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TRADE LIBERALIZATION IN DISINFLATION

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ABSTRACT

There exists near-consensus among professional economists on the desirability of achieving macroeconomic stabilization prior to the removal of microeconomic distortions. Yet this advice was completely disregarded in some of the most important cases of reform during the last decade--Bolivia and Mexico since 1985, Poland since 1990, Argentina since 1991, for example. In these and many other cases, radical trade liberalization measures were put in place, or existing programs speeded up, in conjunction with macroeconomic stabilization packages. In this paper I revisit this issue by focussing on recent liberalizations in Latin America. I argue that the theoretical case for the existence of a policy dilemma in exchange-rate management when trade liberalization is implemented simultaneously with stabilization policies is weaker than is usually presupposed. A commitment to a pegged exchange rate can, if credible, actually solve rather than intensify the potential conflict between trade liberalization and exchange-rate stability. However, the credibility of disinflation may be endangered by early liberalization.

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I. Introduction

Respectable economists are quick to disavow claims to much knowledge about the appropriate sequencing of economic reforms. Economic theory provides very little guidance, it is often said, about the dynamics of the transition away from highly-distorted, inflationary situations. But one enduring piece of conventional wisdom is the desirability of achieving macroeconomic stabilization prior to the removal of microeconomic distortions. Here is a concise and representative statement of this conventional wisdom, from an introductory chapter by Vittorio Corbo and Stanley Fischer to a World Bank conference volume:

In countries with acute macroeconomic problems, structural reforms designed to increase efficiency and restore growth, whose own efficiency depends on a predictable macroeconomic situation, should be initiated only when sufficient progress has been made in reducing the macroeconomic imbalances... The importance of this sequence--first reforms oriented mainly towards reducing severe macroeconomic imbalances and then reforms aimed at improving the allocation of resources and the restoration of growth--has become increasingly clear with experience. At the same time, the approach has strong analytical underpinnings: macroeconomic instability in the form of high and variable inflation and of balance-of-payments crises reduces the benefits of structural reforms aimed at improving the allocation of resources through changes in incentives--benefits that generally are transmitted through changes in relative prices (Corbo and Fischer, 1992, p. 7, references omitted).

Yet, this advice was completely disregarded in some of the most important cases of reform during the last decade--Bolivia and Mexico since 1985, Poland since 1990, Argentina since 1991, just to cite a few examples. In these cases and quite a few others, radical trade liberalization measures were put in place, or existing programs speeded up, in conjunction with macroeconomic stabilization packages. Neither is it evident, so far at least, that policy makers in these countries committed a serious mistake by ignoring conventional wisdom.¹

¹The conventional wisdom is in part based on the experience of the Southern Cone countries (Argentina, Chile, and Uruguay) during the late 1970s. This experience in

(continued...)

There are essentially three arguments for why it makes sense to postpone trade liberalization until disinflation takes roots. First, as mentioned by Corbo and Fischer in the extract above, the relative-price variability that typically characterizes high-inflation environments is not conducive to the realization of the efficiency benefits that the removal of price distortions is generally expected to bring about. Second, trade liberalization requires a reduction in trade taxes, which may conflict with the need to shore up government revenues during stabilization. Third, the liberalization will typically require a compensating devaluation to protect the trade balance and domestic employment, while the success of stabilization may hinge on a fixed, or at least stable, exchange rate. For useful discussions where these arguments are fleshed out, see Sachs (1987) and Mussa (1987).

On closer look, the first two of these arguments are not particularly damaging to the liberalization-cum-stabilization strategy. The low likelihood of efficiency gains materializing in a high inflation environment may weaken the case for liberalization, but does not reverse it. If policy makers find it politically expedient to package the trade reforms alongside the stabilization measures, as they apparently have, the fact that the benefits will take some time to show up is no argument for delaying the liberalization. With respect to fiscal impact, a serious trade liberalization is as likely to increase revenues as it is to reduce them: the elimination of tariff exemptions and of quantitative restrictions, and the ensuing import boom, may more than outweigh the reduction in (statutory) tariffs in practice. The practical importance of removing exemptions can be grasped by considering that actual import tax

¹(...continued)

liberalization with simultaneous stabilization is now routinely judged to have been a failure. See the special issue of World Development, August 1985.

revenues stood at no more than 2 percent of import value in Argentina prior to the recent reforms, despite an average statutory tariff rate above 30 percent.² A recent study by Greenaway and Milner (1991) finds no evident relationship between trade reform and the amount of revenue collected from trade taxes.

Hence the most serious objection by far to trade liberalization is the last one, having to do with exchange-rate management. The problem arises here from the constraint that the exchange-rate can be used in only one of two ways: either as an instrument to achieve a real target (the trade balance or employment), or as a nominal anchor for the domestic price level (see the useful discussion in Corden, 1991). Under the first strategy, exchange-rate policy is responsive to developments in the economy, and policy follows wage- and price-setting; under the latter, the exchange rate is precommitted, and government policy leads the private sector.

In practice there may be some ways to alleviate the conflict. For example, a maxi-devaluation at the outset of the stabilization (as in Bolivia in 1985 and Poland in 1990) can provide some extra margin of competitiveness to help with the tough times to come. Also, once inflation is under control, a downward crawl in the nominal exchange rate can be instituted with less fear of inflation. These are palliatives, which do not entirely do away with the problem. Unless the currency is inconvertible and domestic price-setters have already internalized the more depreciated parallel exchange rate, a maxi-devaluation will necessarily raise the price level and be inflationary under conditions of imperfect credibility

²These figures are from GATT (1992a). See also Pritchett and Sethi (1992) on the difference between statutory tariff rates and trade tax collections. It should be noted that the presence of exemptions does not necessarily reduce the efficiency costs of protection: their discretionary and arbitrary implementation generates a great deal of uncertainty and rent-seeking.

and staggered contracts.³ And giving up the nominal anchor is always a risky option in countries with long inflationary experience--one not easily undertaken (the Bolivian experience, to be discussed below, is a good example) .

In most of the successful stabilizations of the past decade, and certainly all of those involving triple-digit or higher levels of inflation, fixing the exchange rate has played an important role in coordinating expectations around a low-inflation equilibrium and in achieving a quick break in the inflationary cycle. The exchange rate, often along with other nominal variables, has been used as a nominal anchor. While the importance of fixing the exchange rate to conquer inflation can be debated⁴, the more relevant point is that policy makers have chosen this strategy and that this has left the exchange rate unavailable for maintaining external competitiveness.

This would not be of great consequence if nominal wages were fully flexible. In the absence of such flexibility, however, a trade liberalization has to be coupled with a devaluation to offset its negative impact on the trade balance and on employment. If the devaluation cannot be undertaken for fear of complicating the stabilization, trade liberalization will simply result in overvaluation. Indeed, this overvaluation will be particularly costly to

³A devaluation aimed at unifying the official and black-market rates can be inflationary too. The larger-than-expected jump in the Polish price level in early 1990 has often been attributed to a maxi-devaluation judged by many to have been excessive.

⁴Anne Krueger, for one, has argued that a "sliding peg" strategy for the exchange rate need not be incompatible with the goal of reducing inflation (Krueger, 1978, pp. 231-237). She cites South Korea in 1964 and Brazil in 1964 as two success stories of simultaneously liberalizing trade regimes and controlling inflation in the context of a sliding peg. For a more recent skeptical view, see Kenen (1992). Edwards (1992) presents a broad discussion on the pros and cons of using the exchange rate as nominal anchor.

the economy, as it will aggravate the real appreciation that will take place even in the best of circumstances, due to the necessarily gradual convergence between domestic and world inflation.

This risk is not a hypothetical one. Overvaluation of the currency is one of the most important reasons in practice for the failure and abandonment of liberalization. In her review of the evidence for the well-known NBER project on trade liberalization, Krueger found that 12 out of 13 failures were due to the real exchange rate becoming too overvalued "to permit sustained liberalization" (1978, p. 230). The more recent 19-country World Bank study organized by Michaely, Papageorgiou, and Choksi reaches an even stronger conclusion: a real exchange rate depreciation "appears to be almost a necessary condition for at least partial survival of a liberalization policy" (1991, p. 196). These authors find that none of the liberalizations that took place during a real appreciation was fully sustained (see their Table 13.4).

This paper revisits this policy dilemma by focussing on recent liberalizations in Latin America. I will briefly review the evidence from the last decade and a half, and ask: has trade reform "worked" in creating more open economies? has it complicated macro stabilization and engendered doubts regarding its sustainability when undertaken in the midst of macro instability/stabilization? The answer will be yes in both instances. In the second half of the paper, I will suggest that the theoretical case for the existence of a policy dilemma in exchange-rate management may be weaker than we usually presuppose. In particular, I will show in the context of a standard model that a credible nominal anchor--which is a necessary condition for the success of an exchange-rate based stabilization--leads to the

disappearance of the nominal wage rigidity that lies at the root of the dilemma. There is, in theory at least, a way out.

The argument that underlies the last point is the following. Trade liberalization does have to be accompanied by devaluation when nominal wages are rigid; but nominal wages are most likely to be rigid (i.e., predetermined with respect to the nominal exchange rate and monetary policy more generally) when policy makers cannot or do not commit credibly. Therefore, a commitment to a pegged exchange rate can, if credible, actually solve rather than intensify the potential conflict between trade liberalization and exchange-rate stability.⁵ "If credible," however, carries a big if. I will discuss credibility issues briefly in the penultimate section of the paper.

II. Recent Trade Reforms and Their Consequences

A synopsis of recent Latin American trade reforms is presented in Table 1. The table shows the inflation rate prevailing at the time the reforms were initiated, to underscore the point made above regarding the unorthodox sequencing commonly selected. See also de Melo and Dhar (1992) for a recent overview of trade reforms in the region, and Rodrik (1992a,b) for the reforms in Eastern Europe and elsewhere. In this section, I will focus on five important cases in Latin America: Chile, Bolivia, Mexico, Argentina, and Brazil. The last three countries are important because of their size; the first two deserve attention because they have the longest-running significant trade liberalization programs in the continent.

⁵I am shamelessly borrowing language here from Peter Kenen, who suggested that I include a verbal explanation of the model at this point of the paper.

Table 1: Trade Liberalization in Selected Latin American Countries

Country/ start of program	Inflation rate at start	Maximum tariff		Number of brackets		Average tariff		Non-tariff barriers and other rates
		Initial	Present	Initial	Present	Initial	Present	
Argentina 1987	132	115	20		4	43	9	- In 1987-1988, the value of industrial output subject to restrictions was reduced from 62% to 14%. In 1989-1990, the remaining licensing restrictions were eliminated. - Liberalization began in 1987 and accelerated in 1989.
Bolivia 1985	11,805	150	10		1	12	10	- All prohibitions and license requirements on imports were abolished, with the exception of controls on sugar and wheat, and on goods that affect health and endanger State security.
Brazil 1988	683	105	60	29	7	51	17 (14 in 1989)	- In 1990, the list of prohibited imports was abolished. Nevertheless, 47 computer-related products were not allowed to be imported until 1992, and license criteria rules for intermediate and capital goods were maintained. - Tariffs began to be restructured in 1984-1989.
Chile 1973	350	220	11	37	1	94	11	- Qualitative import restrictions were eliminated in the 1970s, with the exception of those on second-hand automotive vehicles. - In response to a balance-of-payments crisis, the uniform tariff of 19% was raised to 20% in 1983, and 35% in 1984. It was then reduced in successive stages to 15% in 1988, and 11% in 1991.
Mexico 1985	58	100	20	10	5	24	10 (none)	- Coverage of import licenses was reduced from 92.2% of production in June 1983 to 17.9% in December 1990, and government import prices were eliminated. Prior licenses were maintained for some agricultural and food products, petroleum and its by-products and some products used in industrial development programs.
Peru 1990	7,482	110	25	53	3	66	2 (new system 15 & 25)	- Licenses, controls, import permits, quotas and prohibitions were eliminated in March 1991. - The program began in August 1990 when the maximum tariff of 50% was established. It went further in March 1991, when the maximum tariff was reduced to 25% for consumer goods and 15% for the rest (80% of all imports).
Venezuela 1989	84	135	20 (exception on imports of cars > 25)	41	6	35	9.5	- The number of headings subject to restriction was reduced from 2,304 in 1988 to 200 at present. - The tariff reduction program, initially to be completed in 1993, was accelerated in March 1992.

Sources: ECLAC (on the basis of country figures), Department of Commerce statistics, and IFS.

Chile's trade reform after 1973 constitutes the longest-running experiment with openness in Latin America, and has had an important demonstration effect on other countries in the region. Between 1973 and 1979, quantitative restrictions were entirely eliminated and tariffs were reduced in stages down to a uniform rate of 10 percent. Following the debt and financial crisis of 1982, which hit Chile particularly hard, tariffs were raised first to 20 percent (in 1983) and then to the highest rate allowed under Chile's GATT binding--35 percent (in 1984). By 1988 the uniform tariff was down at 15 percent, and was further reduced to 11 percent in 1991. Aside from the uniformity of tariffs and their comparatively low level, what distinguishes the Chilean trade regime is an institutional framework that renders the exercise of discretionary protectionism (over time and across goods) very difficult (see GATT, 1991).

Figure 1 shows why Chile is now the envy of Latin America. Chile's trade has more than doubled in dollar terms since the lows of 1983-84. Moreover, this expansion of trade has been a balanced one, with imports and exports growing at commensurate rates. The path of the real exchange rate⁶ (also pictured in Figure 1) yields the reason. During 1982-85, the Chilean government was able to engineer a real depreciation of about 50 percent through successive devaluations. In the following three years (1986-89), the real rate was maintained roughly constant. Hence, a highly supportive exchange-rate policy provided the liberalization with an ideal environment.

⁶The real exchange rate in this and following charts is calculated as the ratio of the nominal exchange rate (national currency per US\$) multiplied by the US WPI to the domestic WPI (where available; CPI otherwise). All data come from the IMF, International Financial Statistics, unless specified otherwise.

This textbook performance was enabled in turn by the absence of a protracted inflation problem in Chile. The fiscal imbalances that developed during the 1982-83 crisis, brought about by the socialization of the insolvent financial sector, were quickly reversed. Consequently, there was no need to use the exchange rate as a nominal anchor, allowing exchange-rate policy to be targeted on the competitiveness of the traded sector. It is only since 1990, with the trade boom (as well as a boom in private investment) safely under way, that the government has allowed the exchange rate to lag behind domestic prices (see Figure 1).

Bolivia's trade liberalization is more recent than Chile's, but is equally impressive. A major trade liberalization was implemented in August 1985, alongside the stabilization program that ended the hyperinflation. The unification of the exchange rate as part of the stabilization eliminated a huge implicit export tax. In addition, practically all quantitative restrictions were lifted and the maximum tariff was lowered to 20 percent. In 1991, a further reduction in tariffs took place, with a 10 percent rate applying to all imports except for capital goods (the latter being subject to a tariff of 5 percent).

Bolivia is often portrayed as a case where the economy has responded very sluggishly to structural reforms. A casual look at the dollar value of Bolivia's trade (Figure 2) would seem to support that view: there has been only a modest increase in exports and in the overall trade volume since the liberalization-cum-stabilization of August 1985. However, this modest increase has taken place during a period when Bolivia's export prices tumbled by 50 percent (mainly due to the collapse in world tin prices, which is also shown in Figure 2). Moreover, non-traditional exports have been growing at double-digit rates since 1987 (de Melo and

Dhar, 1992, p. 22).

Exchange-rate policy in Bolivia illustrates well the conflict between the "real targets" and "nominal anchors" approaches.⁷ The textbook prescription to a country experiencing a large, apparently permanent, terms-of-trade deterioration would be a devaluation. Yet Bolivian authorities have been loath to undertake a maxi-devaluation for fear that this may reignite inflationary expectations. Consequently, exchange-rate policy has been able to counter neither the effects of the drop in export prices nor of the 1991 liberalization.

Mexican trade liberalization started in 1985, but was accelerated in late 1987 as part of the Economic Solidarity Pact negotiated among the government, labor and employers. Quantitative restrictions on imports have been substantially eliminated since then. The maximum tariff has been progressively reduced from 100 percent to 20 percent, with the average tariff coming down to 11 percent by 1991. Mexico joined GATT in 1986. The Mexican government looks at the successful completion of NAFTA as an important final step in the institutionalization of these reforms.

Since the Economic Solidarity Pact, the Mexican peso has been targeted firmly on the domestic price level despite the substantial trade liberalization that has taken place. Thanks to a serious fiscal adjustment, the strategy has worked in reducing inflation to below 20 percent. Figure 3 is a graphic illustration of the consequences for trade and the real exchange rate. Since the end of 1987, the real value of the peso has appreciated steadily, imports have more than tripled, and the trade surplus has turned into an awesome deficit. Taking the total value

⁷The Bolivian exchange rate is determined in a currency auction, so is nominally free to fluctuate. However, in practice the institutional framework of the auction allows the government considerable discretion in setting the rate. See Dominguez and Rodrik (1990).

of trade as the appropriate indicator of success, we can say that the trade reform has achieved a remarkable opening up of the economy. Micro-econometric studies have already documented the positive consequences of this opening up for domestic price-cost margins, and less solidly, for productive efficiency (Tybout and Westbrook, 1992; Grether, 1992). So trade liberalization has clearly "worked" in a resource-allocation sense. However, without the confidence engendered by the presence of NAFTA on the horizon, the accompanying real appreciation would have made this liberalization a prime candidate for reversal. Even with NAFTA, it will remain to be seen whether domestic costs will fall sufficiently to validate a real value of the peso that is now higher than on the eve of the 1982 crisis. And if NAFTA gets unstuck in domestic U.S. politics, Mexican policy makers will face the tough task of generating a real depreciation without upsetting existing agreements with labor and without destabilizing the price level.⁸

Argentina has gone through several cycles of liberalization and protection. The liberalization that started in 1976 was undone with the onset of the debt crisis in 1982, at which point quantitative restrictions and licensing requirements were re-imposed. By 1986, half of Argentine production was protected by import quotas, import licensing requirements were ubiquitous, and already high levels of tariffs were augmented by surcharges and additional import taxes. However, most of the import taxes were never collected due to special exemptions and rebates (GATT, 1992a, vol I, p. 7). Starting in 1987, these restrictions were substantially eliminated. By mid-1992, import licensing had been entirely

⁸See Dornbusch (1993) for a critical discussion of the sustainability of Mexico's exchange-rate stance.

abolished, the maximum tariff was brought down to 22 percent, and quantitative restrictions were virtually eliminated (save for the automotive sector). The current trade regime essentially consists of a three-tier tariff schedule, with rates set at 5 percent, 13 percent, and 22 percent.⁹

Figure 4 shows a moderate increase in Argentine exports subsequent to the onset of liberalization in 1987. More striking, however, is the import boom that has taken place since the Cavallo stabilization in 1991. Imports from the United States have increased at an astounding annual rate of 65 percent during the two years following the stabilization, while exports have stagnated. The immediate culprit is the exchange rate once again. The Convertibility Law of April 1991 has fixed the value of the Argentine currency (renamed "peso", since January 1992) against the dollar. Despite the dramatic reduction in inflation--now at two-digit levels annually--a creeping real appreciation has been the inevitable result. Amid industrialists' complaints regarding loss of competitiveness, the government has already experimented with a simulated devaluation by instituting an export-subsidy-cum-import-surcharge scheme.

In Brazil, a complex, discretionary, and highly protective trade regime had been in place until the late 1980s. Trade reform was started in 1988, but greatly accelerated in early 1990 in conjunction with the first Collor stabilization plan, at which time virtually all non-tariff barriers were lifted (GATT, 1992b). Brazil's infamous restrictions on computer and

⁹The GATT Trade Policy Review Mechanism (TPRM) report on Argentina mentions that there have been 14 tariff reforms since 1987, not all of which have been in the same (downward) direction. For example, in July 1991 the duty on electronics and automotive items was raised to 35 percent (to be lowered again to 22 percent on January 1st, 1992).

software imports were completely liberalized by October 1992. Export licensing and taxes have been largely eliminated. The average tariff has come down to 21 percent in January 1992 from 51 percent in 1987, and further reductions have been scheduled for the near future. Brazil has offered to bind its tariffs at 35 percent in the context of the Uruguay Round (the same level as the Chilean binding), but only for industrial goods.

Unlike the other countries discussed above, Brazil is continuing to struggle with extremely high inflation (of more than 20 percent a month). Exchange rate policy has gone through different phases, targeting the price level at some points and competitiveness at others, accounting for the cycles in the real exchange rate shown in Figure 5. Brazil's trade volume has expanded noticeably since the liberalization (see Figure 5), but remains unstable, like the rest of the economy.

To summarize the evidence, trade liberalization has clearly "worked" in the sense of increasing overall trade. But the strongest gains were recorded in cases where macroeconomic instability was substantially reduced. Moreover, whether exports took off as rapidly as imports depended heavily on the exchange-rate stance. In Mexico (since 1988) and Argentina (since 1991) the use of the exchange rate as a nominal anchor has led to significant real appreciations, import booms and potentially unsustainable trade deficits.

III. Trade Policy and Disinflation with Endogenous Nominal Wage Rigidity

Policy makers in Latin America have not been entirely oblivious to the risk of denying themselves the use of the exchange-rate as a tool for enhancing competitiveness. However, from their perspective, the dilemma has looked less compelling. This is because of the now-

prevailing view among policy makers that chronic inflation is deep down the result of insufficient discipline exerted by a weak, accommodating government on private sector wage- and price-setters. This is how Bruno puts it:

Although the origin of high chronic inflation, like hyperinflation, lies in the existence of a large public-sector deficit, the quasi stability of the dynamic process comes from an inherent inertia strongly linked with a high degree of indexation or accommodation of the key nominal magnitudes (wages, the exchange rate, and the monetary aggregates) to the lagged movements of the price level (Bruno, 1991, p. 4).

If this view is correct, it follows that a credible commitment not to accommodate, exemplified by an exchange-rate commitment, should not only take care of inflation, but also remove the nominal rigidities that require the use of devaluation for competitiveness purposes. In other words, 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.

Opening up, then, should also help disinflation because it creates competition and imposes market discipline on cartelized groups. This lumping-together of the sources of micro- and macro-distortions is quite common. Here is the official Argentine view:

... unlike previous experiments in adjustment and stabilization, the current strategy aims to increase the overall efficiency of the economy through the liberalization of all the available variables, so that the reduction of costs as a result of the ongoing structural transformations will eliminate the recurrent fiscal deficits as well as the handicaps borne by the production sector in terms of international competition" (Government of Argentina, in GATT, 1992a, vol. II, p. 15, emphasis added).

And the Brazilian view goes:

Openness, transparency and deregulation: these are the main features of an economic program aimed at eliminating inflation, increasing investments and ultimately resuming sustained economic development in Brazil (Government of Brazil, in GATT 1992b, p. 1).

From this perspective, one can perhaps understand why the prospect of overvaluation due to liberalization is not viewed as an independent source of risk when compared to the prospect that the nominal anchor itself may not hold. And in view of the primacy of the concern with inflation, the former would certainly appear to be of less consequence.

I will briefly sketch out a model to clarify the links between nominal wage rigidity and the credibility of an exchange-rate commitment. The basic model is a familiar one from the literature on time inconsistency. The only new wrinkle is the differentiation between the import-competing and export-oriented sectors of the economy and the incorporation of a tariff. The model's basic structure is given by the following four equations:

$$W = -\gamma\pi^2 - (l - l^*)^2 \quad (1)$$

$$U = U(w - \pi, l) \quad (2)$$

$$\pi = \alpha(e + t) + (1 - \alpha)e = e + \alpha t \quad (3)$$

$$l = l^* + \phi(e - w) + \phi\lambda t \quad (4)$$

The first equation shows the objective function of the government: it is a conventional quadratic-loss function defined over prices (π) and employment (l), with γ denoting the relative weight placed on inflation and l^* the government's employment target. Equation (2) is the general formulation of labor's objective function, and shows that workers care about their real wage levels as well as the level of employment. Equation (3) is the definition of the CPI, with e denoting the nominal exchange rate and import-competing products receiving

a weight α and exportables a weight $(1-\alpha)$. Note the role of import protection, captured by the parameter t . Foreign prices of importables and exportables are taken to be exogenous, so their log-levels are fixed at zero with no loss of generality.

Economy-wide labor demand is given by equation (4). To see where this equation comes from, note first that (inverse) product real wages are $e-w$ and $e+t-w$ in the two sectors. Let each sector have a common elasticity of labor demand with respect to the product wage, ϕ , and let the share of employment in the import-competing sector be λ . The result is the labor-demand function expressed in equation (4), with prices normalized such that l^* is the full-employment level. We ignore the effect on aggregate labor demand of any changes in allocative efficiency brought about by trade liberalization

We compare two situations, one in which the government sets the exchange rate after the nominal wage is selected (discretion) and another in which the government makes a credible exchange-rate commitment prior to wage-setting (commitment). Since our interest lies in the way that trade policy affects equilibrium outcomes under these two scenarios, we take t to be pre-determined relative to e and w in both cases.

(a) *Discretion.* Under discretion, the government maximizes its objective function (1) with respect to e , taking w as given. Substituting (3) and (4) into (1) and solving for the first-order condition yields:

$$e = \frac{\phi^2}{\gamma + \phi^2} w - \frac{\alpha\gamma + \lambda\phi^2}{\gamma + \phi^2} t \quad (5)$$

We note that increases in wages are accommodated by a compensating depreciation of the currency so as to reduce the impact on employment. But the accommodation is less than full

as long as the government attaches a cost to the inflationary consequences (i.e., as long as $\gamma > 0$). A tariff reduction, in turn, is also met with a depreciation, again to dampen the effect on employment.

A useful simplification at this point is to assume that the import-competing sector's share in aggregate employment matches its share in the CPI, so that $\lambda = \alpha$. This reduces (5) to

$$e = \mu w - \lambda t, \quad (6)$$

with

$$0 < \mu \equiv \frac{\phi^2}{\gamma + \phi^2} < 1.$$

Equation (6) generates the conventional prescription for exchange-rate management in the presence of nominal-wage rigidity: match trade liberalization with a compensating devaluation.

Workers in turn set w by taking the decision rule expressed in (6) into account and maximizing (2). In view of (6), real wages and employment are given by:

$$w - \pi = (1 - \mu) w \quad (7)$$

$$l = l^* - \phi (1 - \mu) w \quad (8)$$

Since t does not enter into either expression, we have an immediate conclusion: in the discretionary equilibrium, the nominal wage is rigid with respect to the tariff. Wage setters disregard trade liberalization. The reason is that they know the exchange rate will be set so as to insulate them from its effects. Furthermore, this is true regardless of the specific

functional form taken by $U(w-\pi, l)$.¹⁰

What we have then shown is that when the government cannot credibly commit to a fixed exchange rate: (a) the nominal wage will indeed be rigid in the sense that it will be unresponsive to changes in commercial policy (even though no money illusion or long-term contracting has been assumed); and hence (b) it will be optimal for the government to devalue the currency whenever it liberalizes trade.

(b) *Commitment.* Suppose now that the government can credibly commit (through a convertibility law as in Argentina, for example) to a fixed exchange rate. Without loss of generality, let $e = 0$. How is the nominal wage set in this case?

Since there is no feedback from the exchange rate, the levels of the real wage and of employment are now given by:

$$w-\pi = w-\lambda t \quad (9)$$

$$l = l^* - \phi(w-\lambda t) \quad (10)$$

By inspection, we can see that in this case real wages and employment are both affected by t (the first negatively, and the second positively), holding w constant. Further, since $w-\lambda t$ enters (9) and (10) in exactly the same way, we know that the optimal response of nominal wages to changes in trade policy will be given by:

¹⁰However, this conclusion is sensitive to the equality between λ and α . When these two parameters are not equal to each other, the wage setting rule will depend on the level of t . However, $\lambda = \alpha$ would seem to be an appropriate benchmark.

$$\left. \frac{dw}{dt} \right|_{\text{commitment}} = \lambda$$

A reduction in tariffs will be matched by a proportionate reduction in nominal wages, with the proportion equaling the share of the import-competing sector in the economy. Once again, this result is independent of the functional form taken by $U(\cdot)$. Hence, under a credibly fixed exchange rate, the flexibility of nominal wages is regained.

To get closed-form solutions for variables of interest and to carry out a more explicit comparison of outcomes under the two scenarios, we need to assume a specific functional form for workers' utility function. Let this function be given by

$$U = \beta \log(w - \pi) + \log l, \quad (11)$$

with β capturing the relative weight placed on real wages. Then we can obtain the solutions shown in Table 2.

We note several things about these results.¹¹ First, the real variables (employment and real wages) are invariant to the exchange-rate regime. This is the usual policy-ineffectiveness result. Second, there is an inflationary bias under discretion, due to the government's incentive to push employment above the level regarded as desirable by wage setters. This is

¹¹Note that we can think of all price variables in the model as being expressed in rates-of-change form, so that we can talk about inflation rather than changes in the price level.

Table 2: Solutions for Variables of Interest

VARIABLE	<u>Under Discretion</u>	<u>Under Commitment</u>
<i>nominal wages:</i>	$\frac{\beta}{\phi(1+\beta)(1-\mu)} l^*$	$\frac{\beta}{\phi(1+\beta)} l^* + \lambda t$
<i>employment:</i>	$\frac{1}{1+\beta} l^*$	$\frac{1}{1+\beta} l^*$
<i>real wages:</i>	$\frac{\beta}{\phi(1+\beta)} l^*$	$\frac{\beta}{\phi(1+\beta)} l^*$
<i>inflation:</i>	$\frac{\mu\beta}{\phi(1+\beta)(1-\mu)} l^*$	λt
<i>nominal exch rate:</i>	$\frac{\mu\beta}{\phi(1+\beta)(1-\mu)} l^* - \lambda t$	0

also the standard result.¹²

Third, nominal wages are unresponsive to a change in trade policy under discretion, but responsive to it under commitment. This is the point made above, and shows that stickiness of the nominal wage is endogenous to the policy regime. Fourth, the aggregate price level is a function of the tariff under commitment, but independent of the tariff under discretion. This implies that trade liberalization can serve as a credible disinflation strategy only when there exists a credible exchange-rate commitment. In the absence of such a commitment, the beneficial impact on prices of trade liberalization is undone by the

¹²An inflationary bias under discretion also exists when the government is motivated by seignorage revenues (and not by the short-run Phillips curve as in this model). See Bruno (1991) for a discussion.

depreciation necessitated by nominal wage rigidity.

To summarize, what this framework has shown is that the circumstances under which a successful exchange-rate based stabilization will work--credibility, which in turn will depend partly on fiscal fundamentals--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.

How do we interpret the evidence discussed earlier in light of the present model? In particular, can we put a more optimistic gloss on the real exchange-rate appreciation experienced by the liberalizing/stabilizing countries? Not necessarily. The real exchange rate is the inverse of the real wage rate in the present model, and should therefore remain unaffected by the switch to an exchange-rate commitment. Strictly speaking, then, the observed real appreciation is inconsistent with the implication that nominal wage rigidity will disappear in a successful stabilization.

However, two more optimistic possibilities need to be discussed. First, in the real world the exchange-rate commitment may lack full credibility at the outset, and gain credibility as time goes on. Real appreciation is a feature shared by all exchange-rate-based stabilizations, whether trade liberalization accompanies it or not (see, for example, Kiguel and Liviatan, 1988, and Végh, 1992). Consequently, the disappearance of nominal wage rigidity can be expected to take some time too.

In this interpretation, the observed real appreciation is a temporary one that will

eventually reverse itself as the change in policy regime takes root. This view resuscitates the trade-off between the "nominal anchor" and the "real target" approaches, but confines it to the short term. Any country with a sufficient cushion of foreign reserves would be able to survive it. The experience of the 1980s is perhaps too recent to provide any clues as to whether this process is in motion or not. And earlier cases of exchange-rate based stabilizations do not provide clearcut testing grounds because of complicating features: the Argentine *tablita* stabilization of 1979-81 was undone by lack of fiscal discipline, and the Chilean one of 1976-81 by backward indexation of wages.

A second possibility is that the observed real appreciations simply reflect the appreciation of the long-run, sustainable equilibrium exchange rate. In our model, the switch in policy regimes is associated with a transformation of the economy from a fix-wage one to a flex-wage one. Shouldn't this change have beneficial real consequences for the economy? Indeed, in a more fully fleshed-out model, it is possible that the added flexibility of the economy would show up in a higher level of the equilibrium real wage and a lower (more appreciated) real exchange rate. The simplest way to see this is to consider what would happen to labor demand as nominal wages become more flexible. It is not unreasonable to suppose that increased labor-market flexibility would be rewarded in practice by an outward shift in the labor demand schedule, that is by an increase in l^* in equation (4). We can see from the solutions (under commitment) in Table 2 that the upshot would be an increase in employment and in real wages, and consequently an appreciation of the real exchange rate.

An important clue with regard to the relevance of this second scenario is provided by the behavior of private investment. Where the real exchange rate appreciation is a

sustainable, equilibrium phenomenon, we would expect it to go alongside a revival in private investment. The latter would indicate increased confidence on the part of the private sector, and would form the natural real-world counterpart to an increase in I^* in the model above.¹³

The experiences of Chile, Mexico, and Argentina in the second half of the 1980s present three rather different pictures with regard to private investment. In Chile, the comparatively mild real appreciation since 1988 has been accompanied by a doubling of private investment: during 1989-91, private investment averaged 14.4 percent of GDP, compared to 7.3 percent during 1982-88 (Figure 6).¹⁴ As Figure 6 makes clear, the appreciation still leaves the Chilean peso highly depreciated relative to the heights reached prior to 1982, while the private investment share has practically caught up with its peak during the earlier period. These facts would lead one to remain relatively sanguine about the appreciation of the Chilean peso. Of course, Chile is one country which did not experience triple-digit inflation and a protracted stabilization crisis during the 1980s, so may not be a very good case on which to try out the story above.

Argentina's experience during 1987-1991 has been opposite to that of Chile. The trend real appreciation of the Argentine currency has taken place alongside a continued

¹³The counter-argument is that nothing favorable can be ascribed to an investment boom that takes place in the context of a real appreciation of the currency: a (temporary) overvaluation acts as an investment subsidy because imported capital goods are (temporarily) cheap. See Dornbusch (1985). However, an investment boom that takes place under these conditions has at least the potential of validating the contemporaneous level of the real exchange rate, provided it is not narrowly focused on non-tradables, since it expands the production capacity of the economy.

¹⁴The source for all private investment data in Figures 6-8 is Pfefferman and Madarassy (1992).

squeeze in private investment, to the point where gross private investment stood at barely over 4 percent of GDP in 1990 (Figure 7). In light of successive stabilization packages' inability to conquer inflation during this period, the result is not surprising. Since the Cavallo stabilization of 1991, private investment has apparently shot up; so future statistics could conceivably tell a different story.

The Mexican case stands between the Chilean and Argentine extremes. Unlike in Argentina, the real appreciation has followed a successful stabilization in 1988, and private investment has risen by a couple of percentage points of GDP since then (Figure 8). However, the magnitude of the real appreciation has been much larger, and the investment boom much smaller, than in Chile. As pointed out above, it remains to be seen whether NAFTA and overall confidence in the health and stability of the Mexican economy can sustain a real exchange rate that has appreciated by 35 percent since 1987.

To sum up, it may be viewed as encouraging that in all cases where disinflation has worked (Chile, Mexico, and Argentina after 1991) private investment has increased. This may be seen as making the real appreciations less threatening to the sustainability of the trade reforms. Nonetheless, Chile is the only one among the three countries considered here where there is no prima facie case that the observed real appreciation poses a future risk. The model considered above was designed to illustrate a best-case scenario under which the conflicting demands made on exchange-rate management by stabilization, on the one hand, and trade liberalization, on the other, can prove to be illusory. The evidence for this scenario is mixed, and is unlikely to be fully sorted out for some time.

IV. Early Trade Liberalization and Credibility of the Nominal Anchor

Even if trade liberalization is fully compatible with a credible disinflation, the reality that any disinflation strategy is likely to face imperfect credibility at the outset raises additional problems. Early liberalization may be costly both because it exacerbates the transitional costs, as discussed in the introduction, and because it may affect adversely the credibility of the disinflation itself. I focus here on the latter possibility. By simply assuming an exchange-rate commitment, the model discussed above sidestepped a crucial question: how does early trade liberalization affect the credibility of the anchor? Does it endanger credibility by complicating the transition? Or does it enhance credibility by raising the stakes?

Liberalization clearly aggravates the costs (both economic and political) of the transitory real appreciation experienced by disinflating countries. In addition, it forces policy makers to confront an additional powerful group--the import-competing interests--on top of those adversely affected by the fiscal retrenchment. Finally, by linking in the public's mind the fortunes of stabilization and liberalization, it creates the danger that any reversal on the liberalization front will contaminate the disinflation process. These are powerful arguments suggesting that early liberalization may be costly to the credibility of disinflation.

However, these arguments have to be set against the potential signalling value of tackling stabilization and liberalization simultaneously. To a jaded public which has seen too many disinflation plans fail for lack of political backbone, an ambitious package that attacks all the sacred cows at once may well communicate the presence of a "tough" government that means business. (Or a naive one that will become history before too long!) Also, the fact

that linkage raises the costs of failure has a beneficial flip side: it makes reversal less likely in the face of temporary setbacks.

Hence arguments can be made on either side. As is usual with anything of practical consequence, economics provides only so much guidance; responsible policy makers have to judge the politics of the situation for themselves. We end by stressing what has already been said: stabilization-cum-liberalization need not be inherently incredible on account of the exchange-rate conflict, because the conflict may well disappear under a successful nominal peg.

V. Concluding Remarks

It is clear that in all the cases considered here (except Chile's), policy makers were concerned first and foremost with controlling inflation. Opening up to foreign trade was a secondary priority, and was largely undertaken for its anti-inflationary (rather than resource-allocation) benefits. Regarding the risk of overvaluation, policy makers have been more sanguine than academics. And there is at least a theoretical possibility that they may yet turn out to be right. As we have seen, the use of the exchange rate as a nominal anchor is not necessarily in conflict with the requirements of trade liberalization: if the nominal anchor works, nominal wage rigidity will eventually disappear; if it ultimately proves unsustainable, competitiveness will have taken a serious hit, but so will the fight against inflation.

This paper has been an attempt to put the best possible face on policy makers' preference for early liberalization. In view of the lexicographic preference for price stability, it is not clear that packaging trade reform with stabilization has seriously compounded the

downside risks. If the stabilization works, on the other hand, the economy will reap the obvious upside gains from having integrated into the world economy. As discussed in the previous section, however, the strategy is not without serious problems, and its success remains to be demonstrated.

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Figure 1
Chile: Trade Volume and the Real Exchange Rate

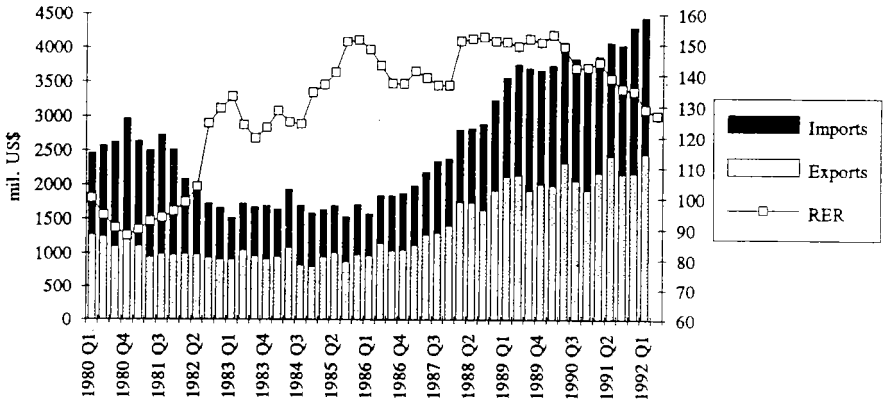


Figure 2
Bolivia: Trade Volume, Export Prices, and the Real Exchange Rate

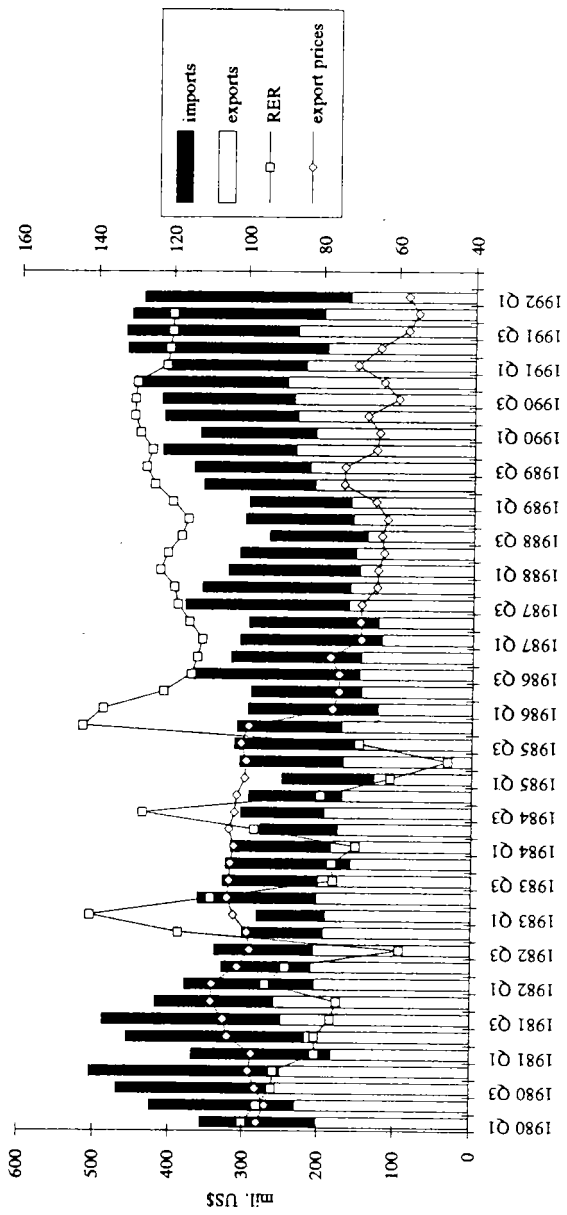


Figure 3
 Mexico: Trade Volume and the Real Exchange Rate

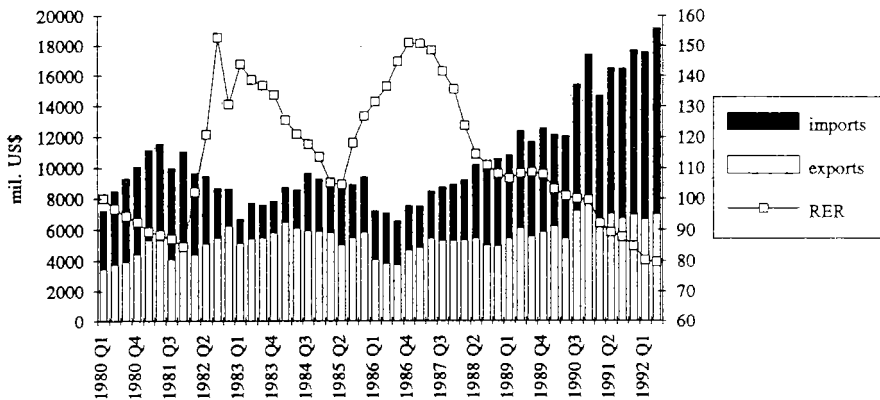


Figure 4
 Argentina: Trade Volume and the Real Exchange Rate

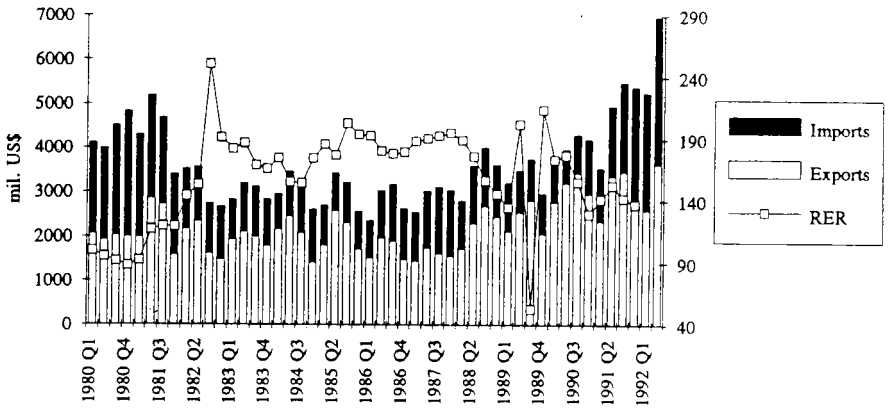


Figure 5
Brazil: Trade Volume and the Real Exchange Rate

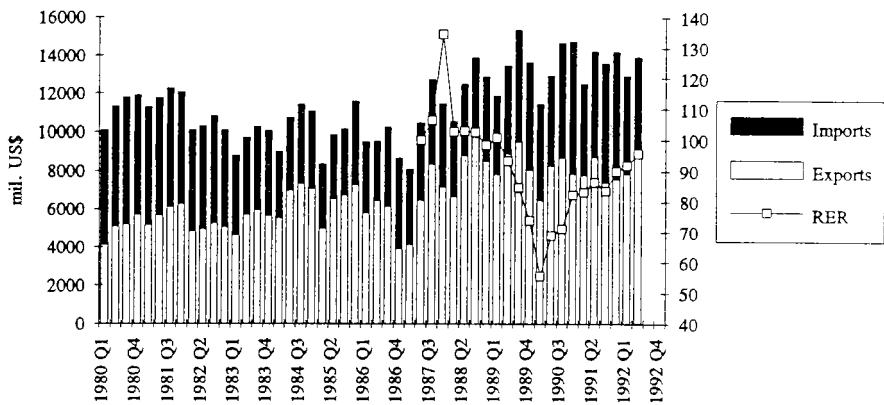


Figure 6
Chile: Private Investment and the Real Exchange Rate

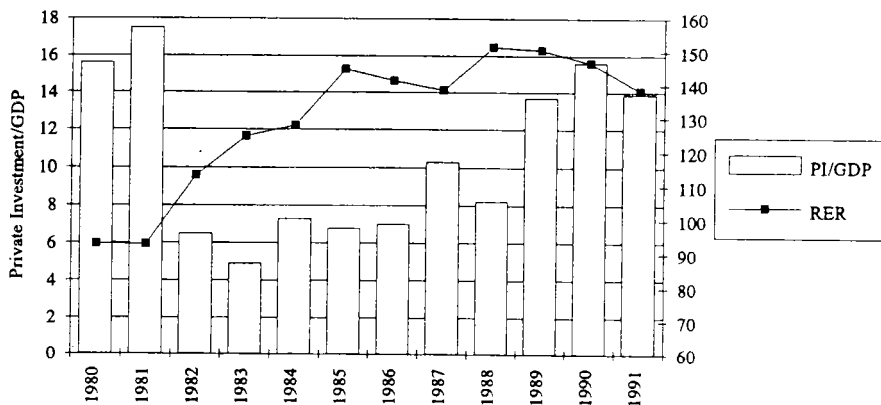


Figure 7
Argentina: Private Investment and the Real Exchange Rate

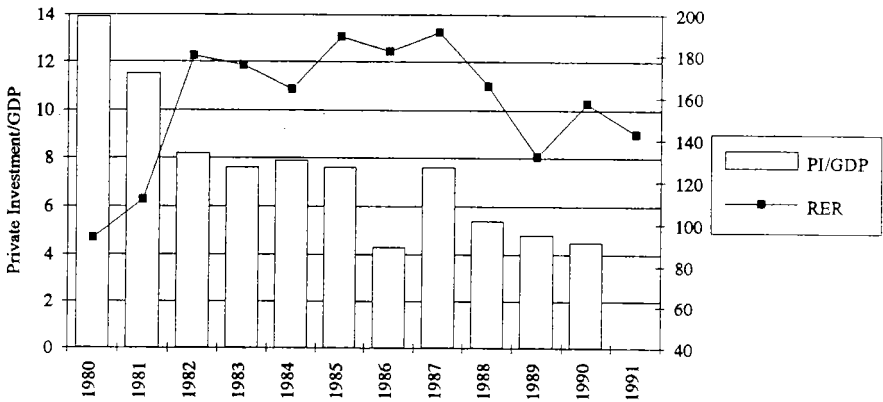


Figure 8
Mexico: Private Investment and the Real Exchange Rate

