

**THE ROAD TO ECONOMIC RECOVERY:
STRATEGIC ISSUES AND CHOICES**

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Any paper of this type must appropriately begin with a disclaimer. Our visit was organized with the objective of bringing to Russia the insights of individuals with wide experience in other parts of the world. Its aim was to explore the ways in which that experience might usefully be brought to bear on the severe problems currently facing the Russian economy. This aim poses severe constraints on those like myself who try to draw useful lessons from the experience of other countries. These constraints quite obviously stem from the many aspects of Russia's current situation that have little or no counterpart in the economies where we gained our experience. These many special features of the Russian case should warn us to proceed with caution as we attempt to draw lessons from the experience of other countries. I have been fully aware of this need for caution as I have conducted my search for relevant lessons. This helps account for my concentration in the present document on the most basic and fundamental economic forces -- forces whose operation does not depend in any serious way on specific institutional and historical features. It must be said, however, that I am thinking throughout in

terms of economies in which market forces play a fundamental role in determining the allocation of resources.

Keeping Inflation Under Control

When an economy is in a depressed, uncoordinated state, one seeks ways of stimulating production in a manner that is: a) economically efficient now and b) likely to continue to be efficient for some time as the economy evolves.

The worst way to attack the problem of a depressed economy is through large doses of inflationary finance. Not only does inflation represent a highly inequitable tax on those who happen to have incomes or assets that are fixed in nominal terms (or that adjust very inadequately in response to inflation); in addition, and very importantly, ongoing serious inflation introduces significant distortions into the economy, and impedes key elements in the process of economic growth.

Many economic texts treat inflation as if it were a simple, straightforward tax on real cash balances. No one can deny that inflation entails such a tax, because the cash balances one is holding are continually losing value as the price level rises. The textbook treatments, however, make a big mistake in ignoring the other costs of inflation, which far outweigh the costs of a tax on real cash balances.

These other costs consist first of time, energy and resources that people spend in protecting themselves from inflation (even sometimes in trying to profit from inflation); second in the ways in which the inflation process blurs the signals that a well-functioning price system is supposed to provide, and third in the likely negative impact of inflation on the rate of investment in the affected economy.

The blurring of price signals is a point that merits elaboration. Prices play a critical role in an economic system based on market principles. If a good is in short supply (relative to its demand at the prevailing price), its price will tend to rise, thus stimulating additional supply. Resources are thus attracted (by higher prices) to activities where demand has increased. The price signals work in the opposite direction for activities facing a declining trend of demand.

Obviously, it is the relative, not the absolute prices of goods and services that are relevant for this signaling function of the price system. The trouble with inflation is that economic agents cannot readily distinguish between price rises that are simply the consequence of inflation (and hence do not call for a reshuffling of the resources of the economy) and those that are genuine signals for resources to move. The problem would be bad enough even if actual price movements could be neatly broken down into an inflationary component (the same for all prices) plus a relative price component, serving as a signal for resource allocation; because ordinarily demanders and suppliers would have a hard time perceiving the size of inflation component at any given point in time. It is much worse than that in the real world, because even though in the end inflation tends to affect all prices equally, it does so at vastly different speeds. Some prices, particularly those of primary products, exhibit a rapid response to inflationary forces, while others (like rents and public utility rates) tend to respond quite sluggishly. Thus, even if no fundamental changes in the underlying real economic equilibrium are taking place, one will see some prices (A) move more rapidly than others (B) in the early phases of an inflationary process, thus seeming to signal a call for resources to move from B to A. Then, in the latter phases of the same inflationary process the second set of prices B will rise more rapidly, as they finally come to fully “digest” the inflation in question.

Thus it is that an inflation process actually sends relative price signals to economic agents -- but they are false signals arising simply from different speeds of a responsiveness of different prices as more fuel is injected into the engine of inflation. So now, the economy's suppliers and demanders have a huge problem. It is not just distinguishing a common inflationary component of price changes from individual relative price movements. Instead they have relative price movements arising out of the inflationary process itself, plus relative price movements that are genuine longer-term signals. It is the uncertainty about what is signal and what is noise that creates these additional problems -- problems that grow in size and importance as the rate of inflation increases.

The greater is the rate of inflation, the greater is the confusion that besets economic agents as they try to discern what are the genuine signals that the economy is sending them. Two consequences follow quite naturally. First, agents will be more reluctant to respond to apparent signals (observed changes in relative prices), the greater is the ongoing state of inflation. So the economic machine will react to real changes in supply and demand, but more sluggishly. Second, agents will make more mistakes, the higher is the rate of inflation. The more noise there is, relative to signal, the greater the likelihood that people will be reacting to just noise, thinking that it is a signal. In this way economic agents end up taking actions that have a negative economic effect, by misinterpreting the meaning of the relative price changes they observe.

The blurring of relative price perceptions that appear with high rates of inflation has a direct effect on the rate of economic growth. As is well known, and as I will emphasize later, the discovery of ways of reducing real costs is a very important component of the growth process. With blurred perceptions, economic agents find it harder to identify possibilities for real cost reduction. What looks like a genuine cost-reducing opportunity today may disappear or even

end up by raising costs, as the prices of inputs and outputs weave their separate paths of adjustment to inflation.

Inflation also tends to hurt growth by diverting resources from investment in the economy in question. The uncertainties connected with inflation are very likely to raise the threshold real rate of return, which people require before they will willingly invest. At the same time, inflation at home makes people more interested in placing their savings abroad, or if not abroad, in accumulations of dollars or pounds or DM or francs that they keep within easy reach. Needless to say, these various ways of diverting funds from investment in the local economy have the effect of reducing the rate of growth.

Many empirical studies have documented the negative impact of inflation on growth. So I am not here going to try to repeat their demonstration or re-examine their evidence. I will, however, report on two empirical exercises, which may be helpful to present or future policymakers.

One has heard many times the familiar refrain that reducing the rate of inflation entails “high social costs”. It is widely believed that a serious recession, even maybe a depression, is the price that a country has to pay to get itself out of an inflationary orbit. Table 1 presents very clear evidence that this is not the case.

The cases examined in Table 1 all fall into a category that I call “acute inflation”, where inflation rises close to 100% (I used a cutoff rate of 90%) or more at its peak, before a stabilization process is mounted. Table 1 identifies the period in which inflation is rising to its peak and the subsequent period in which the rate of inflation is falling, and then shows the annual average growth rates of GDP during these respective periods. It is notable that the rate of GDP growth in the period of declining inflation is, in all but two cases (both for Brazil) greater

than that for the period of rising inflation. And even in those two periods of declining inflation, Brazil had positive rates of GDP growth (0.86% and 2.68%, respectively).

Overall, the median rate of real GDP growth for the 21 periods of rising inflation was 0.42% per annum, while that of the 21 periods of declining inflation was 4.37% per annum -- representing what must be described as a huge difference in growth rates.

Tables 2a, 2b, and 2c undertake a different empirical experiment. Instead of simply focusing on a single, big up-and-down inflationary episode, in these tables we follow a country through a substantial period of its history, correlating year-by-year rates of inflation with the corresponding contemporaneous growth rates of real GDP. These tables reveal an insight that we are well advised to remember -- the negative connection between inflation and growth is strongest for countries which experienced what we have called acute inflation; it is less marked but nonetheless present for countries whose maximum annual rate of inflation was in the 20% to 90% range; and it is for all practical purposes absent for countries and periods where exchange rate stability (or something very close to it) prevailed.

It is worth while for us to consider the reasons for the very equivocal results that emerge when we correlate rates of inflation with rates of real growth for stable exchange rate countries. In the first place it is important to note that in these countries inflation is always kept within quite narrow bounds -- it does not have the kinds of variation that are present for the other two categories (Tables 2a and 2b). But the forces that determine real growth rates (apart from inflation itself) operate with pretty much equal strength in these stable countries as they do in the other cases examined. Natural disasters and world recessions bring low or even negative growth rates, while export price booms and huge capital inflows bring positive growth rates. One has

little reason to expect that these events will be strongly and negatively correlated with movements of the rate of inflation within its relatively narrow band.

Now with respect to the rate of inflation itself, its main movements (for a stable-exchange-rate country) are likely to come from two types of source. First, there are movements in the general world price level, measured in dollars or pounds, or whatever other currency the country's money may be pegged to. These world price movements will typically be reflected in the country's own price level, but quite unconnected to the forces governing its rate of real GDP growth. Additionally, one finds in fixed exchange rate countries a scenario that quite naturally conduces to a positive (rather than the "expected" negative) connection between the rate of price level change and the rate of real economic growth. This scenario is related to the real exchange rate, about which more will be said in the next section. Here we will simply note two important sources of an abundance of dollars -- a) an export price boom and b) a large capital inflow. In both cases the abundance of dollars causes the dollar to be cheap in real terms. With a flexible exchange rate this could turn out to be simply reflected in a fall in the local currency price of the dollar. But with a fixed rate, the typical scenario is for the Central Bank to buy the dollars, creating base money in the process. Equilibrium is reached when the internal price level has risen enough to cause an increase in the demand for dollars (typically for imports) that is big enough to match the increased supply arising out of increased exports and/or capital flows. The presence of this mechanism for fixed exchange rate countries helps explain why nearly half the observed correlations between the inflation rate and the real GDP growth rate (though low) are positive. By contrast, for the acute inflation countries only one of the sixteen correlations is positive, and in the intermediate case only four out of fifteen correlations are positive.

The Role of the Real Exchange Rate

Let me begin this section by pointing out that, in the 1940s, 1950s and 1960s, even specialists in the field of international trade were unfamiliar with the concept of the real exchange rate. My own diagnosis is that its special role was obscured by the simplifications (assuming a world of two countries A and B, two products X and Y, and two factors of production L and K) that were typically employed in classrooms and in theoretical work obscured the need for such a concept. Moreover, the 1950s and 1960s were decades of relative calm, in which the real exchange rate did not come to center stage either as a reflection of new and critical problems, or as a policy variable that might help in their solution.

All this changed dramatically in the 1970s and 1980s. The first decade was characterized by two major oil price shocks, and by one major world recession, and also by the inevitable abandonment (in the face of these shocks) of the Bretton Woods system. All these elements led to an era of unprecedented volatility of real exchange rates. This volatility was a reflection of changes that were taking place in the underlying structure of supply and demand, to which the adjustment of a country's real exchange rate was typically a natural and necessary response. But at times the problem took the reverse form, of a disequilibrium whose solution (a major adjustment of the real exchange rate) was prevented or long delayed, usually by a combination of rigidities both of prices and of the nominal exchange rate.

By studying the experiences of countries in the 1970s, 1980s, and 1990s, we have come to have a quite full appreciation of the role that the real exchange rate plays in the economic system. That role is nothing less than its being the "fundamental equilibrating variable" of a country's balance of payments. All kinds of disturbances lead quite naturally to the need for an upward or downward adjustment in the real exchange rate:

- a) reducing tariffs, quotas and other import restrictions leads to an increased demand for imports hence to a rise in the equilibrium real price of the dollar.
- b) reducing restrictions on exports adds to the supply of foreign currency, hence to a fall in its equilibrium real price.
- c) a boom in the world price of a major export commodity makes dollars abundant, so their real equilibrium price falls.
- d) technical advances (real cost reductions) in the prices of tradable goods adds to the supply of exports and/or import substitutes. This adds to the supply of dollars (via more exports) or reduces the demand for them (via lower imports), with the result that the equilibrium real price of the dollar falls.
- e) capital inflows typically add to the available supply of dollars, thus tending to reduce their equilibrium real price. One should note here, however, that the effect of a capital inflow on the real exchange rate will differ depending on how it is spent. If money is borrowed and used exclusively to buy capital equipment (or other tradable goods) for a new project, the new supply of foreign exchange is just matched by a new demand, so there is no effect on the equilibrium real price of the dollar. It is quite different if the borrowed money is spent on local (nontradable) goods and services; in this case the borrowed dollars have to be converted to local currency, creating a need for a fall in their equilibrium real price.

This list of forces affecting the equilibrium real exchange rate should give readers an appreciation that mastery of real exchange rate analysis does not come easily. Much misunderstanding of this subject has prevailed and continues to prevail. There is a great need for policymakers to recognize the fundamental importance of the real exchange rate in the ongoing processes of a modern economy, and also to bear in mind that it is a variable that responds to

many different and complex forces. This is not an area where simplistic notions can serve as a reliable guide.

The real exchange rate has a particularly important place in the situation of Russia today. The Russian economy has been engaged in a major adjustment process for more than a decade, and still has not achieved the goal of a thriving market economy, with its resources fully and efficiently employed, and with its links to the world economy fully and efficiently developed.

The analogy fits quite well to think of the Russian economy as being in a swamp, struggling to get out to dry land, where it can move much better and much faster, and can operate much more productively.

How can the Russian economy escape from this swamp? It surely requires a healthy, economic demand for the services of its abundant human and physical resources. How can this demand be fostered, stimulated, developed? The easy response is to create demand internally, perhaps by the government, perhaps via the banking system. Such “autonomous” creation of demand invariably involves, in one form or another, the inflationary expansion of the money supply. This was the subject of the preceding section, where the folly of the inflationary path was amply demonstrated. High rates of inflation are, in theory, in practice, and in common sense, inimical to economic efficiency and to economic growth. And in the Russian case, one can also say that the inflationary “solution” has already been tried, and has led to disastrous consequences.

The alternative and much better avenue of escape from the swamp is provided by the real exchange rate. The objective in this case is export-led growth, in which the economy exploits its known sources of comparative advantage, and in the process also encounters new ones.

This route out of the swamp can be said to be the natural one, in the sense that it is likely to evolve quite naturally in a market economy,. If a country has to export more to solve its problems, then what is more natural than for those exports to be priced attractively? And attractive pricing for exports means high prices in rubles, as far as Russian producers are concerned, and low prices in dollars, pounds or marks as far as foreign buyers are concerned. A high real price of the dollar accomplishes both of these apparently contradictory objectives at the same time.

A high ruble price of the dollar gives a strong incentive to old export items, and at the same time stimulates a search for new items of comparative advantage. It was the stimulus of a high real exchange rate that led to the development in Chile during the middle and late 1970s, of several major new export items -- including salmon (in which Chile is now one of the three biggest exporters), kiwis (in which it disputes for leadership only with the old leader, New Zealand), and table grapes, peaches, raspberries, nectarines and other fruit. These are all items of true comparative advantage for Chile. The salmon are cultivated in the fiords of Chile's southern coast, just as they are cultivated in the fiords of Norway and Scotland. The boom in fruit exports is quite natural, too, as it takes advantage of Chile's location in the southern hemisphere and of its rich soil and benign climate.

Yet this comparative advantage remained unexploited for many, many years. Production and export of these new items was stimulated by a high real price of the dollar in the mid-1970s, which made it highly attractive for people to experiment with ideas for new export items. In every single case major investments were involved, which took years to bear fruit. Once again the high real exchange rate was a major contributor to the attractiveness of these investments.

Influencing the Real Exchange Rate

I hope that the preceding section has given readers a good appreciation of the importance of the real exchange rate as a key economic variable, and of the many different forces that are reflected in its movements. As is the case for most economic prices, it is a variable that should be treated with a great deal of respect -- one should not dream of ordering it around, of telling it what to do. Here, as elsewhere on the economic stage, the law of supply and demand has to be appreciated and respected.

It is within this context that one ought to be thinking as one contemplates the role of the real exchange rate (RER) in economic policy. The RER cannot be ordered about, and cannot be simply manipulated to do what the policymaker wants. But this does not say that it cannot be influenced by the actions of the economic policy authorities.

There are two ways in which the authorities can fruitfully work to influence the RER. The first is by operating on the real variables that influences the supply and demand for foreign currency, and the second is by moving the nominal exchange rate to facilitate the adjustment of the real rate to a new equilibrium level. But one must shun like the plague any idea that one can sensibly think of using changes in the nominal exchange rate as an instrument for bringing about changes in the equilibrium level of the RER.

I now proceed to a series of historical examples, each of which illustrates one or another of the points just made. First will be the case of El Salvador 1985-88, which will show the futility of trying to use a nominal instrument (in this case the nominal exchange rate) as a device for changing the equilibrium value of a real variable (in this case the real exchange rate). The second is Brazil, 1968-1979 where a policy of targeting the real exchange rate succeeded in that objective. In this case real instruments were used, namely changing the intensity of import

restrictions plus accumulating reserves of foreign currency. The third example is Chile, 1985-1998, where the real exchange rate was also targeted, but less strongly than in the earlier Brazilian case. Here the main real instruments were at the beginning the repatriation of foreign debts, and toward the end the massive accumulation of foreign reserves. The final example is that of contemporary Argentina, where the real exchange rate has been out of equilibrium for at least five years, and a tragic confluence of economic rigidities has frustrated its appropriate adjustment.

El Salvador, 1985-1988. The economy of El Salvador has for more than two decades been characterized by what is perceived as a low real price of the dollar. This perception is reflected in constant complaints by large numbers of producers of tradable goods. In my own experience there, the agricultural sector has been the most vocal complainer. Farmers have had a difficult time meeting international competition and, not being economists, have come to a simplistic determination of what was wrong. What they alleged was that the government, and in particular the Central Bank, had in its hands a very simple answer to their problem. Whereas they (the farmers) were barely surviving at the prevailing exchange rate, the whole sector could be made to thrive if only the exchange rate were, say, to be doubled. Misery would be turned into prosperity, losses into profits, penury into wealth. How, asked the farmers, could the authorities be so stupid as not to see and appreciate this?

Well, the authorities yielded and performed the experiment in early 1986. The exchange rate had been 2.50 colones per dollar for many years; now it was doubled to 5.00 colones. With this, according to the farmers' view, the agricultural and other producers of tradables goods should have been rescued from their plight. Undeniably a sort of temporary rescue did take place, but by 1988, barely two years after the massive devaluation, the general price level had

doubted, compared to its pre-devaluation (1985) level. And by 1990 it had tripled. The dollar value of merchandise exports, which had averaged about \$700 million in 1983-85, jumped to \$777 million in 1986, but quickly receded to about \$600 million in 1987 and 1988, and was below \$600 million for the following three years.

What happened to frustrate the results that agriculturists and others so fondly expected from a massive devaluation. The answer is that the underlying real situation of the economy had not changed, and in particular the devaluation did nothing to change the equilibrium value of the real exchange rate.

The reason why the real exchange rate was low in El Salvador in the middle and late 1980s, and continues low to this day, is the massive flood of dollars that arrives every year in the form of emigrant remittances and foreign aid. These have financed the bulk of El Salvador's excess of imports and exports for more than 15 years -- deficits that have ranged from 6 to 15 percent of GDP in the period in question. This flood of dollars is what made the dollar abundant and therefore cheap in real terms. I have often said to complaining farmers in El Salvador, if you really want to raise the real price of the dollar, tell your relatives and friends in Los Angeles to stop sending remittances, and tell your government to stop accepting foreign aid. Cut off these sources of supply of dollars and the price of the dollar will surely rise in real terms. But as long as these inflows of dollars continue, you can expect the dollar to be cheap.

Needless to say, my argument here was rhetorical. El Salvador as a nation and a society has clearly benefited both from emigrant remittances and from foreign aid. It is not in their interest to cut off either flow. My real point is that while these large inflows of dollars continue, the equilibrium real exchange rate will remain low. A major devaluation will change the nominal rate, but the real rate will try to go back to its equilibrium level, as it actually did in the

period 1986-88. In the end, all that El Salvador got out of its big devaluation of 1986 was a roughly doubled price level.

Brazil, 1968-1978. Brazil's economy was in a state of distress in 1963-64, beset by high levels of protectionism, inflation, price controls and related maladies. A series of major reforms in the 1964-68 period set the stage for the so-called Brazilian miracle of 1968-78. One of the key policies characterizing that "miracle" period was the attempt to maintain the real exchange rate at a level that would stimulate investment in the production of tradable goods in general, and of export goods in particular.

If the El Salvador episode demonstrates that one cannot successfully target the real exchange rate using a nominal instrument, the Brazilian miracle period shows that one can at least sometimes succeed in such an attempt if one uses one or more real policy instruments. The key real instruments were a buildup of foreign exchange reserves plus the manipulation of import restrictions so as to influence the market's demand for foreign exchange. Brazil started this period (Dec., 1967) with only \$157 million of foreign currency reserves, and ended it (Dec., 1978) with over \$11 billion. The buildup of reserves actually came in two spurts -- one which lasted until 1973 and brought reserves to \$6.36 billion, and a second in which they rose from \$3.65 billion at the end of 1975 to \$11.83 billion at the end of 1978. In between, reserves were depleted in response to the 1974 oil crisis, but this too was in pursuit of Brazil's RER target. For the two periods when reserves grew, the market would otherwise have set a rate below the target, so purchases were called for. During the oil crisis years, however, market demand for dollars soared, and it took sales of reserves to keep the RER from exceeding its target level.

The other instrument Brazil employed was changes in import restrictions. During the first period this was a case of happy coincidence as between two policy objectives. The

government wanted to liberalize trade, and was faced with existing import barriers that were far too high. Lowering these barriers helped it to meet its liberalization objective, and at the same time the added demand for foreign currency helped lift the real exchange rate to the target level. Brazil's strategy during the 1968-73 period can be thought of as turning first to reserve accumulation as the "central variable" to influence the RER. But then, if the required rate of reserves accumulation was too great, a judicious reduction of import restrictions was brought into play.

One can think of this strategy as being put into reverse gear starting with the oil price boom of 1974. Recall that now the market pressure was toward a real exchange rate that was higher than the target. Brazil first sold off its reserves, but when they were judged to have fallen too far, the Brazilian authorities responded by putting an additional import restrictions so as to curtail the demand for dollars and bring the equilibrium RER down to the target level they had set.

Most economists genuinely applauded as import restrictions were successively reduced or eliminated during the 1968-73 period, but were dismayed by the reintroduction of such restrictions in the 1974-78 period. It must be said, however, that this policy, though far from being first best, did in fact succeed in holding the real exchange rate to within plus or minus 5% of its target level, all the way through 1978. Moreover, the growth of the Brazilian economy was spectacular, averaging 10% during 1968-73, and 7% during 1974-78.

Chile, 1985-98. Chile was the Latin American country that was hardest hit by the debt crisis of 1981-82. The capital inflow into that country had reached a peak of 15% of GDP in 1981 (which was higher than the peak attained by any other Latin American country), and fell by more than 10 percentage points of GDP in the single year 1981-82. However, this turnaround

happened to coincide with a precipitous fall in the price of copper, which fell by more than 30% between 1980 and 1982.

The Chilean economy remained in a deep depression until 1985, when a new finance minister (Hernán Buchi) and a new economic team mounted a series of major new economic reforms. These represented a continuation of the process of liberalization and modernization that had characterized the earlier Chilean boom of 1975-81. The cornerstone of Buchi's macroeconomic policy was the real exchange rate. His objective was to emulate the Brazilian miracle by organizing an economic recovery that was driven by the growth of exports. A high real price of the dollar was sought as a means of stimulating this export growth.

The real instruments that Buchi employed to influence the real exchange rate included trade liberalization and accumulation of international reserves (both familiar instruments from the Brazilian and the earlier Chilean (1975-81) episodes), plus what I will call "Buchi's secret weapon". This was the repatriation of private sector debt, carried over from the big capital inflows that had characterized the years 1979-81. It was mainly owed by Chilean banks to banks in the U.S. and Europe. In the wake of the debt crisis there had emerged in New York a secondary market for Latin American debt of all kinds, in which the debt instruments were transacted at varying degrees of discount below par. At the time Buchi discovered his secret weapon, the debt instruments of the main Chilean debtor banks were transacting at about 60% of par.

It was not legal for the Chilean banks to go into the international market to repurchase their own bonds at discounted prices. But that did not deter others from performing the same function. The Chilean authorities became alerted to the situation when the Central Bank began to receive large and growing demands for dollars, for the purpose of buying and repatriating the discounted bonds of Chilean banks. Fearful that such applications would lead to unmanageable

pressures on Chile's market for foreign exchange, the Chilean authorities instituted a mechanism of control, which consisted of auctioning off, every two weeks, certificates which gave the buyer the right to repatriate the discounted debt instruments. (Chile's capital account had not been decontrolled, so this solution was easy to implement.)

With these auctions, it was easy for Chile's Central Bank to stem the flood of demand for foreign currency. That flood had started because of the high profit potential implicit in the difference between the discounted price of Chilean bank bonds (originally around 60) and their par value (100). Initially, this "profit" was available to be divided in negotiations between the entrepreneurs and the debtor banks. But once the bi-weekly auctions were instituted, the Central Bank ended up with most of this arbitrage profit.

So the Chilean authorities gained in two ways -- they were able to control the flow of demand for foreign exchange for this purpose, and they made a lot of money in the process. It did not take long for them to see the potential for using these same bi-weekly auctions to produce yet a third advantage for them -- the capacity to create, at their own initiative, whatever demand for foreign currency (within feasible limits) was needed to produce an equilibrium of supply and demand within the band that they were targeting for the real exchange rate.

This was the beginning of what I would call a blissful period of real exchange rate targeting by the Central Bank of Chile. Supply and demand (including the Central Bank's own desired accumulation of international reserves) were always kept equal at a price within the target band, and the Central Bank made a lot of money in the process!! But the period of bliss was destined to end. Each passing year reduced the amount of discounted bonds that was still outstanding, and at the same time the size of the discount was progressively squeezed toward zero.

By the time Patricio Aylwin was elected as Chile's next President at the end of 1989, one can say that the permissions-auction idea had run its course. Yet the new government firmly believed in the idea of trying to keep the real exchange rate at an export-incentive level. But how to do it? Here they took a clue from the earlier, highly successful policy. That policy had in effect amounted to the replacement of discounted foreign debt denominated in dollars by newly issued domestic debt (of the Chilean debtor banks) denominated in pesos. That is, during 1985-89, the policy had fostered a reduction of foreign dollar liabilities plus a rise in peso liabilities of these banks. A very close counterpart of this could be achieved, it was thought, by effecting a rise in dollar assets of the country (held abroad) compensated by a rise of peso liabilities. Thus began a systematic policy (known as sterilized intervention) of the Central Bank issuing bonds on the local market, and using the proceeds to build up dollar balances abroad.

The policy of building up dollar balances abroad certainly "worked" in the literal sense. The international reserves of Chile's Central Bank stood at \$3.6 billion just after President Aylwin's election in December, 1989. By the end of 1990 they had risen to \$6.1 billion; they reached \$9.2 billion by the end of 1992, \$13.1 billion by the end of 1994, and \$17.3 billion by the end of 1997. This success, however, masked two problems, one of "Central Bank losses", the other of the "reflux of capital".

Although the "new" policy, under which the Central Bank of Chile borrowed in the home market, then demanded dollars (in order to prop up the real exchange rate), and finally placed those dollars abroad in the world financial markets bore a close resemblance to the old policy (of repatriating discounted debt), it differed dramatically in its effect on Central Bank earnings. Whereas the "old" policy brought a regular flow of cash (the proceeds of the biweekly auctions) into the coffers of the Central Bank, the "new" policy generated nothing but losses. These

stemmed from the fact that the interest rate paid on the peso bonds issued by the Central Bank was significantly higher than that yielded by the dollar denominated securities and deposits that were acquired using the proceeds from the sale of the bonds. Interest rates on both sides of this equation varied through time, but they always signified losses for the Central Bank. An example of the discrepancy can be drawn from recent experience -- with the Central Bank paying 7 to 8 percent on peso bonds indexed to the Chilean price level, while the proceeds of those bonds were being used to buy securities yielding an average nominal return (in dollars) of only 4 to 5 percent. Since over the period since 1990 the peso has appreciated significantly in real terms (in spite of the Central Bank's efforts), the loss was significantly greater than the 2-4 percentage point differential between the real peso rate paid and the dollar rate received. Moreover, the Central Bank loss in this borrowing-cum-placement operation has an automatic tendency to grow through time, so long as the operation is itself continuing. This can be seen by contemplating the growth in Chile's international reserves. If all of the growth from \$3 billion in 1989 to \$17 billion in 1997 was a reflection of operations of this type it would mean that the Central Bank would be taking its loss on an outstanding stock of bonds equal to the full increment (\$14 billion) of reserves that those bonds had financed. Taking an illustrative figure of 5 percentage points as the net loss per annum, we would calculate the loss at $.05 \times \$3$ billion, or \$150 million during 1991 (when total reserves were about \$6 billion), rising to $0.5 \times \$14$ billion, or \$700 million by 1997, when Chile's foreign reserves had grown to \$17 billion. The cumulation of these losses, and the prospect of future losses that would be linked to the extent of future reliance on similar operations, was certainly partly responsible for the acceptance, by Chile's Central Bank, of a downward drift in the real exchange rate in the years after 1989.

The "reflux" problem was related to the operation just described. As the Central Bank sold additional bonds on the local market, the interest rate within Chile tended to be driven higher -- i.e., above the level where it otherwise would have found its equilibrium. This higher interest rate within Chile made it more attractive for both foreigners and Chileans to shift money from, say, New York to the Santiago market. Thus, if the Central Bank were adding \$4 billion to its international reserves in New York, perhaps a quarter or a third or half of that amount would flow back to Chile as an "induced" private capital flow. We do not know the precise fraction of funds put abroad that came back to Chile as an induced "reflux". But we do know that the Central Bank took the problem very seriously.

The response of the Chile's Central Bank to the "reflux" problem was to institute what was in effect a tax on flows of short-term capital into the country. This was accomplished by a requirement that 30% of any inflow of short-term funds be placed in a zero-interest deposit at the Central Bank, for a period of a year. Thus, if these funds could have earned a 10% interest rate in the local market, the effect would have been the same as a tax of 3 percentage points. (Indeed, in the latter part of the period, investors could simply pay the Central Bank an "up front" fee of three percentage points of the capital flow in question, thus "buying out" of the deposit requirements).

The 30% deposit requirement (and more recently the option of a 3% fee in lieu of a deposit) stayed in effect until very recently. In the wake of the so-called Asian crisis, however, the deposit was first reduced from 30 to 10 percent, and subsequently (late in 1998) eliminated entirely. By that point the Chilean authorities were more interested in attracting capital to the country than in preventing too much of it from coming.

Argentina, 1995-2000. The big real exchange rate lesson to be drawn from Argentina's experience in this period is how difficult and painful it can be for a country to try to achieve a real exchange rate devaluation through a process of internal deflation.

There is an easy litany that one can use in instructing the uninitiated about the real exchange rate. Let us call the nominal exchange rate with the dollar (or any other chosen major currency) E -- the nominal price of the nominal dollar. Deflate this by a general price index (π_d) of the country in question and you get E/π_d -- the real price of the nominal dollar. Multiply this by an index (π^*) of the dollar prices of tradable goods and you get $E\pi^*/\pi_d$ -- the real price of the real dollar.¹

From this definition ($E\pi^*/\pi_d$) of the real exchange rate it can easily be seen that any change that can be accomplished by a change in E can also in principle be achieved by an inversely proportional change in π_d . Indeed, movements in π_d are the main mechanism by which the RER adjusts, under any fixed exchange rate system. We have an enormous list of cases in which major declines (appreciations) of the real exchange rate have taken place successfully while the nominal rate E was fixed. But we have very few cases of successful major increases (depreciations) of the real exchange brought about by downward movements of the internal price level. These are the cases that are very hard to find.

¹This same number is also the real price of the real deutschmark, for we get E' (the nominal price of the nominal DM) by dividing E (pesos per dollar) by H , the number of marks per dollar, and we get π' , the index of the DM prices of tradable goods by multiplying π^* times H . So $\pi^*E/\pi_d = (\pi^*H)(E/H)/\pi_d = \pi'E'/\pi_d$. In the same way it can be shown that a country's real exchange rates with the pound, franc and yen are all exactly the same as those with the dollar and with the DM. In short, the real exchange rate is not a bilateral variable but a variable signifying a country's connection with the world market for tradable goods and services. In this paper we use the dollar as the currency of reference because of its relative importance, and because most quotations of countries' exchange rates refer to the local currency price of the dollar.

The reason is apparent from the case of Chile in 1981-82. Chile's 1975-81 boom really came to its peak on the second quarter of 1981, when the rate of unemployment (which had been coming down but was mostly in double digits from 1975 through 1980), finally reached 8% in June 1981. Then the debt crisis struck, and the rate of unemployment rose from 8 to over 28 percent in the lapse of barely a year. Chile was operating with a fixed exchange rate of 39 pesos to the dollar. But huge capital inflows had brought about a major fall in the RER, as the Chilean consumer price index (1985 = 100), had risen from 27 to 45 while the nominal rate remained fixed. This major appreciation of Chile's RER occurred under a fixed nominal rate, while its international reserves grew, while real GDP grew at around 8% per year, and while international reserves were reaching record levels. But only misery followed starting in late 1981, when a major RER adjustment in the opposite direction was called for.

The reason for this asymmetry is not hard to find -- it is the oft-noted and well-documented fact that wage and price levels tend to be much more rigid in a downward than in an upward direction. Sometimes one encounters economists and others who try to dispute this fact by pointing to cases of prices (like those of primary commodities) that fluctuate up and down symmetrically, and by finding instances in which workers in certain firms and industries have willingly accepted reductions in their nominal wages. Such evidence can be perfectly true, but it does not speak to the issue of real exchange rate adjustment via deflation. To deal with that issue one needs to find examples of important increases in the real exchange rate that were brought about mainly through a declining price level. But when Chile's debt crisis struck, the general price level did not fall. Instead, economic activity fell, and unemployment skyrocketed to over 28%. Chile's government adamantly defended the fixed exchange rate to the last moment, when it felt it had no alternative but to devalue the peso. What this means is that this Chilean

experience qualifies as a devaluation crisis, not as a case of successful deflation under a fixed exchange rate system. The same is true for the vast majority of other cases where a major upward adjustment of the RER was called for (by the market forces of supply and demand). Since devaluation came soon after the crisis struck, in all these cases, they do not allow us to see a full adjustment process with a fixed exchange rate.

The economics literature treats one famous case -- that of the British pound in the 1920s. Here the disequilibrium of the real exchange rate was created by the British authorities themselves when, after the end of the First World War, they imposed a huge appreciation of the nominal exchange rate (which had been allowed to float during the war). This is generally regarded as a huge policy mistake, as it set in motion a lengthy process of internal deflation, leading some economists to call the 1920s a "lost decade" for the British economy.

Argentina's situation in the 1990s was quite different from Britain's in the 1920s, in that one can not blame the Argentine authorities for a poor choice of the parity at which they fixed their exchange rate. But they carried with them a different burden -- the consequences of three near-hyperinflations within a span of less than 25 years. Argentina's inflation rate had hit 444% in 1976, 672% in 1985, and 3000% in 1989. By the end of the third such episode, the exchange rate was being used as the general "inflation signal" of the economy. Shopkeepers, barbers, plumbers, restaurants -- just about everybody was setting their prices in dollars, then translating them into australes at the latest exchange rate that was reported over the radio. It was this practice that produced the real exchange rate that prevailed at the point when the parity of one new peso per dollar was set. Had the parity been set at two new pesos per dollar, the initial price level would simply have been twice as high, with the initial RER being just the same.

This was the historical process by which Argentina came to have a fixed parity with the dollar, as a consequence of which her initial real exchange rate almost came as an “act of God”, being beyond the control of the authorities. This parity served the interests of Argentina pretty well as the economy grew at an average rate of nearly 9% per annum over the years 1991 (when the parity was set) through 1994. All hell broke loose, however, in the wake of the Mexican crisis of December, 1994. Within a single quarter after that crisis, Argentina lost a third of its gross international reserves and fully half of its net reserves. Only by imaginative emergency moves were the authorities able to prevent a total collapse of the money supply, and even so M2 fell by around 12% in a single quarter.

The Mexican crisis without a doubt changed the equilibrium real exchange rate of the Argentine economy, principally through its effect on capital flows. Thus what had up to 1994 been an RER that was reasonably close to equilibrium, now became an RER that was substantially below its new (1995 and after) equilibrium. Had Argentina been “any ordinary country”, the natural remedy would have been a substantial devaluation of the currency. But Argentina economists of all stripes argued against this solution because, they all felt, it would lead the Argentine public to essentially abandon the peso (the new unit as of the establishment of parity in 1991) and run completely to dollars and other foreign currencies.

So the Argentines have stuck with their parity, bearing it and its consequences as the curse of their inflationary history. But these consequences have been severe. Despite the strong deflationary pressures, the best the consumer price index could do is to hold steady for the five years 1995 through 1999. The producer price level was slightly more responsive to the deflationary pressures, reaching an index level of 95 in 1999 [with 1995 = 100]. But the failure to achieve equilibrium was super-evident in Argentina’s unemployment experience. Over the

whole period from 1995 onward, the unemployment rate has averaged about 15%, and has not fallen below 12.5%. Argentina has been unlucky in that Asian, Russian and Brazilian shocks have followed the Mexican one like the waves of the ocean. But there can be little doubt that Argentina would have been better off if it had been able (like its neighbor, Brazil) to use a nominal devaluation as a device to bring its real exchange rate into closer accord with its equilibrium level. Fixing the exchange rate in 1991 was not a mistake, and not a curse. The economy thrived for four years, just as the Chilean economy had thrived for two years under a fixed exchange rate before the debt crisis of 1981-82 struck. But in the presence of strong negative external shocks, a prompt and decisive devaluation (or freeing of the exchange rate) would under normal circumstances have been the natural solution for Argentina as of 1995. It would surely have made the necessary RER adjustment more palatable and less costly. Argentina's real curse is that her inflationary history has precluded her from using the policy instrument -- a freeing of the exchange rate or a sharp devaluation -- that would normally be most appropriate to resolve her recent and current disequilibrium.

More On Sterilized Intervention

Sterilized intervention is probably as old as central banking itself -- maybe even older, as it quite likely was also practiced by the "leading private banks" that were the precursors of today's central banks.

In a fully operative fixed exchange rate system, the Central Bank buys and sells foreign exchange at the specified rate. In this process, it naturally accumulates and decumulates international reserves. It seems at first sight that these holdings of reserves are beyond its influence, being simply the result of the simple acts of buying and selling at the fixed rate. But the truth is much more complicated. In a "pure" system, the pesos emitted by the Central Bank

would serve as a base for a general monetary expansion. This would put more money in the hands of the public, very likely in excess of what they really wanted to hold. The result would be that they would want to spend the excess, on goods, services and financial instruments. In these acts of spending they would cause imports to increase as they spent on importables, and exports to decrease as they spent on exportables. An outflow of international reserves would typically result, which would only come to an end when the amount of money in the system was once again in accord with what people were willing to hold, given the prevailing levels of prices and incomes.

Unless the underlying conditions of the economy changed in some important way, this process that started from a full equilibrium with an amount R_0 of international reserves, and then received a “shock” of ΔR to those reserves, would end up with reserves back at or near R_0 . The extra money ΔM that came into being on the basis of ΔR would represent “unwanted monetary balances” and would tend to be spent. The part spent on tradables would be reflected in a loss of reserves. This is the process by which the original equilibrium reserves level (R_0) would be restored.

Now suppose that a Central Bank wanted to keep some or all of the increment ΔR in its reserves. What would it do? Quite obviously, it would have to try to short-circuit the process just described -- by which people brought about a loss of reserves through their spending their undesired monetary balances. The natural and easy way to do this is to short-circuit the link by which the increment to reserves ΔR produces an induced increment (ΔM) in the money supply. This can be done by the Central Bank's operating on the other major asset of the banking system, namely domestic credit. So if domestic credit can be curtailed by enough so that the money supply is kept in consonance with what people want to hold, this will eliminate

the scenario through which the initial increment (ΔR) of reserves is reversed and ultimately erased.

This is where sterilized intervention enters the picture. Central Banks use various devices to prevent or at least control the increment of money (ΔM) that is generated in response to an increment of reserves ΔR . Increases in interest rates, changes in the fractions of reserves that banks must hold against deposits, open market operations in which the Central Bank absorbs base money by selling bonds or other assets, direct regulation of expansions of bank credit -- all these devices have been and are being employed by Central Banks. And important among the purposes for which they are used is sterilized intervention.

Sterilized intervention is not just a one-way street. The example above dealt with the Central Bank preventing an increment of reserves ΔR from having its full "natural" effect on the money supply. The same can happen in reverse -- preventing a loss of international reserves from leading to a proportionate or nearly-proportionate fall in the money supply. This is precisely what the Argentine authorities successfully did in early 1995 in their efforts to prevent a huge loss of international reserves from leading to a corresponding collapse of the nation's monetary magnitudes.

I cannot claim any intimate knowledge of the Russian case, but as I read that country's simple monetary statistics, I believe I see strong evidence of sterilized intervention. An easy example can be drawn from the recent gyrations of the world price of petroleum. As this price fell from nearly \$20 a barrel in 1997 to around \$10 in December 1998-February 1999 Russia's international reserves were allowed to fall from a peak of over \$20 billion in the second quarter of 1997 to a low of less than \$7 billion in March of 1999. But when the oil price turned around and started to rise to bonanza levels, Russia's Central Bank allowed reserves to rise dramatically,

so that by now they are again close to \$20 billion. These are two good examples of what appears to be sterilized intervention.

Table 3 shows some examples of sterilized intervention by other countries. These cases were built up from an ongoing study by S. Wong, which deals with recent episodes of very large capital inflows. In column (1) the dates of the capital inflow episode are shown. Column (2) then gives the cumulative capital inflow over this period, expressed as a percentage of a year's GDP. Thus Chile's capital inflow over the nine years 1989 through 1997 amounted to some 60% of a year's GDP, equivalent to about 6.7% of GDP per year.

The third column of Table 3 shows the accumulation of international reserves over the specified period. The fourth column simply gives the ratio of (3) to (2). Thus, in Chile's case, we see that 52% of the capital inflow ended up "reflected" in increased reserves. This did not happen by accident. We know, in the Chilean case, that those reserves were accumulated as a result of a conscious policy by the Central Bank of influencing the real exchange rate using the instrument of sterilized intervention. I certainly would not contend that all or even most of the other cases were the result of such a conscious policy. But there is little doubt concerning the fact of sterilized intervention in the other cases. And this would mean a corresponding effect on the real exchange rate, even if that were not the main purpose of the operation.

To see what actually happened to real exchange rates in these capital inflow episodes, we show in column (5) the ratio of ending RER/beginning RER. For this ratio we use as the beginning point the average RER of the year before the capital inflow started, and as the ending point the average RER of the year before it ended. (This guards against the possibility that the crisis which ended the capital inflow took place during a last year in which the net inflow was still positive, triggering a big increase in the RER which was really not the consequence of the

capital inflow, but instead of its abrupt termination at some point in its final year.) One can see in column (5) the natural effect of capital inflows in causing the real price of the dollar (the RER) to fall. This tendency was mitigated but not obliterated by the sterilized interventions that the table documents.

As a final note on sterilized intervention let me return to the “reflux” problem mentioned in the analysis of the Chilean case. The intensity of this problem depends very much on the degree of integration of a country with the world capital market, and with the way in which that market assesses its “country risk”. Recall that the reflux problem emerges when the country’s accumulations of international reserves are to some degree offset by “induced” private capital flows in the opposite direction. Such flows would be induced by the squeezing of domestic credit in the country, which typically would cause interest rates to rise. It is this rise in interest rates that then operates to attract the induced “reflux” of funds. The reflux problem obviously depends on the degree of capital market linkage and on the degree of confidence that international market participants place in the country. This linkage and confidence were quite low for Chile and Argentina in the middle 1970s, so reflux was not a problem. Linkage and confidence were considerably better in the 1990s so by then the issue of reflux became a problem. Luxembourg, with its virtually complete integration and full confidence, has to be a country for which the reflux problem would be huge, which would mean that sterilized intervention would have little effect. It seems quite clear that in the present circumstances, Russia is more like Chile and Argentina in the middle 1970s than it is like those countries, not to mention Luxembourg, today. So I do not see any serious impediment to the effectiveness of sterilized intervention in Russia. Indeed, I believe we have seen the successful use of this instrument in both directions, during the past three years.

The Importance of “Sources of Growth” Analysis

The idea of breaking down a country’s growth rate into a series of components due, respectively, to increase in labor input, increase in capital input, and a residual incorporating other influences has to be recognized as one of the 20th century’s great advances in economic thinking. At the time of its inception it helped to: a) play down the role of physical capital and b) play up the role of “technical advance” as elements in the growth process. Very soon thereafter the role of human capital was given new attention. Still later the multi-faceted nature of the residual term came to the fore. My own predilection is to explicitly label this term “real cost reductions”. This label does not change anything, but it helps remind us that this term does not just represent new inventions, or economies of scale, or externalities and spillovers but rather includes all of these things, plus improved personnel management, better office procedures, modernized inventory control, maybe even successful advertising campaigns, and many other paths to greater profits through greater efficiency.

This “disaggregated” view of the growth process does not fit very well in a framework structured around the concept of the aggregate production function. Rather, its natural point of focus is the firm, where every element of the process of growth must ultimately be reflected. This is true at least of the growth of GDP (which is what has traditionally been measured) since the GDP of a nation (or province or country) is nothing but the sum total of the GDP contributions of the entities located there. Focusing on the firm and even on breakdowns of growth by two- and three- and four-digit industries gives one a quite different appreciation of the nature of the growth process than one gets by thinking in terms of an aggregate production function. The more disaggregated one’s focus, the more Schumpeterian becomes one’s vision of the growth process. This is because the great under-appreciated fact of disaggregated growth

analysis is the pervasiveness of real cost increases side by side with real cost reductions. In just about every disaggregated data set that one turns to there are losers as well as winners -- and not just a few losers, but lots of them, often accounting for as much as a third or even half of initial value added.

Though some may gravitate toward attributing this to mere randomness, I feel this is like running away from the challenge posed by the phenomenon of widespread declines (side by side with increases) in total factor productivity (TFP). I believe, as Schumpeter did, that there is something about it which is not only systematic, but also quite of the essence of the growth process. On top of whatever simple randomness there is, we have the phenomenon of winners beating out losers, all over the economic landscape. The winners are those who find ways of producing the same products for less, or better products for the same money, or totally new products that attract consumer demand. The losers are those who suffer in this process, typically being driven back to production points where their average costs (which are the raw material that TFP analysis works with) are higher.

Policies that Promote (or Enable) Real Cost Reductions. Many different studies of the breakdown of growth into its components have come to the conclusion that high-growth situations tend to be characterized (among other things) by high rates of real cost reduction. These real cost reductions occur, in one sense or another, inside of business entities. So where does policy come into play? In some cases, like improving a highway network, it may directly “produce” reductions in real (in this case transport) costs. In others, like promoting research and development activities, it may involve operations that can actually “deliver” real cost reductions within the firm. But the overwhelming bulk of relevant policies work in neither of these ways.

Instead, they play an “enabling” role, making it easier for firms to encounter new ways of reducing real costs.

First and foremost among growth-enabling policies is the control of serious inflation. Much evidence shows that inflation inhibits economic growth. We earlier in this paper discussed three main ways in which this happens -- a) the blurring of relative prices that invariably accompanies high inflation makes it hard for firms to perceive opportunities for real cost reduction; b) some of the investible funds that are generated in inflationary economies tend to be diverted to safer havens (like foreign currency or foreign bank and securities accounts), and c) the higher its rate, the greater the fraction of real resources dedicated to finding ways of turning the inflation process to one’s private advantage (even though no overall gain to society is involved).

Surmounting inflation almost by definition entails pursuing more sensible fiscal and other macroeconomic policies, but it is worth while to list such policies as a separate point. A macro-framework that is economically sound, and that in addition is expected to continue to be so in the future, opens the door to investments and cost-reducing activities that would otherwise be shunned.

Linked to sound macro-policies, but not quite the same thing, is the reduction of economic distortions, most especially those put in place by the government itself. Taxes, tariffs, quotas, price controls, open and hidden subsidies -- these are some of the more important of such distortions. Closely related are the distortions imposed by arbitrary regulations, restrictions, licensing procedures and the like. Some distortions are the inevitable accompaniment of government, but in most real-world cases there is wide scope for reducing their cost to the economy. The idea is to move from an economic system that has lots of “prices that lie” toward

one in which there are fewer, and where the lies they tell are more like fibs and less like gross prevarications. This is important because, the greater the degree of distortion in the economy, the more cases there will be of actions that reduce real costs for the economic agents directly involved but that actually increase real costs from the standpoint of the economy as a whole. Ill-advised regulations not only work to keep real costs higher than they need to be; they also reduce the rate of growth by slowing the speed at which opportunities for real cost reduction are implemented.

Policies that Promote a More Open Economy. Without a doubt policies promoting freer trade in particular and a more open economy in general can be considered simply as a category under the general heading of policies that reduce economic distortions. But that would tend to underplay the critical role that openness appears to have played in just about every development success story of recent decades. People can argue about the nuances, but not only did exports and imports both grow dramatically in the great growth episodes of Japan, Taiwan, Korea, Spain, Portugal, Greece, Brazil, Chile and Argentina -- but they grew even in relation to the very notable growth of GDP.

Openness seems to do much more than just eliminate triangles of excess burden stemming from tariffs, quotas and similar distortions. It appears also to unleash, or at least to have the potential for unleashing a new dynamism in previously stagnant or sluggish economies. I know it is hard for many of us economists to accept that economic agents are not always working equally hard to reduce real costs, but the evidence strongly suggests that businesses with a market whose security for the firm is more-or-less guaranteed (by high protection in one form or other) are more likely to take the comfortable route of sticking with routines that proved successful in the past. Once such businesses are exposed to the rigors of world market

competition, they either adapt by reducing real costs or (usually gradually by a sequence of painful steps) fade out of the picture. Living with market competition for a period of time also tends to change the outlook of business firms, from a more-or-less static vision of finding a “cash cow” and milking it steadily over a long period to a more dynamic approach of making it part of their regular business routine to constantly look for newer and better products, processes and methods. In these ways, a country’s turning its economy toward greater openness has an effect not only on the level of its GDP (the comparative static effect) but also on its rate of growth (the dynamic effect of trade liberalization).

Some Special Features of the Russian Case. Russia’s history has bequeathed to it certain advantages and certain disadvantages with respect to the process of real cost reduction. The most obvious advantages are on the educational side, where it has a labor force that is far better prepared than those of the great bulk of countries with a comparable (or even greater) GDP per capita. This is an enormous plus, which is likely to become more and more important as other barriers to growth are overcome.

The list of disadvantages is pretty well-known. The legal framework has to be made more appropriate for a modern market economy. Economic activity must come to take place under “rules of the game” that are conducive to economic activity and that are appreciated by and enforced upon the whole range of market participants. Labor in particular must be able to move from place to place. I understand that the legal restrictions on such mobility have been lifted, but institutional restrictions (particularly the access of workers to housing in a new location) still have to be surmounted.

I would like to make special note of an inheritance from Russia’s past that was particularly called to my attention during our visit. That is the characteristic pattern (from the

Soviet era) of concentrating the production of a given item in a huge factory complex at a given place, often incorporating a vertical integration from very basic inputs all the way up to the finished final product. This organization of production tends to be highly bureaucratized, leaving little scope for cost-reducing initiatives. If one could only rewrite history.!! The search for real cost reduction would be far better served with many smaller factories, each seeking ways to reduce real cost, than with just one or two huge factories trying to do the same thing. One of the biggest challenges for stimulating economic growth in Russia is to figure out ways of generating imaginative cost-reducing ideas, of creating avenues of financing so that such ideas can be implemented, and of giving the resulting enterprises (be they old ones or new) a free competitive access to the internal and external marketplaces. This task is much harder, starting from a system built mainly of huge, integrated complexes. But that only makes it more of a challenge. In my view, the speed of Russia's progress out of its present depressed economic condition will depend greatly on how successful is the response to this challenge.

TABLE 1

Acute Inflation Episodes

Growth	Annual Rate of Inflation		Annual Rate of					
	Average Rates of Inflation		of Real GDP					
Declining Inflation Period	Period	Rising	Peak	Declining	Rising			
		Inflation	Rate	Inflation	Inflation			
		Period	Period	Period	Period			
1	Mexico	1979-1987-1994	63.83	131.8	30.82	2.92	<	3.54
2	Argentina	1975-1876-1981	313.45	444.0	152.95	-0.49	<	1.20
3	Argentina	1982-1985-1987	382.39	670.1	110.71	-0.98	<	4.87
4	Argentina	1988-1989-1998	1711.20	3079.8	281.14	-4.41	<	5.07
5	Indonesia	1962-1966-1972	365.86	1136.3	45.60	1.22	<	7.26
6	Peru	1987-1990-1998	2908.30	7481.7	83.80	-3.93	<	5.39
7	Nicaragua	1985-1988-1996	4045.59	10205.?	503.07	-4.00	<	1.73
8	Israel	1978-1984-1998	145.22	873.8	36.88	2.64	<	4.53
9	Ghana	1976-1977-1980	86.27	116.5	59.20	-0.60	<	1.72
10	Ghana	1981-1983-1994	87.22	122.9	26.01	-2.73	<	4.52
11	Chile	1972-1974-1982	328.96	504.7	63.14	-4.80	<	3.90
12	Turkey	1977-1980-1983	60.31	110.2	32.94	0.42	<	4.47
13	Uganda	1984-1987-1991	151.50	200.0	40.88	3.13	<	6.17
14	Venezuela	1993-1996-1998	64.68	99.9	42.91	0.43	<	2.62
15	Costa Rica	1980-1982-1987	48.44	90.1	17.66	-2.91	<	4.37
16	Brazil	1978-1985-1986	116.20	226.9	147.14	3.55	<	7.00
21	Brazil	1987-1990-1991	11308.98	2937.8	432.78	2.05	>	0.86
22	Brazil	1992-1994-1995	1651.84	2668.5	22.97	3.35	>	2.68
23	Bolivia	1980-1985-1998	2251.58	11749.6	32.62	-1.50	<	3.49
24	Uruguay	1972-1973-1978	83.95	47.0	51.13	1.95	<	3.47
25	Zambia	1989-1993-1997	136.15	188.1	39.72	0.70	<	1.06

TABLE 2a

Acute Inflation Countries*

(15 of 16 correlations are negative)

Statistical Significance	Maximum Sample Inflation Period <u>In Sample</u>	Annual Rate of Growth of Real GDP		Annual Rate Of Inflation		Coeff. of <u>Correlation</u>			
		<u>Average</u>	<u>Std. Dev.</u>	<u>Average</u>	<u>Std. Dev.</u>				
<u>10%</u>	<u>5%</u>								
1	Nicaragua	1973-1996	0.21	7.85	1148.22	2648.34	-0.30	*	
2	Bolivia	1961-1998	3.55	3.08	372.22	1907.38	-0.33	*	*
3	Brazil	1964-1998	5.40	5.21	350.87	689.87	-0.22	*	
4	Peru	1951-1998	3.79	5.16	227.53	1171.85	-0.41	*	*
5	Argentina	1952-1998	2.57	6.36	212.50	556.59	-0.31	*	*
6	Uganda	1981-1996	5.60	3.61	71.64	69.50	-0.17		
7	Indonesia	1959-1997	5.68	3.10	64.37	185.78	-0.30		
8	Chile	1961-1998	4.25	5.65	60.86	111.84	-0.49	*	*
9	Uruguay	1956-1998	2.00	3.82	51.89	29.58	0.11		
10	Turkey	1967-1998	5.37	5.73	45.89	30.97	-0.42	*	*
11	Mexico	1976-1997	3.31	4.00	42.84	35.84	-0.53	*	*
12	Israel	1956-1996	6.14	4.16	41.90	76.15	-0.38	*	*
13	Ghana	1965-1997	2.62	5.03	35.42	32.63	-0.15		
14	Zambia	1962-1997	2.39	6.13	34.78	46.25	-0.12		
15	Venezuela	1958-1998	3.64	4.05	18.76	23.75	-0.40	*	*
16	Costa Rica	1971-1998	4.08	3.55	18.66	16.50	-0.79	*	*

*Countries in this sample had at least one year of 90% inflation or more; each sample period has been chosen as to not include a long period during which the exchange rate was fixed, if any existed.

TABLE 2b

Intermediate Group (Devaluation Episodes)*

(11 of 15 correlations are negative)

Statistical Significance	Maximum Inflation Period In Sample	Annual Rate of Growth of Real GDP		Annual Rate Of Inflation		Coeff. of Correlation			
		Average	Std. Dev.	Average	Std. Dev.				
		<u>10%</u>	<u>5%</u>						
1	Nicaragua	1974-1998	2.79	5.59	25.94	19.76	-0.07		
2	Ecuador	1966-1998	5.57	6.14	23.52	18.79	-0.31		
3	Dominican	1985-1997	3.78	4.31	22.51	19.19	-0.75	*	*
4	Colombia	1969-1996	4.55	1.91	21.84	6.35	-0.50	*	*
5	Paraguay	1984-1997	3.34	1.71	21.05	8.29	0.05		
6	Jamaica	1961-1997	1.88	4.01	16.86	15.43	-0.37	*	*
7	Malawi	1969-1997	4.36	5.56	16.81	15.76	-0.09		
8	Egypt	1983-1998	5.61	2.44	14.36	5.90	0.06		
9	Madagascar	1965-1997	1.33	3.61	13.18	11.46	-0.21		
10	Korea	1955-1997	7.69	3.74	12.41	11.76	-0.23		
11	Syria	1961-1997	6.37	8.59	11.29	12.02	-0.17		
12	Philippines	1960-1998	3.94	3.38	11.09	9.31	-0.51	*	*
13	Bangladesh	1974-1997	4.73	2.75	10.57	10.64	0.38		
14	Pakistan	1972-1998	5.30	2.16	10.12	5.53	0.00		
15	India	1966-1997	4.84	3.25	8.49	5.84	-0.04		

*These countries have at least a 20% inflation rate in any year plus at least one devaluation crisis; the maximum annual inflation rate for each is less than 90%.

TABLE 2c

Stable Exchange Rate Cases -- Low Inflation Episodes

(10 of 18 correlations are negative)

Statistical Coeff. of <u>Correlation</u>	Significance <u>10%</u> <u>5%</u>	Sample <u>Period</u>	Annual Rate of Growth of Real GDP		Annual Rate Of Inflation		
			<u>Average</u>	<u>Std. Dev.</u>	<u>Average</u>	<u>Std. Dev.</u>	
			1	Morocco	1985-1998	3.64	
2	Jordan	1990-1998	5.24	5.16	5.89	4.60	-0.46
3	Singapore	1961-1997	8.53	3.82	3.17	4.81	0.07
4	Thailand	1954-1996	7.20	3.13	4.98	5.25	-0.10
5	Malaysia	1971-1997	7.51	3.02	4.45	3.49	0.25
6	Panama	1951-1998	5.24	4.77	2.44	3.49	0.07
7	Papua New Guinea	1075-1993	2.88	5.24	6.36	2.24	-0.33
8	Kuwait	1973-1995	1.36	14.47	5.10	3.66	-0.53
9	Syria	1988-1998	5.47	6.35	13.25	8.78	0.43
10	Syria	1961-1987	6.70	9.37	10.56	13.09	-0.26
11	Ethiopia	1997-1991	1.75	5.95	8.92	10.65	-0.67
12	Paraguay	1959-1983	5.52	3.91	8.75	8.09	0.49
13	El Salvador	1952-1985	3.50	4.27	5.99	7.14	-0.49
14	Haiti	1967-1990	2.03	3.34	7.74	7.74	0.25
15	Honduras	1951-1989	3.89	3.56	4.65	4.44	-0.16
16	Dominican Rep.	1963-1984	5.61	5.28	7.32	6.07	0.16
17	Guatemala	1952-1985	4.21	3.02	4.36	5.85	-0.07
18	Mexico	1957-1975	6.70	1.918	5.97	5.83	-0.11

*Sample periods correspond to years in which the country in question had a fixed exchange rate, or during which its exchange appreciated or depreciated very moderately, at a maximum average rate of 1.5% depreciation or appreciation per year.

TABLE 3

Sterilized Intervention in Periods of Capital Inflow

Country Ending/Before	Period	Capital Inflow Over Period	Accumulation of Reserves Over Period	Rate (3)/(2)	RER*
	(1)	(2)	(3)	(4)	(5)
Argentina	1977-81	7.19	6.86	.95	57/149
Chile	1989-97	60.24	31.29	.52	73/111
Peru	1991-97	39.22	19.31	.49	74/100
Uruguay	1990-97	43.85	12.85	.29	54/107
Bolivia	1990-97	43.85	12.85	.29	90/95
Brazil	1992-97	15.97	19.55	1.22	94/112
Korea	1990-96	16.52	4.75	.29	93/98
Malaysia	1989-97	75.37	29.27	.39	80/96
Indonesia	1990-96	26.73	8.15	.31	92/99
Singapore	1972-87	232.27	129.77	.56	102/108
Thailand	1990-96	71.18	22.81	.32	89/101

*In column (5) we attempt to show what happened to the real exchange rate over the period of capital inflow. It makes sense to use the RER the year before the start of the inflow period as the base. Similarly, because the "crisis" that ended the inflow sometimes occurs in the last year of the inflow, we take the penultimate year of inflow as our ending period.