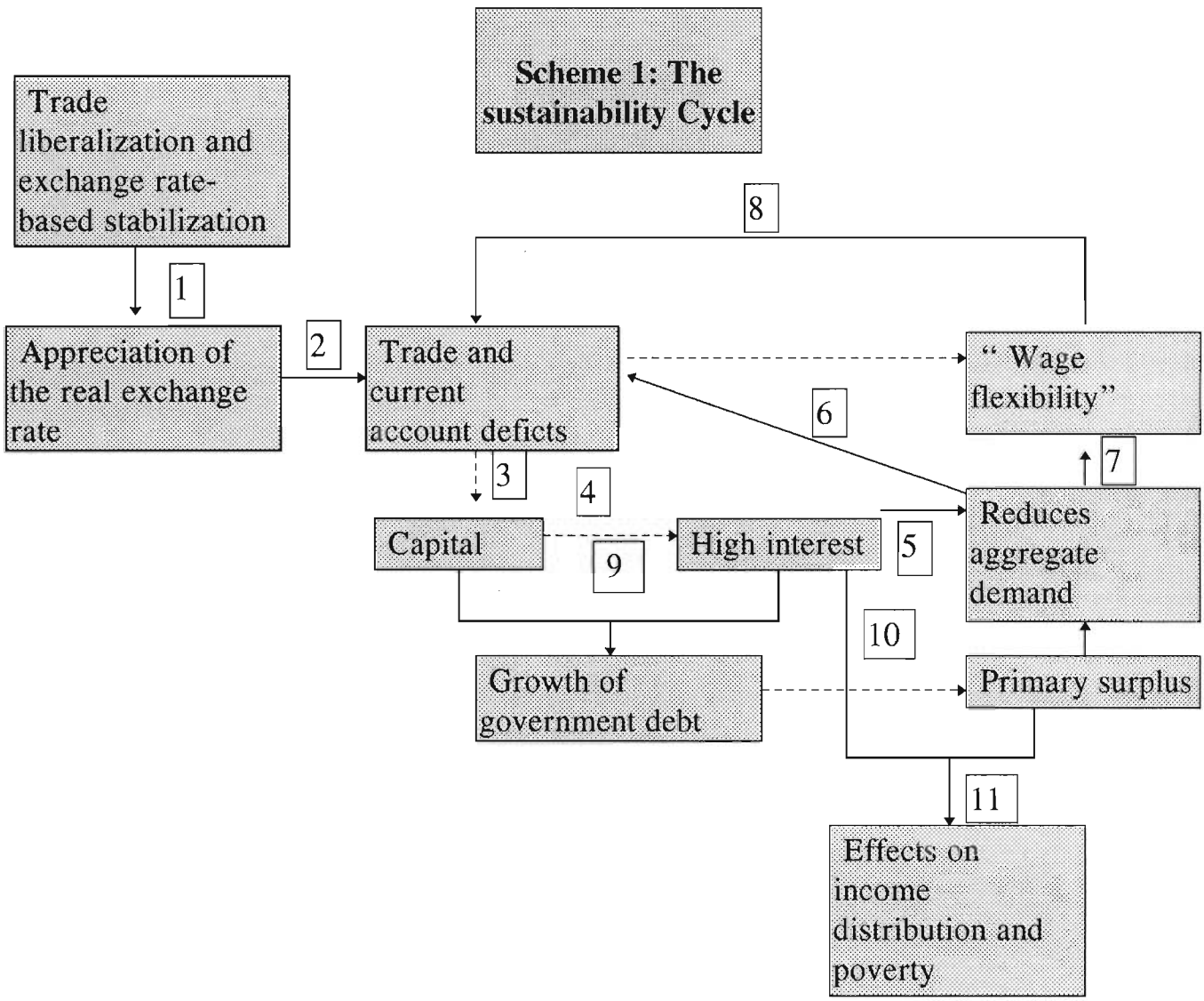
Based on the above discussion and the recent experiences with trade liberalization cum exchange rate-based stabilization plans in Argentina, Mexico and Brazil, it seems useful to examine a cycle of causal effects in which the requirements for a sustainable adjustment are spelled out. **Scheme 1** is an attempt to establish such cycle.

The combination of trade liberalization and exchange rate-based stabilization, on the one hand, and some level of wage and price stickiness, on the other, give rise to a real exchange rate appreciation [arrow 1 in **Scheme 1**]. The expansion of aggregate demand which follows stabilization, specially in an environment of greater external credit, plus the lack of dollarization in some sectors of the economy, are important ingredients in explaining the fact that wages and prices do not necessarily follow the path of the exchange rate.

The appreciation of the exchange rate, coupled with pent-up demand for imports after decades of protection, gives rise to a significant increase in the demand for imports (not matched by increases in exports) and trade and current account deficits [arrow 2]. In order to sustain the exchange rate and finance the current account deficits, capital inflows are required (***dashed lines*** on the scheme represent "policy requirements"). To attract foreign capitals, high interest rates are required [arrows 3 and 4].

High interest rates, in turn, lead to a reduction in aggregate demand [arrow 5] which, at the same time, reduce imports directly [arrow 6] and puts pressure on firms and unions. Such pressure is assumed to eventually bring about a reduction in the degree of indexation of wages and prices and possibly some deflation [arrow 7]. Given the path followed by the exchange rate, the movement of wages and prices might lead to a smaller appreciation of the currency (or even a real devaluation) thus reducing imports and trade deficits [arrow 8].

Hence, reducing aggregate demand becomes an important ingredient to enhance the sustainability of the transition to an equilibrium with low inflation. In the long run, it is expected that costs (or "wages" to use the conventional concept in the literature) will be sufficiently "flexible" and fall in relation to the exchange rate thus reestablishing the conditions to growth without external imbalances.

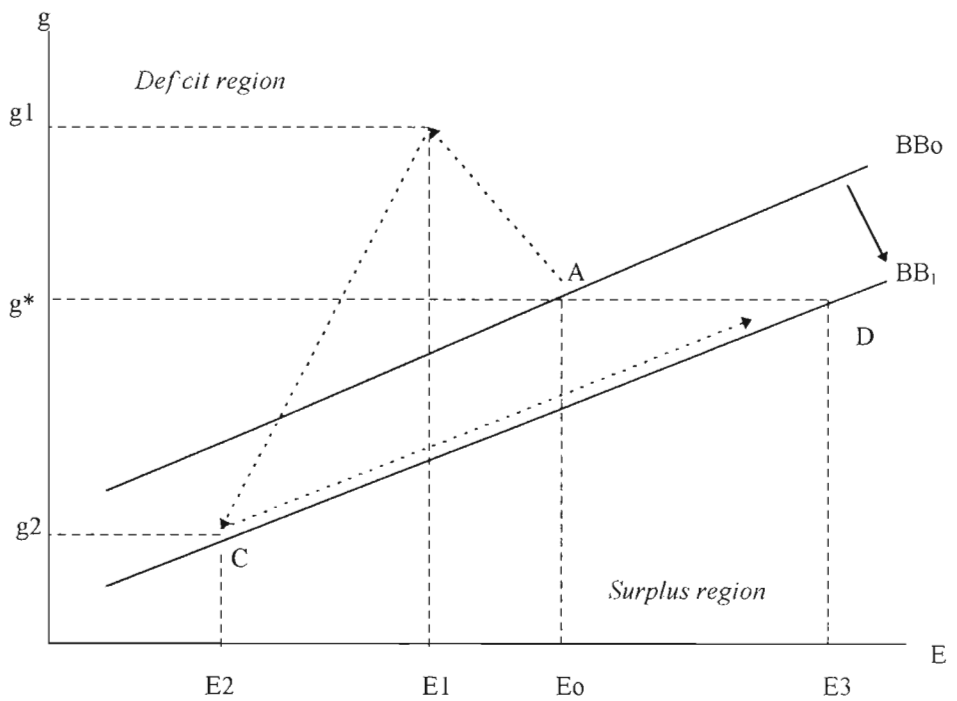

Scheme 1: The sustainability Cycle
Trade liberalization and exchange rate-based stabilization
1
Appreciation of the real exchange rate
2
Trade and current account deficts
3
4
Capital
9
High interest
5
Reduces aggregate demand
6
7
" Wage flexibility"
8
Growth of government debt
10
Primary surplus
11
Effects on income distribution and poverty

Box 1 provides a more analytical version of the causal effects presented in **Scheme 1**. The main conclusions arising from the analytical exercise are the following. In face of external imbalances, the task of policy makers is to restore economic growth under the condition of external equilibrium. In order to do that, since it is difficult to induce a deflation in a boom, contrationary policies must be introduced. This would lead the economy to situation of smaller (and perhaps negative) rate of growth. The recession is expected to create deflationary pressures which ideally would lead to a real devaluation of the exchange rate, reducing external constraints to economic growth. However, it is important to notice that, for a given nominal exchange rate, in the new equilibrium, nominal costs and prices in the tradable sector would have to be smaller than before the initial policy change.

Box 1:

Graph 1 illustrates the path followed by the economy in the adjustment process. On the vertical axis, ***g*** *stands for the rate of economic growth (or the rate growth of industrial output) and on the horizontal axis* ***E*** *stands for the real exchange rate. The line* ***BB*** *represents the external equilibrium associated with a given level of the exchange rate and level of tariff and non-tariff protection.* [5]

Graph 1



The reduction in tariff and non-tariff barriers --given the nominal exchange rate-- or the nominal appreciation of the exchange rate (such as it occurred in the beginning of the Real plan in Brazil in 1994), displaces the BB line to the southeast from $B_o B_o$ to B_1B_1. Given the growth rate (g) and the real exchange rate (E_o), the economy --which, by assumption, was in a position of external equilibrium before the change in the policy (point A)-- is now in a situation of deficit. The expansion of the economy increases the rate of growth (from g* to g_1) fueling wage inflation and leading to an appreciation of the real exchange rate (from E_o to E_1) taking the economy to point B.*

The task of policy makers is to restore the original rate of economic growth (g) under the condition of external balance, that is, take the economy to point D. In order to do that, since it is difficult to induce a deflation in a boom, contrationary policies must be introduced. This would lead the economy to point C with a smaller (perhaps negative) rate of growth (g_2).*

The recession is expected to create deflationary pressures which ideally would lead to a real devaluation of the exchange rate. In such case, the economy would be sliding along the B_1B_1 line until it reaches point D. Notice that, for a given nominal exchange rate, in the new equilibrium, nominal costs and prices (as well as the nominal wage) in the tradable sector would have to be smaller than before the initial policy change.

The movement from points A to D in ***Graph 1*** *corresponds to the sustainability cycle depicted on* ***Scheme 1*** *whereby contrationary monetary and fiscal policies reduce aggregate demand with direct effects on the trade account. It is expected that the contraction in the level of activity will eventually induce firms and unions to reduce wages and prices.*

End of Box 1

Of course, engendering a wage and price deflation is a very difficult task. The process might be slow depending on costs of adjustment and market imperfections. Deflation might have distributional effects with wages and prices in the more protected sectors falling less than in the less protected sectors. On the other hand, if deflation is required from the point of view of the external equilibrium, on the domestic front it might give rise to disruptive consequences as bankruptcies fuel into financial difficulties for the banking system. This will induce banks to restrict credit which, in turn, fuels into greater difficulties for firms. Hence, the adjustment process might not be smooth, in which case lasting effects might take place.

Structural and institutional reforms are also designed to reduce costs. The reform of labor market institutions (such as the abolition of minimum wages, reduction in payroll taxes and workers' benefits, changes in the structure of collective bargaining), for example, is usually seen as central to increase labor market flexibility and reduce labor costs. The privatization of services in the electrical, telecommunications and transportation sectors is also seen as an important element in bringing in new investments which will eventually reduce costs.

In sum, the condition for sustainability of the stabilization process is to reduce costs such as to make the import competing and export sectors competitive *given the new levels of tariff and non-tariff protection and exchange rate.*

Even if the process turns out to be successful, there are negative side-effects associated with this strategy. The inflow of capitals coupled with high interest rates leads to an increase in the government debt which in turn increase the interest services of the debt, putting pressure on the govenrment's expenditures [arrow 9 in **Scheme 1**]. Given a certain target for the governments' operational deficit (defined as tax revenues minus expenditures and interest services on the debt), the increase in interest payments implies a reduction in traditional government expenditures (infrastructure and social services). The reduction in such expenditures has important effects on the welfare of the poor who depend on the provision of social services and infrastructure.

The increase in the primary surplus (defined as tax revenues minus expenditures) to compensate for the increase in the payment of interest rates also has distributional effects [arrow 10]. Whereas the poor suffer with a reduction in the provision of social services and infrastructure, government creditors (firms and rich families) are benefited with the payment of high interest rates. Hence, the reliance on high interest rates to attract foreign capitals and dampen aggregate demand --which helps in creating "sustainability conditions"-- puts pressures on the level of traditional government expenditures and at the same time implies a transfer of public resources to the rich.

2.4 Lessons from the Chilean Experience

Analysts usually look at the results of the Chilean experience in assessing the reforms and stabilization efforts carried out in Latin American economies in the last few years. Chile has become the sole star performer in the continent in the 1990`s. Mexico, Argentina and Brazil made important progress --specially in the stabilization front-- but as whole their situation is still seen as `transitory´.

Starting with the Chilean experience might be useful since in many respects the reforms carried out in the 1970´s and 80´s in Chile are very similar to those taking place in other Latin American countries since the late 80´s. Of course circumstances and the political and institutional environments vary across time and countries. But the intellectual similarities are very strong. Trade and financial liberalization, reform of the State and the deregulation of capital and labor markets are central in all experiences.

The macroeconomic performance of the Chilean economy in the 1990´s is impressive. Between 1990 and 1994, GDP and GDP per capita have grown at an annual average rate of, respectively, 6.8% and 5.1%; annual CPI inflation is gradually falling from 27.3% in 1990 to 8.9% in 1994; between 1987 and 1994, the investment:GDP ratio increased from 16.9% to 22.1%, open unemployment fell from 9.4% to 6% in 1994; exports grew 136% and imports grew 147%; and the trade and current accounts of the balance of payments are under control.[6]

However, the transition process in Chile was very long and very difficult. Even more important, the levels of GDP, per capita manufacturing output and real wages in 1989 --just before the 1990's take-off-- show that the twenty years of reforms did not add much to the welfare and the wealth of the country. GDP grew 17.4% between 1970 and 1989 (which is equivalent to an annual average of 0.78%), per capita manufacturing output fell 9% and real wages fell 8%. Over the adjustment period, the rate of unemployment reached a peak of 31.3% in 1983.[7]

In discussing the Chilean experience, Ffrench-Davis et al (1993) distinguishes two periods --one that goes from 1974 to 1981 and the second from 1982 to 1989. The first period was marked by sweeping reforms in trade policy as well as other fields and ended with a crisis associated with the combination of the exchange rate policy and the first Mexican crisis. The second starts with a severe adjustment in the level of activity and was marked by less liberal trade and exchange rate policies.

It is important to remember that in the 1970´s the access to external financing was much broader than after the Mexican crisis, and to a certain extent similar to the circumstances of the early 1990´s. It is worth quoting Ffrench-Davis et al (1993) in their assessment of the policy mix and their consequences in Chile during the 70´s, and notice the striking similarities with some of the characteristics of the current reforms and stabilization efforts in countries like Argentina, Mexico and Brazil.

Exchange rate policy. The authors note that the exchange rate policy was at odds with the trade policy:

> *As is well known, the adverse effect that a reduction in tariffs and other important restrictions have on economic activity can be offset by a real devaluation. Such a devaluation helps to reallocate resources, shifting them away from non-tradable or highly protected goods and services and towards other tradable that receive little or no protection. In other words, a compensatory devaluation facilitates the development of exports and of efficient import substitution. In Chile (...) the dampening effects of the liberalization on the relative prices of tradable as a whole were not counterbalanced by a real devaluation; on the contrary, the local currency rose steeply in real terms. (Ffrench-Davis, p. 182)*

External financial liberalization and exchange rate based stabilization. The liberalization of the external financial accounts and capital inflows helped to support the appreciation of the exchange rate:

> *Trade liberalization was accompanied by significant changes in economic policy, particularly external financial liberalization. Large capital inflows beginning in 1977 allowed the authorities to carry out a real devaluation. In addition, in 1976, the authorities began to use the nominal exchange rate as a tool in the fight against inflation(...) The lessons to be drawn from this are quite clear: to a major extent, the success of a liberalization scheme and the costs it entails ate determined by how the exchange rate is handled; in addition, the degrees of freedom for influencing the real exchange rate are influenced by policies towards international financial flows"(pp. 182-3)*

Investment and recessionary adjustment. Trade liberalization and the appreciation of the exchange rate requires high investment ratios to engender the sectoral adjustment of the economy. If investment is low and current account deficits start growing, a recessionary adjustment might be required:

> *When investment is low, it becomes much more difficult to restructure supply than it would otherwise be; therefore, under such circumstances, a sudden liberalization of imports tends to engender an adjustment process whereby the economy moves very gradually from inefficient forms of production towards the optimum production frontier, but it will do so by recessionary means and will loose a great deal of production potential along the way. (p. 183)*

Changes in the sectoral and industrial structures. Specially in the first phase (1974-81), the adjustment implied a reduction in the value added of manufacture and the disappearance of small and medium size firms:

> I*n 1979, after the reforms had been in place for six years, value added in the manufacturing sector was 8% lower than it had been in 1974 and was 15% lower in per capita terms. Its share in GDP fell sharply from 26% to 20%. (p. 176)*

> *Only the most powerful companies survived into the second phase because shaky firms, as well as business that under normal circumstances might have been profitable, had gone bankrupt. (p. 182)*

In reading these passages it becomes very clear that combining trade liberalization with an appreciation of the exchange rate supported by large capital inflows marked the Chilean experience in the 1970's. These same elements are being repeated in exchange rate based stabilization attempts in many Latin American countries in the 1990's.

2.5 The recent experiences of Argentina, Mexico and Brazil

The experiences of Mexico, Brazil and Argentina differ in their timing and details. Mexico started in 1988, Argentina in 1991 and Brazil in 1994. Argentina has a fixed exchange rate since the beginning of the Plan de Conversibilidad whereas Mexico and Brazil opted for a more flexible system which provides some space for devaluations.

There are, however, many common traits to the three experiences. In particular, a significant reduction of tariff and non-tariff trade barriers coupled with an explicit use of the exchange rate as a coordinating instrument in the realm of the stabilization effort. Capital inflows and mounting reserves played an important role in supporting the exchange rate in face of growing trade and current account deficits. Interest rates were kept high in order to maintain the level of reserves.\[8]

As a consequence of trade liberalization and the appreciation of the exchange rate, imports grew very significantly in all three countries whereas exports grew much less. Between 1991 and 1994, on an annual average basis, imports grew 17% in Mexico, 55.6% in Argentina and 12.3 in Brazil. (In 1995, one year after the beginning of the Real plan, imports grew 51% in Brazil.)

Whereas exports grew 6.4% in Mexico, 5.5% in Argentina and 8.5% in Brazil on an annual basis between 1991 and 1994. As a consequence of the trade deficits resulting from the growth of imports, the ratio of the *current account deficit to exports* grew from 8.8% in 1988 to 58.2% in 1994 in Mexico, from 14% to 54.2% in Argentina and from -11.6% to 3% in Brazil.\[9 and 10]

The behavior of the main macroeconomic variables in the three countries follows extremely closely the pattern presented in **Graph 1** above. **Figures 1 to 3** show the time path of the rate of growth of industrial output and the real exchange rate in the three countries (measured by the ratio of the nominal exchange rate to the industrial wholesale price index or the price index of industrial exports). For each year (or quarter) the data in parenthesis is the corresponding trade deficit. The data for Mexico and Argentina are presented on an annual basis whereas in the case of Brazil they are presented on a quarterly basis. The reason for the difference in the timing is that the effects of the opening and exchange rate appreciation as well as the adjustment in Brazil was much shorter.

In the three cases, the rate of growth of industrial output is high in the early phase of the process --around 6%. The real exchange rate appreciates continuously in all three cases: around 50% between 1990 and 1995 in Argentina, around 25% between 1989 and 1994 in Mexico, and around 25% between the first and the third quarters of 1994 in Brazil. \[11]

The rate of growth of industrial output remains positive between 1991 and 1994 in Argentina (annual average of 5.4%); between 1989 and 1994 in Mexico (annual average of 5.2% between 1989 and 1991); and for the first year of the Real plano (mid-1994 to mid 1995) in Brazil. As seen on the figures, over the respective periods, trade deficits grew leading to growing current account deficits.

The path of the <exchange rate, output growth> pair in Argentina (**Figure 1**) follows the same pattern shown in **Graph 1**: it starts with an increase in the growth of output together with an appreciation of the exchange rate (movement from A to B in **Graph 1**), then a gradual reduction in the rate of growth --reaching zero to negative rates in 1995 (movement from B to C). The expectation, of course, is that the economy will recover positive rates of growth, with a real resulting from a deflation of domestic prices. If the real devaluation is sufficiently strong, the economy might start a movement along the BB line (movement from C to D in **Graph 1**), with greater rates of growth.

>>> Figures 1, 2 and 3 End of Text<<<

In Mexico (**Figure 2**) the path is also similar to that in **Graph 1**. The differences with respect to the Argentinean case refers to the magnitudes of the trade and current account deficits --which are much greater in Mexico-- and the absence of any signs of real devaluations until 1995. The rate of growth of output reached zero in 1993 but then rebounded in 1994. The crisis of December 1994 resulted from the unsustainable levels

of current account deficits, which required a major adjustment of both the exchange rate and the rate of growth as shown by the arrow going from 1994 to 1995. The adjustments in the exchange rate and the rate of growth led the economy to the surplus region (below the BB line) at the cost of higher inflation.

Brazil reacted to the appearance of trade and larger current account deficits much sooner than the other two countries for three reasons. First because the expansion of aggregate demand which followed the launching of the Real plan in 1994 was much stronger than in the other two countries, leading to an increase of imports of 100% on an annual basis in the first quarter of 1995. Second because the Mexican crisis implied a significant drop in reserves, at least for a few months. Third, because the resemblance with the Mexican and Argentinean models was too strong leading to negative effects on expectations .

What is common to all three cases is the required adjustment of the level of activity and the rate of growth of the economy in order to sustain the exchange rate policy and stabilization (cases of Argentina and Brazil) and to deal with the severe external constraints imposed by the crisis in Mexico. The question for the three countries is of course the same, that is, *what are the requirements for the resumption of economic growth without the threat of major external imbalances?*\[12]

2.6 Entering "virtuous circles"

The issue of sustainability of exchange rate-based stabilization programs is crucial as shown by the Mexican crisis of 1994. Keeping the economy on the knife edge between current account deficits and economic growth in order to sustain the exchange rate requires enormous technical and political effort on the part of policy makers and politicians.

As shown in **Figures 1 to 3**, the Mexican economy was not able to stay on the knife's edge. From the point of view of inflation, Argentina is now a stable economy -- with the annual rate of inflation around 2% in 1995. As for its external accounts, in 1995, the trade account shown a surplus of US$ 1 billion (against a deficit of US$ 7 billions in 1994), the current account shown a deficit of US$ 4 billion (against a deficit of US$ 10 billions in 1994). However, the price for the good record is a severe drop in the rate of growth and the level of activity. As shown in section 3 below, given the reduction in industrial employment and the severe increase in unemployment in the past few years, the prospects of low or even negative growth rates are obviously not very good.

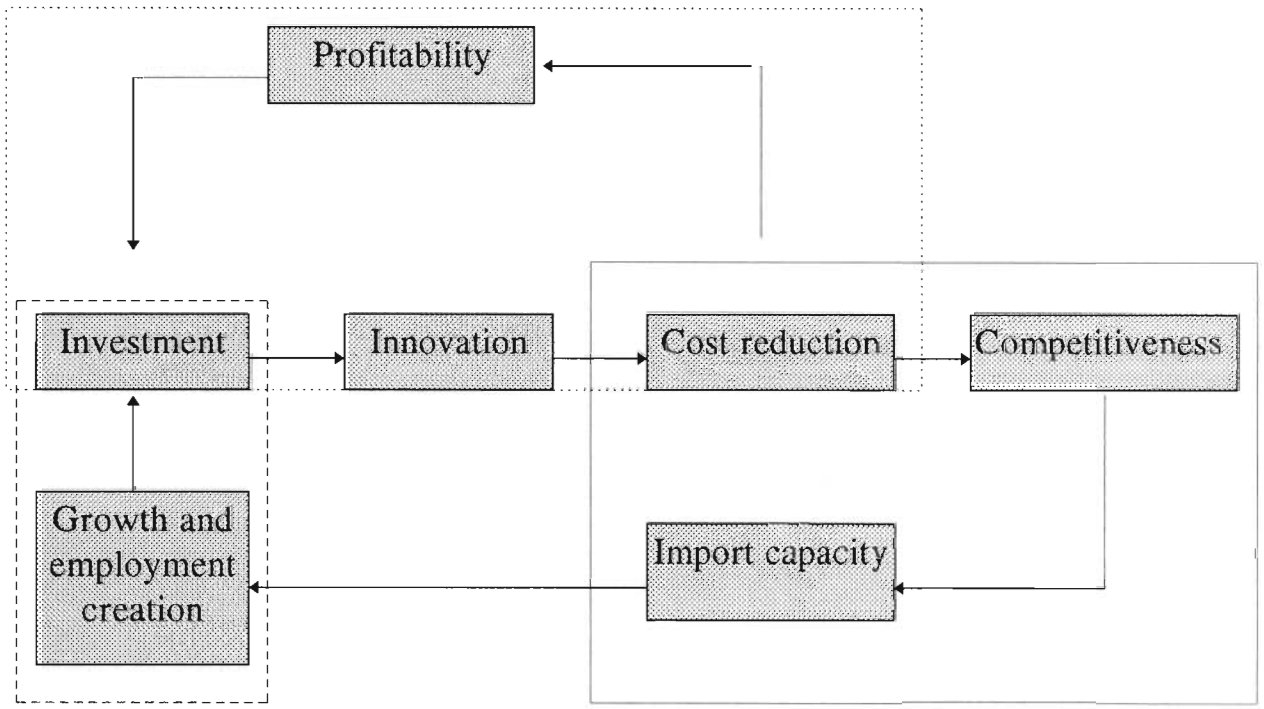
In Brazil the situation seems more comfortable than in Argentina. Although the inflation rate is still relatively high (around 15% on an annual basis), in 1995 the government was able to apply a timely adjustment of the level of activity and started devaluating the exchange rate in order to stop (not necessarily reduce) the real appreciation of the currency. As a result, both the trade and current accounts have shown signs of improvement. However, the level of industrial activity by the end of 1995 had fallen to the levels of the end of 1993, and it seems reasonable to argue that the prospects for economic growth in the next two years are not very good given that the improvement of the external accounts was directly related to reduction in the level of activity. As in the case of Argentina, in Brazil the situation of the labor market has been

deteriorating since the early 1990's, and the prospects for the next few years are pessimistic.

Hence, both in the cases of Brazil and Argentina, it seems that the economies are in a situation of *low-growth equilibrium* characterized in **Graph 1** by point C. Recovering the capacity to growth while maintaining the external accounts under control is, of course, the challenge for these countries.

Entering the virtuous cycle of growth with increasing competitiveness will no be an easy task for Mexico, Brazil and Argentina --and other Latin American countries for that matter. The opening of these economies coupled with the real appreciation of the exchange rate has driven them to a position in which entering the cycle by growing seems rather unlikely. Simply because an increase in the rate of growth would disrupt the equilibrium represented by low inflation and sustainable external accounts.

Scheme 2: The expanded "Verdoorn cycle"



Scheme 2 depicts a version of what be called the ***Verdoorn cycle*** which might be an useful tool to analyze the prospects of growth cum stability in many Latin American economies.\[13] According to Verdoorn's law, there is a close relationship between the growth of industrial output and the growth of productivity. The reason for this is that an important part of productivity growth results from economies of scale, on the one hand, and new investments, on the other hand. Economies of scale can be seen as a "static" factor affecting productivity growth as greater usage of the existing capital stock (or capacity) up to a certain point increases efficiency. Investments contributes with "dynamic" effects for productivity growth through many channels: technological innovations, "learning-by-doing" processes, backward and forward linkages among sectors and external economies of scale.

Growth induces investments (through the typical accelerator effect) and investments increases the rate of growth of output and employment (through multiplier effects) and the prospects of future growth (through the increase in the stock of capital). The mutual causation process between growth and investment is seen on the left hand side of **Scheme 2**.

The increase in the rate of growth thus affects productivity directly (through economies of scale) and indirectly (through greater investments). The increase in productivity, in turn, is associated with cost reduction. Cost reduction also arises as a result of trade liberalization and exchange rate appreciation (smaller cost of imported inputs. Given the domestic and external market conditions, cost reductions could lead to greater profitability and profits which, in turn, would increase the funding for new investments. Hence, another sub-cycle refers to the cumulative process linking investments, cost reduction and profitability, as shown on the top of **Scheme 2**.

Cost reductions increases demand and competitiveness which, in turn, by increasing exports and the share of domestically produced goods in the imports competing industries, relaxes external constraints through an increase in the capacity to import. Through the increase in the capacity to import economies can grow faster without generating external imbalances.

The restrictions on the capacity to import is the main hindrance to grow in Mexico, Brazil and Argentina, as well as other Latin American economies; and since there is a restriction on growth, the positive effects of growth on cost reduction are also restricted. In other words, entering the virtuous cycle through growth is not very likely. As a result, the main objective of policy makers in Latin America in the next few years will be to increase productivity and reduce costs in the context of a low-growth environment. This is, for obvious reasons, a very difficult task.

Section 3: Employment and distribution in over-exposed economies

In this section we examine the behavior of labor market variables after the adoption of measures to liberalize trade in Argentina, Brazil and Mexico. We look at the behavior of industrial employment and the rate of unemployment in section 3.1 and then at real wages in industry (section 3.2) and relative wages (section 3.3).

3.1 Industrial employment and unemployment in the 1990's

The reduction in tariff and non-tariff protection together with the appreciation of the exchange rate exposes the economy to greater international competition. In the case of the large Latin American economies examined in this paper, where import substitution played an important role in the industrialization process, the competition from abroad may have a significant impact on the levels of domestic production and employment --at least in the short run.

Competition and the access to cheaper imported intermediary and capital goods have a positive effect on labor productivity, efficiency and competitiveness. Competition from abroad provides an incentive for the rationalization of production and distribution methods as well as for the up-grading of the quality of the goods produced domestically. The possibility of importing intermediary goods, parts and components with international standards of quality also has an effect on the production process and the productivity of labor. Finally, the import of capital goods embodying technological innovations have positive effects on the demand for "quality" of the work force and the capital:output ratio. Both tend to be associated with an increase in labor productivity.

The increase in labor productivity is rightly seen as an important element in increasing competitiveness since it reduces the cost of labor. Provided that such increase in productivity is matched by an increase in output (resulting from greater competitiveness), the net effect on employment is null by definition. There might be sectoral dislocations of labor in the short run but the level of aggregate employment should not change in the long run. \[14]

Measured by the ratio of *total industrial output to employment*, the level of productivity has increased dramatically in Mexico, Argentina and Brazil since the late 1980's as seen in **Figure 4.** The annual average rate of increase in labor productivity in the three countries is around 6 to 7%.

>>> **Figure 4/ End of text<<<**

However, there are reasons to believe that the increase in labor productivity has been overestimated. Both sub-contracting outside the industrial sector and the increase in the import of intermediary goods, parts and components tend to reduce the ratio of *value added to total production in industry.*\[15] When this is the case, the increase in productivity measured by the ratio of value added to employment in the industrial sector should be smaller than the ratio of total output to employment. That is why it is important to distinguish two measures of labor productivity: the first (which appears in **Figure 1**), is the ratio of total output to employment and the other is the ratio of value added to employment.\[16] To avoid misconceptions, from now on labor productivity measured by the ratio of total output to employment shall be referred to as *T-productivity* and measured by value added to employment shall be referred to as *V-productivity.*

The substitution of imported for domestically produced intermediary goods may result in an increase in V-productivity and competitiveness of the firms producing final goods. But it is the result of a reduction in the competitiveness of domestic firms producing intermediary goods and a reduction in the levels of output and employment in those firms. The increase in *assembling activities* (or "maquiladoras" to use the Mexican terminology) is an example of firms specializing in the assembling of final goods and substituting imported for in-house or domestically produced intermediary goods and components.

The case of sub-contracting outside the industrial sector has the same effect, that is, it reduces the level employment for given levels of V-productivity and value added in the industrial sector. Firms tend to sub-contract in order to become more efficient and to reduce costs, in particular transaction costs associated with changes in technology and demand.

Of course, the relationships between the level of industrial employment and the two measures of labor productivity are different. The arithmetics of the relation between industrial employment,V-productivity and T-productivity is examined in **Box 2**. Two conclusions arise from the algebraic exercise, namely, that:

- Industrial employment increases with the growth of domestic demand and the trade surplus and decreases with the growth of V-productivity and "imported" (from outside the industrial sector) intermediary inputs. Hence, both reductions in the rate of growth of domestic demand and the increase in trade deficits tend to reduce industrial employment. Given the levels of domestic demand for industrial goods and the trade surplus (or deficit), an increase in V-productivity or in the import of intermediary goods reduces employment.

- T-productivity growth will be greater than V-productivity growth as long as the growth of imports of intermediary goods and services is greater than the growth of total industrial output. Both imports from abroad and from non-industrial sectors in the economy are considered "imported goods and services". However, even if domestic sub-contracting outside the industrial sector is not considered as part of these "imports", T-productivity growth has been greater than V-productivity growth in Mexico, Argentina and Brazil where the growth of imports of intermediary goods from abroad has been significantly greater than the growth of industrial output.

Box 2:

The arithmetics of the relation between industrial employment, V-productivity and T-productivity is worth exploring. Total industrial output (Y) is given by the sum of domestic demand (Z) and the trade surplus (X) of industrial goods:

1. $Y = Z + X = \Delta N$

By definition, T-productivity (Δ) is given by the ratio of total industrial output to employment (N). Hence, $Y = \Delta N$.

Total industrial output can also be decomposed into value added (V) and intermediary goods produced outside the domestic industrial sector (I), including imported industrial intermediary goods:

2. $Y = V + I = \Delta_v N + I$

Valued added, in turn, is given by the product of V-productivity (Δ_v) and employment (N) since, by definition, $V = \Delta_v N$

Differentiating 1. and 2. with respect to time gives rise to, respectively:

3. $y = z_o z + (1-z_o) x = \delta + n$

4. $y = v_o v + (1-v_o) i = v_o (\delta_v + n) + (1-v_o) i$

where small case letters stand for the time derivative of the corresponding capital case letters, z_o is the share of domestic demand and v_o is the share of value added in total output in the beginning of the period when growth rates are being calculated.

From 3., it can be seen that the level of industrial employment increases with domestic demand and the trade surplus and decreases with T-productivity:

5. $n = z_o z + (1-z_o) x - \delta$

From 4., it can be seen that employment increases with domestic demand and the trade surplus and decreases with V-productivity and "imported" (from outside the industrial sector) intermediary inputs:

6. $n = \{[z_o z + (1-z_o) x] - [v_o \delta_v + (1-v_o) i]\} / v_o$

From 5. and 6., a relation can be established between changes in T-productivity and V-productivity:

7. $\delta = [(1-v_o)/v_o] [i - [z_o z + (1-z_o) x] + \delta_v$

According to equation 7., T-productivity growth will be greater than V-productivity growth as long as $i > z_o z + (1-z_o) x$, that is, that the growth of intermediary goods from outside the industrial sector is greater than the growth of total industrial output. Even if sub-contracting is not considered as part of "imports of intermediary goods", this condition is satisfied in Mexico, Argentina and Brazil where the growth of imports of intermediary goods has been significantly greater than the growth of output in industry.

End of Box 2

As noted in section 2, as a consequence of trade liberalization and the appreciation of the exchange rate, imports grew very significantly in Mexico, Argentina and Brazil whereas exports grew much less. As a result, these economies went from situations characterized by trade surpluses (or small deficits) in the mid-1980's to situations of large deficits in the 1990s. In the three cases, the rate of growth of industrial output was high in the early phases of the stabilization plan but then tended to fall and become negative.

The movement from surplus to deficit in the trade account coupled with the reduction in the growth of domestic demand, on the one hand, and the increase in V-productivity and the increase in the imports of intermediate goods, on the other, have negative effects on the level of industrial employment.

In terms of equation [6] in **Box 1**, the growth of industrial employment is given by:

$$n = \{[z_o\, z + (1-z_o)\, x] - [v_o\, \delta_v + (1-v_o)\, i\,]\} / v_o$$

where z is the rate of growth of domestic demand for industrial products, x is the rate of change in the trade surplus, δ_v is the increase in V-productivity and i is the increase in imports of intermediary goods. According to the equation:

> If domestic demand falls ($z<0$) and the surplus in the trade account decreases or the deficit increases ($x<0$), the first term on the left-hand side of the equation will be negative ($z_o\, z + (1-z_o)\, x < 0$) with a negative effect on employment. The effect will be also negative if, in the case of $z>0$, $z_o\, z + (1-z_o)\, x < 0$.
>
> If there is an increase in V-productivity ($\delta_v>0$) and in the import of intermediate goods ($i>0$), the second term in the left-hand side of the equation will be positive ($v_o\, \delta_v + (1-v_o)\, i > 0$), with a negative effect on employment creation.

>>> Figures 5, 6 and 7/ End of Text<<<

As seen in **Figures 5 to 7**, since the early 1990's, in Argentina, Mexico and Brazil, the trend is in the direction of negative rates of growth of industrial employment and growing rates of unemployment. The share of informal labor, as estimated by the ILO, shown in parentheses on the **Figures**, grows with the rate of unemployment.

The reduction in industrial employment and increase in the rates of unemployment and informality result from a combination of the four effects mentioned above, namely, a reduction in domestic aggregate demand ($z<0$), an increase in trade

deficits (x<0), an increase in V-productivity (δ_v>0) and an increase in the import of intermediate industrial inputs (i>0).

It is sometimes argued by government officials in the three countries that the reduction in the industrial employment is a result of technological innovations and that therefore there is little that can be done to revert the trend. The effect of technological innovations on employment is captured by the increase in V-productivity (δ_v) in equation 6. However, it is quite clear that the other variables may as well be affecting employment. If domestic demand could grow at a faster pace or there were not a significant reduction in the trade surplus, the effect of an increase in productivity could be compensated. Also, the increase in the import of intermediary goods --which has grown significantly in the three countries-- has a dampening effect on industrial employment.

Another argument made is that the reduction in employment is transitory and results from rigidities and costs of adjustment. Eventually, the dynamic benefits of the opening of the economy (the increase in productivity itself, the reduction in the cost of imported capital goods, etc) as well as an eventual nominal deflation of wages and prices will increase the competitiveness of some branches of the industrial sector, bringing about an increase in industrial employment. In this sense, a movement in the Northwest direction in Figures 5 to 7 would be expected. So far such movement has not started in the three countries examined.

3.2 Employment, real wages and the wage:exchange rate ratio

The question to be answered in this section is the following: to what extent has "wage rigidity" affected competitiveness of the industrial sector in the countries being examined here, and hence their trade balance and industrial employment records?

As noted in section 2, in exchange rate based stabilization processes, the extent to which external imbalances are sustainable depend on the speed in which domestic inflation converges to the international rate of inflation. The speed of convergence, in turn, depends on the degree of dolarization of the economy and the share of the tradable sectors. The smaller the degree of dollatization and the smaller the share of the tradable sector, the longer the period of convergence.

The problem with the low degree of dollarization and the relatively small size of the tradable sector is that relative prices might change drastically against the tradable sector reducing the competitiveness of firms. Whereas prices in the tradable sector are constrained by international prices, prices in the non-tradable sector still respond to domestic supply and demand. The expansionary effects of stabilization and capital inflows on demand thus tend to exacerbate the movement in relative prices in favor of the non-tradable sectors.

The profitability of firms in the industrial sector (and in the tradable sector in general) depend on their costs, on the one hand, and on the prices in domestic currency of competing goods in the international market, on the other. The latter, in turn, depend on the level of protection and the exchange rate.

A reduction in protection or an appreciation of the exchange rate reduces the prices of imports in domestic currency and, ceteris paribus, reduces the competitiveness of domestic firms. To recover the same level of competitiveness, firms have two

alternatives, namely, a reduction in the profit margin and a reduction in costs. There will be a reduction in costs due to the decrease in the price of imported intermediary goods. Apart from that, the reduction in costs depends on the relative movement of wages and the productivity of labor. Labor costs will fall if the wage grows slower than labor productivity.

Even if the profit margin tends to zero or to a certain minimum level, there could be situations in which the reduction in labor costs (given by the ratio of the wage to labor productivity) might not be sufficient to restore competitiveness. With the reduction in competitiveness, firms will eventually be driven out of the market. However, the process might not be as discontinuous since other factors --besides price competition-- affects market shares. However, even small reductions in market shares obviously have negative effects on the level of employment.

As seen in **Figure 8**, in Argentina, whereas industrial employment fell 8% between 1990 and 1994, real wages wages (nominal wages deflated by the CPI) in the industrial sector increased. The increase in wages is not really significant (specially compared with Brazil and Mexico) but there has not been a decrease in wages. In Mexico (**Figure 9**), real wages grew 30% between 1989 and 1994 whereas industrial employment fell almost 15%. Finally, in Brazil (**Figure 10**), real wages, after falling in 1990 and 1991, grew more than 30% between 1991 and 1995.

>>> Figures 8, 9 and 10 **End of Text<<<**

Assuming that firms are prepared to reduce profit margins to maintain competitiveness, what keeps wages from falling or what would explain "wage sickness"? In principle, in face of greater competitive pressures stemming from liberalization and the reduction in industrial employment, real wages should fall. Part of the explanation for the increase in wages can be attributed to the fact that the workers who remain employed are usually those who have greater productivity and wages. Hence there would be a statistical effect due to the change in the composition of the labor force explaining the movement of wages. Another part of the explanation could be attributed to the positive impact on wages of the introduction of new technologies and management practices.\[17] The fact of the matter is that real in the industrial sectors in Argentina, Mexico and Brazil have been growing since 1990 despite the reduction in protection and the reduction in industrial employment.

Box 3: Profit margins, unit labor cost and competitiveness

The market share of a firm operating in the tradable sector is a positive function of the difference between the international price for substitute goods its price:

1. $M = \alpha (\underline{p}\, \varepsilon t - p_i)$ *with* $\alpha > 0$

where: p_i is the price in domestic currency of the tradable good produced in the country, $\underline{p}$ is the international price in dollars, ε is the nominal exchange rate ($ domestic currency/US$) and t is the level of tariffs.

Assume that the firm only has labor costs and form prices by fixing a mark-up ($\Pi \geq 1$) on costs:

2. $$p_i = \Pi (w/\Delta)$$

where w is the nominal wage and Δ is the productivity of labor.

Profitability is measured by $\Pi - 1$. Since the firm only has variable costs and assuming that the cost of capital is given by the interest services on the finance of the variable cost, the firm will stay in business as long as $\Pi - 1 \geq k$ or $\Pi \geq k + 1$ where k is the interest cost per unit of output. Replacing [2] in [1]:

$$M = \alpha (\underline{p}\, \varepsilon\, t - \Pi (w/\Delta))$$

Assuming $\alpha = \underline{p} = 1$, the market share will be given by

3. $$M = \varepsilon\, t - \Pi (w/\Delta)$$

There exists a negative relation between Π and (w/Δ) associated with a fixed level of the market share, say M_o, given the level of tariffs ($t = t_o$) and the exchange rate ($\varepsilon = \varepsilon_o$). To maintain the same market share the following relation must be satisfied:

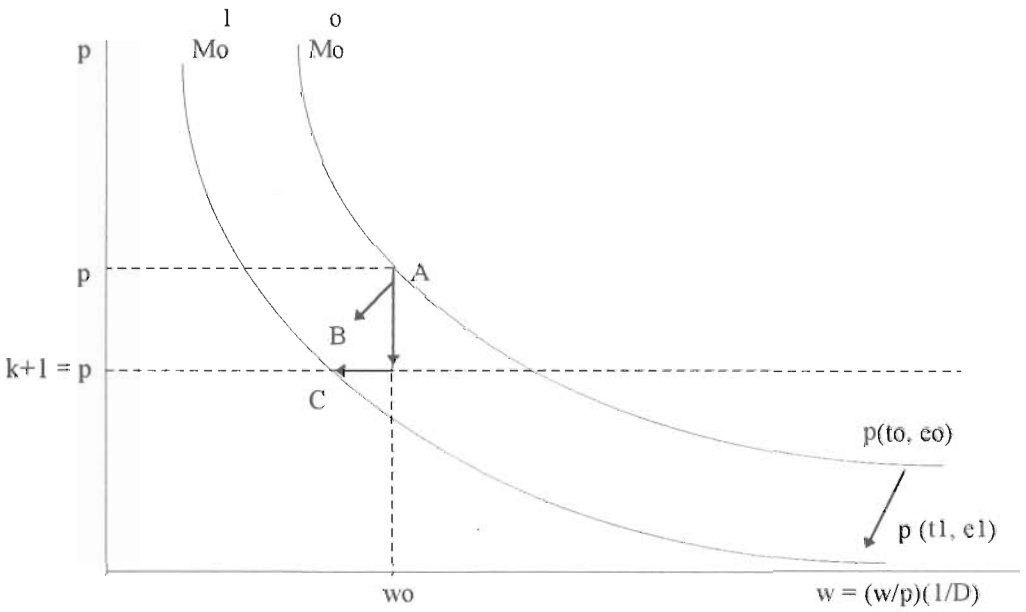
$$\Pi = (\varepsilon_o\, t_o) / (w/\Delta)$$

Dividing the two terms by p (the consumer price index):

4. $$\Pi = [(\varepsilon_o/p)\, t_o] / [(w/p)\, (1/\Delta)]$$

where (ε_o/p) measures the real exchange rate and (w/p) measures the real wage. The relation between Π and (w/p) $(1/\Delta)$ associated with given levels of ε_o and t_o and a fixed marked share is depicted in ***Graph 3*** *as the curve M_o^o. A reduction in ε_o or in t_o will displace the curve to the left from M_o^o to M_o^1. That is, in order to maintain the same market share, either the real wage:productivity ratio or the profit margin will have to fall, or both will have to fall.*

Graph 2



If there is a limit to the reduction in the profit margin, as assumed above (that is, if $\Pi \geq k + 1$), and if there is a limit to the reduction in the real wage:productivity ratio, the final combination of Π and $(w/p)(1/\Delta)$ might be such that the market share will be smaller than M_o. This will be the case whenever the new combination of Π and $(w/p)(1/\Delta)$ lays between the two curves M_o^o and M_o^1 like in point B. Given the loss in the market share there will be a reduction in employment

End of Box

A simple model developed in **Box 3** shows that even in cases in which the real wage grows in line with labor productivity or even fall in relation to productivity, there could be an increase in the wage:exchange rate ratio and the unit labor cost. This will happen if, given the real wage:productivity ratio, prices in the non-tradable sector increased in relation to industrial prices or the latter increased in dollars, or both. Ceteris paribus, an increase in the unit labor cost reduces competitiveness and reduces industrial employment.

It is interesting to notice that although real wages grew in all three countries, the increase in wages have been roughly compensated by the increase in labor productivity. In the case of Mexico, as seen in **Table 1**, real wages grew less than labor productivity between 1987 and 1993. As a result, the real wage:productivity ratio fell 1.6% on an

annual average basis. However, the unit labor cost grew on average 12.7% on an average annual basis in the same period due to the increase in the ratio of the consumer price index (CPI) to the industrial wholesale price index (WSPI) and the increase in the ratio of the WSPI to the exchange rate.

In Argentina, between 1990 and 1994, the real wage:productivity ratio fell 10.1% on an annual average basis. However, the unit labor cost increased 8.4%. In Brazil, real wages increased faster than productivity between December 1993 and October 1995 leading to an increase of 7% in the real wage:productivity ratio on an annual average basis. However, the unit labor cost increased 21.9% in the same period.

What the figures on **Table 1** show is that, particularly in the cases of Mexico and Argentina, the main cause for the loss of competitiveness therefore, does not lay on the "rigidity of the real wage" as measured by the ratio of the real wage to labor productivity. It lays on the change in relative prices between the consumer price index and the industrial wholesale price index together with the increase in the ratio of industrial prices to the exchange rate. The ineffectiveness of the exchange rate as a "price coordinator" even for industrial prices but, to a greater extent to other prices in the economy, should be seen as the main cause of the increase in the unit labor cost and, to the extent that labor costs affects employment, for the reduction in industrial employment.

Table 1: Components of the Unit labor Cost in Manufacture (average annual growth, %)

Variable	Mexico (1987-93)	Brazil (Dec1993/Oct 1995)	Argentina (1990-94)
Real wage (1)	+ 4.2	+ 13.4	- 2.7
Productivity (2)	+ 5.8	+ 6.4	7.4
(1) - (2)	- 1.6	+7.0	- 10.1
CPI - Ind WSPI	+ 5.6	+ 5.2	14.8
Ind WSPI - exchange rate	+ 8.6	+8.5	- 6.5
Unit labor cost	+ 12.7	+ 21.9	+ 8.4

Source: Papers prepared for the ***ILO project*** on labor costs and competitiveness in Latin America coordinated by José Márcio Camargo.\[18]

3.3 The effects of trade liberalization on the real wage in industry and relative wages

In the previous sub-section it was noted that, although real wages did not increase in relation to labor productivity (except for the case of Brazil), real wages in industry did not fall in face of the decreasing levels of industrial employment. The present section explores the likely causes for the increase in real wages.

According to the conventional view, trade liberalization, by reducing the level of protection, will reduce the bargaining power of workers in the industrial sector thus reducing their nominal wage or de degree of indexation of the wage in relation to inflation. Workers in the non-tradable sector will experience an increase in their real wage due to the reduction in the prices of tradable goods. The relative wage between workers in industry and non-tradable sectors will tend to decrease. By extension, if it is assumed that the ratio of skilled to unskilled workers in industry in greater than that same ratio in the non-tradable sectors, the relative wage between skilled and unskilled workers economy wide would tend to decrease.

Within the industrial sector, there would be a decrease in the relative wage between skilled and unskilled workers since, with less protection to skilled labor-intensive and capital-intensive sectors, there would be a change in the composition of output and the demand composition of factors of production in favor of unskilled labor-intensive sectors. The change in the composition of demand for factors of production would increase the relative value of unskilled workers.

Hence according to the conventional view, the net effect of trade liberalization would favor the less skilled workers both economy-wide and within the industrial sector.

There are different factors affecting real wages and wage differentials between workers with different skills in a process of trade liberalization. It is true that, on the one had, since firms in the tradable sector are facing greater international competition, this will change their attitude in wage bargains, creating downward pressures on real wages. On the other hand, however, the introduction of new technologies and new management practices tend to increase the value of high skill workers and reduce the value of low skill workers. The net effect of these two sets of forces on the *average wage* in the industrial sector is, in principle, ambiguous. The effect on the *relative wage* between skilled and unskilled workers is positive.

Hence, in principle, real wages in industry and the relative wage of skilled and unskilled labor could increase due to the introduction of new technologies or management practices which increase the value of skilled labor and reduce the value of unskilled labor.

Trade liberalization increases the import of capital goods. It is a well established fact that there is a strong complementarily between labor skills and the new vintage of capital goods. On the other hand, the new technologies tend to reduce the demand for unskilled labor. The result of the change in the relative demand for labor skill would be an increase, rather than a decrease, in the relative wage of skilled and unskilled workers within the industrial sector.

There could also be an explanation for the increase in real wages in the tradable sectors and in industry in particular. Such explanation would have to do with the introduction of management practices which demand greater "commitment to quality" on the part of workers.

Ramaswamy & Rowthorn (1991) have introduced the notion of "damage potential" of workers. To use the *efficiency wage* literature terminology, the greater the *costs of shirking* for a firm, the greater the damage potential of workers. But even in case of firms in which the costs of shirking are identical, wages could be different if the damage potential of workers depended on what Ramaswamy & Rowthorn call *performance* by which they mean a "*wide array of attributes which determine the effectiveness of work ... For instance, performance can depend upon how intensely workers concentrate on their jobs (and) upon factor such as the willingness of workers to take initiative and function flexibly. (p. 509)*

It could be argued that if there is a positive relation between real wages and performance, wages would tend increase with an increase in the demand for performance. If the labor demand curve is negatively sloped, the increase in wages would reduce employment in sectors in which the wage increases due to greater demand for performance. This could happen in sectors producing for the international market where the standards of quality are set by consumers in the developed countries.\[19]

As shown in **Figures 8 to 10**, real wages have increased in Argentina, Mexico and Brazil during the years of trade liberalization and exchange rate appreciation. As for the wage differential between skilled and unskilled workers, the available evidences are in the direction of an increase, not a decrease, in differentials.

For Chile between 1975 and 1990, Robbins finds that

> *"relative wages shifted in favor of more educated workers (and) supply shifts cannot explain these wage changes since relative supply of more educated workers rose... This implies that the overall demand for labor must have shifted to favor more educated workers."* (p. 29-30) \[20]

In Argentina, Pessino finds that

> *"there was a significant increase in the rate of return to tertiary education starting in 1990 ... increasing from 16 to 26 per cent (and) since May 1993, all the marginal returns to education increase, meaning that the "loosers" in the later part of the period are those with incomplete primary schooling. The higher increase in returns for individuals with tertiary studies reveals the increase in their relative demand with presumably low elasticity of substitution. This increment in the rate of return to higher education occurred in spite of the increase in the supply of highly educated individuals during the period."* (pp. 29-30) \[21]

In the case o Mexico, calculations made by Alarcón and McKinley show that the marginal returns to education remained roughly the same between 1989 and 1992 for those workers with primary and secondary education whereas increasing considerably for those with tertiary education. As for the decomposition by occupation there was an increase in the marginal return for technical workers in relation to poor unskilled workers and for "elite" workers with relation to technical workers.\[22]

Also in the case of Mexico Hanson and Harrison find that

> *"Since trade reform, there has been a dramatic increase in the skilled-unskilled wage gap. The relative wage changes have occurred without large changes in relative employment... We find strong evidence that the changes in Mexico's relative-wage structure are associated with changes internal to industries and plants".* \[23]

Finally, still on the case of Mexico, Cragg and Epelbaum find that "across-group wage dispersion, as measured by the ratio of post -secondary to primary school average wage, increased by 50% from 1987 and 1993".\[24] They also find that wage dispersion within worker skill class --which can be seen as a measure of unobservable characteristics such as ability-- increased over the same period.

The evidences so far, therefore, ar not in the direction of a reduction in the relative wage of skilled (or educated) and unskilled (or less educated) workers in Chile, Argentina and Mexico after trade liberalization. \[25]

Section 4: Final comments

This paper looks at the long and difficult path to stability and growth resumption of the three main countries of Latin America. So far, it seems that there is a stringent trade-off between stabilization, on the one hand, and sustainable external accounts, on the other. Reducing the rate of growth seems to be the price to be paid to have both at the same time.

It could be argued that low levels of economic growth is a reasonable price to pay for stability in Latin American countries. After all, Argentina, Brazil and Mexico are relatively rich countries where the main problem lays on the unequal distribution of income. Hence, to the extent that reducing inflation has a positive effect on distribution, it would seem worth while reducing the rate of growth.

However, so far the response of labor market variables to the macroeconomic and trade policies has not been very encouraging. Industrial employment has been falling, the rates of unemployment and informal employment are increasing and relative wages have moved in favor of the more educated, with negative distributive implications.

The combination of low growth rates, falling employment opportunities and regressive movements in relative wages obviously has negative effects on the welfare prospects for the poor. There are countervailing effects. The access to credit which did not exist in the period of high inflation and the reduction in the price of tradable goods due to the opening of the economy both increase the purchasing power of the poor.

For the long run, the prospects for the labor market variables and distribution will depend on the eventual resumption of growth and job creation, on the one hand, and on the structural effects of technological innovations and the sectoral structure of output resulting from greater international integration.

Higher rates of growth would certainly create more jobs but the reduction in value added per unit of output resulting from the loss of competitiveness of some sectors together with the labor saving characteristics of new technologies have the opposite effect. Hence, the long run prospects are still uncertain.

Endnotes:

1. Rodrik, D. 1993. "Trade liberalization in disinflation", NBER, Working Paper no. 4419.

2. The issue of wage stickiness and its impacts on the external accounts and industrial employment is discussed in detail in section 3.

3. Kiguel, M. and Liviatan, N. 1992. "The business cycle associated with exchange rate-based stabilization", The World Bank Economic Review, vol. 6, n. 2.

4. Other questions are: how long is (or must be) the recession and what are the long term effects on growth of the recession? These questions will be discussed later in this section.

5. The balance of payments equilibrium corresponds to a situation of, say, a balanced current account and a trade surplus.

[6] Data from CEPAL 1995. Estudio Económico de America Latina y el Caribe 1994-1995, Santiago de Chile.

[7] Data taken from Ffrench-Davis et al 1993. "Trade liberalization and growth: Chile", in M. Argosin and D. Tussie (eds) Trade and growth, Macmillan International Politica Economy Series, Great Britain.

[8] For a thorough analysis of the macroeconomic consequences of these policies in Latin American economies, see Frenkel, R. 1995. "Macroeconomic sustainability and development prospects: Latin American performance in the 1990's", UNCTAD Discussion paper n. 100, August.

[9] Data source as of endnote 5.

[10] The effects of these rather significant changes in the external accounts on the structure of inputs (between imported and domestically produced inputs) in the industrial sector and the labor market (industrial employment, unemployment, wages, etc) are examined in section 3.

[11] Data source: for Mexico and Argentina (Situacion Latinoamericana, CEDEAL, Madrid, various issues) and FIBGE for Brazil.

[12] In some Latin American countries --Brazil being the best example-- growth might not be as important to enhance social welfare as redistribution of wealth and income. However, given that the levels of industrial employment are falling very drastically and the conditions of the labor market are deteriorating significantly in the past few years (as will be seen presently in this paper), the resumption of growth becomes very important for the social sustainabilty of these countries.

[13] For a detailed discussion of the Verdoorn Law, see McCombie, J.S.L. 1987. "Verdoorn's Law", in J. Eatwell et al (eds) The New Palgrave, Macnillan.

[14] Sectoral shifts in output and employment within industrial branch as well as between the industrial and other sectors of the economy is certain to take place as the level of protection is reduced. In face of technological and institutional rigidities the mobility if

resources and labor in particular across sectors might take some time thus implying a transitory period of reduction in employment in the tradable sector (and industry in particular) and unemployment. In the long run the level of aggregate employment is assumed to return to "full employment".

[15] By sub-contracting outside the industrial sector is meant the transfer of some activities previously in the industrial sector (catering, maintenance, etc) to the services sector.

[16] The data for calculating this second measure of productivity is not available.

[17] These consequences are examined in detail in section 3.3.

[18] Laos, E. 1996. "Costo laboral y competitividad manufacturera en Mexico (1984-93), Mimeo, ILO, Lima; Amadeo, E. e Gonzaga, G. 1996. "Salário, produtividade e câmbio: uma análise do custo unitário do trabalho na indústria brasileira (1985-95)", Mimeo, OIT, Lima; e Szeretter, H. 1996. Ärgentina: costo laboral y ventajas competitivas de la industria 1985-95", Mimeo, OIT, Lima.

[19] For a closer examination of this argument, see Amadeo, E. 1995, "International trade, outsourcing and labor: a view from the developing countries", Discussion Paper n. 338, Department of Economics, PUC-Rio, Rio de Janeiro.

[20] Robbins, D. 1994. "Earnings dispersion in Chile after trade liberalization", Mimeo, Harvard University.

[21] Pessino, C. "The labor market during the transition in Argentina", Mimeo, CEMA, Buenos Aires.

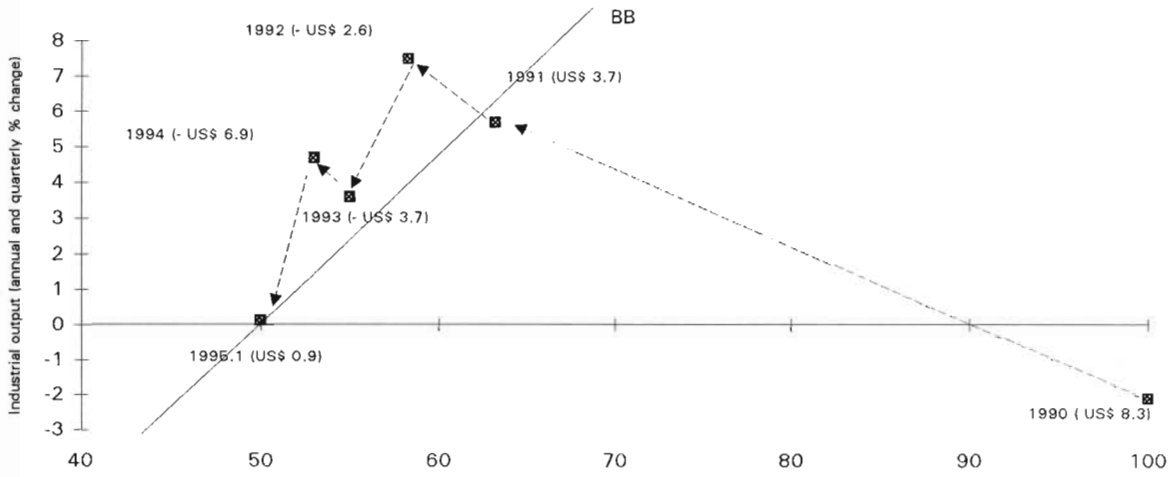
[22] Alarcón, D and McKinley, T. 1995. "Widening wage dispersion under structural adjustment in Mexico", FOCAL, University of Toronto.

[23] Hanson, G and Harrison, A. 1995. "Trade, technology and wage inequality", NBER Working paper n. 5110.

[24] Cragg, M. I and Epelbaum, M. 1995. "The premium for skills in LDC's: evidence from Mexico", Mimeo, Department of Economics, Columbia University.

[25] Evidences for Brazil are still not available.

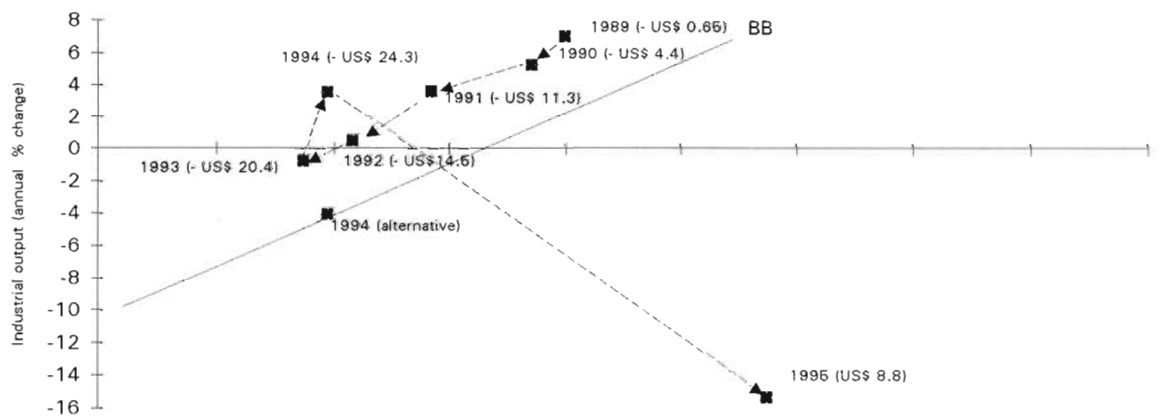
Figure 1. Argentina: evolution of the trade account (year, trade surplus in US$ billion)



Sources: Situacion Latinoamericana

Real exchange rate (ind. export), 1990 = 100

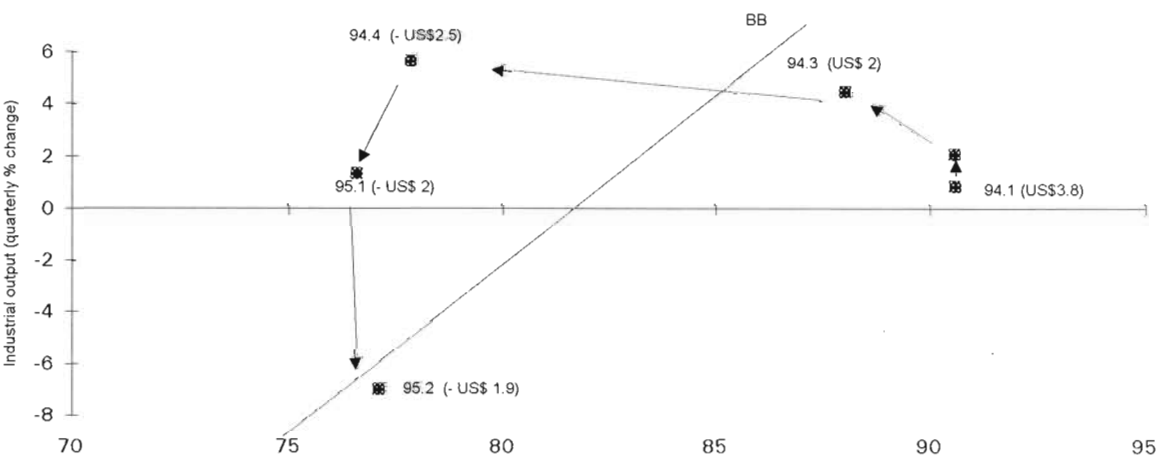
Figure2. Mexico: evolution of the trade account (year, trade surplus in US$ billion)



Sources: CEPAL and Situacion Latinoamericana

Real exchange rate (ind. export), 1989 = 100

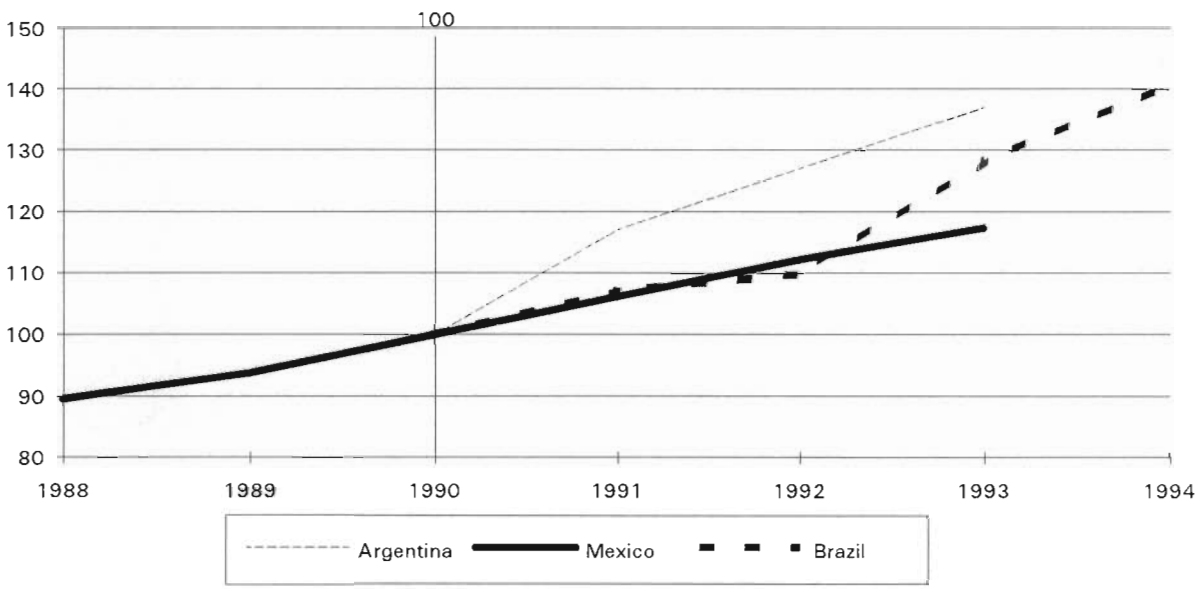
Figure 3. Brazil: evolution of the trade account (quater, trade surplus in US$ billions)



Real exchange rate Jan 1992 = 100

Source: FIBGE

Figure 4. Labor productivity in manufacture (1990 = 100)



Sources: See Frenkel (1995) for Argentina and Mexico; FIBGE for Brazil.

Figure 5. Argentina: urban unemployment, annual % change in industrial employment and informal employment

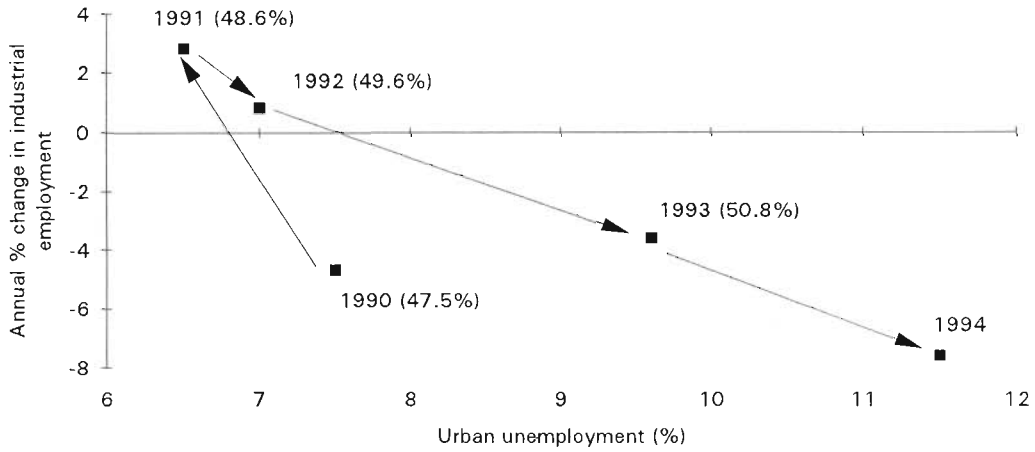


Figure 6. Mexico: urban unemployment, annual % change in industrial employment (non maquila) and informal employment

Figure 7. Brazil: urban unemployment, annual % change in industrial employment and informal employment

Sources: CEPAL (unemployment and industrial employment) and ILO (informal employment)

Figure 8. Argentina: employment and real wages in manufacture (1990 = 100)

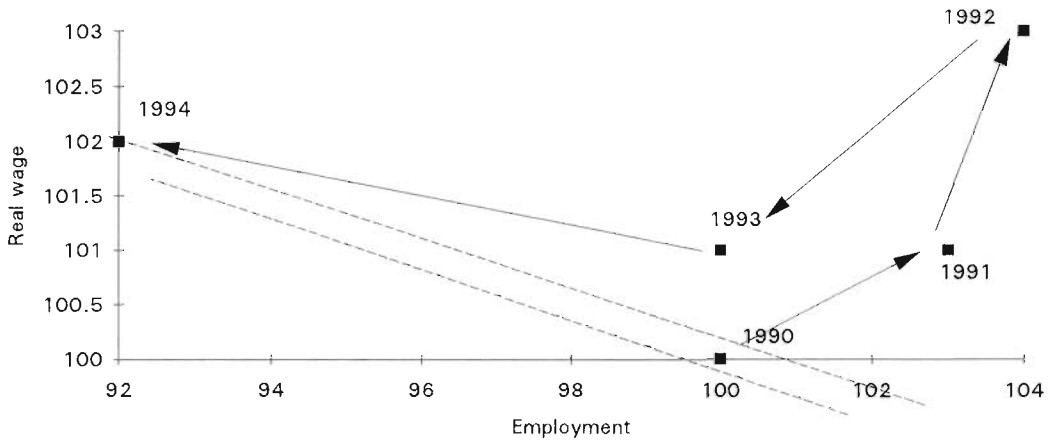


Figure 9. Mexico: employment and real wages in manufacture (1990 = 100)

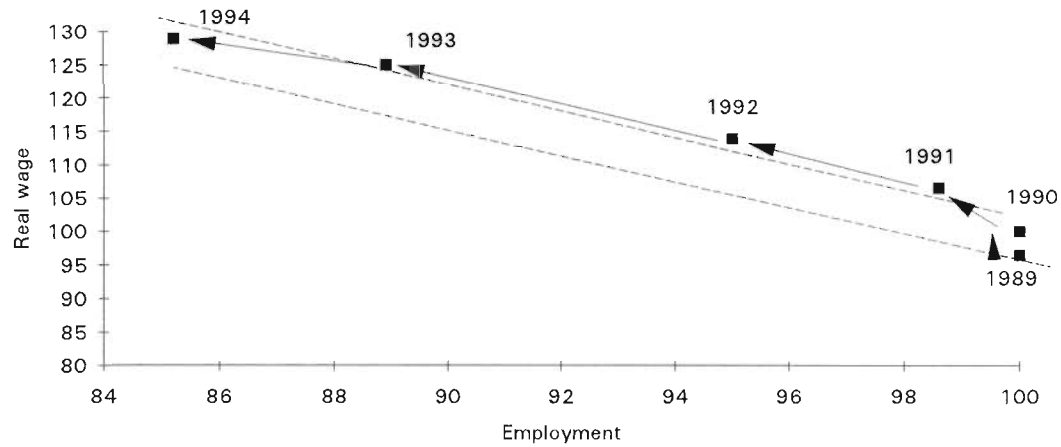


Figure 10. Brazil: employment and real wages in manufacture (1990 = 100)

Sources: CEPAL (for Argentina and Mexico) and FIBGE (Brazil)

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