

EXPERIENCES WITH EXTREME MONETARY INSTABILITY

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ABSTRACT

Experiences with Extreme Monetary Instability*

In early 1990, Argentina, Brazil, Peru, Yugoslavia and Poland were experiencing extreme instability or, at least, the early stages of stabilization. Other countries, like Bolivia, had already run the course and stabilized or, like Mexico, had avoided the extreme experience and opted for stabilization early and decisively. The lessons from these case studies, and from the earlier experiences of the 1920s and 1940s, have still to be drawn. Exactly the same themes come up each time. The paper investigates the dynamics of high inflation and the essential steps in stabilization.

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NON-TECHNICAL SUMMARY

In early 1990, Argentina, Brazil, Peru, Yugoslavia and Poland were experiencing extreme instability or, at least, the early stages of stabilization. Other countries, like Bolivia, had already run the course and stabilized or, like Mexico, had avoided the extreme experience and opted for stabilization early and decisively. The lessons from these case studies, and from the earlier experiences of the 1920s and 1940s, have still to be drawn. It is apparent that exactly the same themes come up each time.

How does a country fall into hyperinflation, what is necessary to cure the disease, and how can normal growth be restored? Will Eastern Europe and the Soviet Union soon resemble Latin America, with some success stories, a few countries on the verge of high or extreme inflation and some going all the way? The recent experience of Poland and Yugoslavia, and the extraordinary problems for everybody else, suggest that discussion of high inflation is timely.

Policy-makers in financially vulnerable countries should know whether extreme inflation is a rare tropical disease, hard to catch and hard to cure, or whether it could happen to anyone, almost by accident. Should the brink of hyperinflation make policy-makers opt for a posture of zero inflation at any price? Or is there room in between, with cost-benefit analysis and with the lessons from a rich inflation experience across time and space?

We take the latter view: hyperinflation is not around the corner always and anytime there is a budget deficit. But we also insist that inflation can easily be an unstable process, and that it is essential to understand exactly where this instability resides. Brazilian policy-makers are living monuments to the frivolous naïvete of arguing, "you do not understand: our country is different, inflation is stable, there is a plateau", and they have argued it even as inflation rose from 100% to 500% to 5000%.

The complacency comes at a disastrous price: society falls apart as the middle class disappears and society is divided between those that know how to get ahead with inflation and those that fall behind. Pauperization of the middle class – the very poor were always poor and it is not even clear that they get much poorer – rapidly corrodes social institutions. The tax system becomes undermined by corruption and fraud, and so do all social relations. The middle class revolts against the State, and the poor revolt against property.

A second lesson to be drawn from the experience of the past concerns the interaction of politics and economics. Political change towards a more participatory democracy has not traditionally been the vehicle for stability. Political change that carries with it the expectation of an improvement of

opportunities and living standards, just as in the 1920s, has created a situation where the money printing press is overworked. Europe in the 1920s had that experience, so did the Soviet Union in 1919-21, Allende in Chile or Solidarity in Poland. It is common to hear that financial disorder is the reflection of a weak government. Of course, if the government were strong and governance were easy, financial instability would be prevented in the first place. But the excuse is carried to an expensive extreme and the phrase "politically impossible" is used too easily. When destructive inflation has gone all the way, ultimately, all the politically impossible things will be accomplished and more! More, because the destruction that will have taken place calls for extra stern measures to rebuild confidence and stability. Because democratic institutions do not facilitate hard choices, history shows that democratic countries have almost invariably adopted special procedures to adopt and implement the hard measures necessary for stabilization. The arrangements differ from national unity governments (Israel in 1985) to restricted special powers for the executive (Poincaré in France in 1926) or special Parliamentary Committees charged to interact expeditiously with the Executive (Germany in 1923). In the end, the 'politically impossible' is realized because the destruction brought about by uncontrolled inflation is so devastating that it forces cooperation.

A third area of findings concerns the question of what targets to set for stabilization. Financial terrorists in high-inflation countries are rendering a disservice when they argue that zero-inflation must be achieved *at any cost*; the rhetoric is appropriate, but applying it in fact fosters unacceptable social chaos. Once again, a clear line must be drawn between policies that accept a moderate inflation because there is a steeply rising cost of disinflation and policies that do not set a limit on inflation, or policies that merely repress it for a while, and thus do not erect a dam of confidence and stability. Policy-makers need to have a good grasp of the role of orthodoxy, meaning quite unambiguously control of the budget, and incomes policy as ingredients in stabilization. Without fiscal austerity stabilization cannot last, without incomes policy it cannot start.

A fourth set of issues regards the transition from stabilization to growth. Can we be sure that, following stabilization, growth resumes readily on the wings of a gain in confidence? Or is there a risk of protracted stagnation? If the risk of stagnation is present, what kind of policies at home and abroad can help improve the odds? This is where structural reform must come in and play a role, but so should foreign support that reassures investors and thus tilts the economy from idling to growth.

In early 1990, Argentina, Brazil, Peru, Yugoslavia and Poland were in the midst of extreme instability or, at least in the early stages of stabilization. Other countries had already run the course and stabilized, as did Bolivia, or had avoided the extreme experience and opted for stabilization early and decidedly, as Mexico did. The lessons from these case studies, and from the earlier ones in the 1920s and 1940s, still have to be drawn. It is apparent that exactly the same themes come up each time.

Three issues stand out: How does a country fall into hyperinflation, what is necessary to cure the disease, and how to return to normal growth? Will Eastern Europe and the Soviet Union soon resemble Latin America, with some success stories a few countries on the verge of high or extreme inflation and some going all the way? Table 1 shows inflation rates for several European countries in the range from moderate to acute and extreme inflation. The experience of Poland and Yugoslavia, and the extraordinary problems for everybody else, suggest that discussion of high inflation is timely.

Table 1 Recent European Experience with High Inflation
(Percent per year)

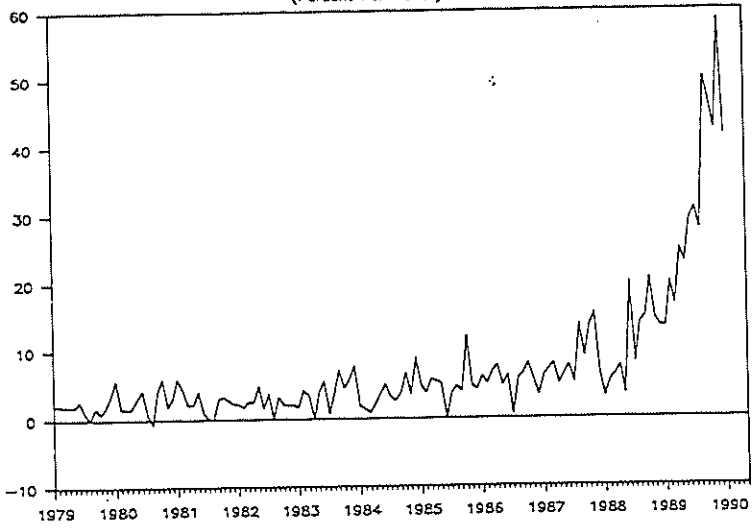
	Hungary	Turkey	Poland	Yugoslavia
1986	5.2	34.6	17.7	89.8
1987	8.7	38.8	25.2	120.8
1988	15.6	75.4	60.0	194.1
Last 12 months	16.8	182.7	67.7	758.0
Last 3 month ^a	9.4	67.7	6808.4	1926.9

^a3rd quarter of 1989

Source: IMF

YUGOSLAVIA: INFLATION

(Percent Per Month)



Policy makers in financially vulnerable countries should know whether extreme inflation is a rare tropical disease, hard to catch and hard to cure, or whether it could happen to anyone, almost by accident. Should the brink of hyperinflation make policy makers opt for a zero-inflation at any price posture? Or is there room in between, with cost-benefit analysis and with the lessons from a rich inflation experience across time and space?

We take the latter view: hyperinflation is not around the corner always and anytime there is a budget deficit. But we also insist urgently that inflation can easily be an unstable process and that it is essential to understand exactly where this instability resides. Brazilian policy makers are living monuments to the frivolous naivete of arguing "you do not understand: our country is different, inflation is stable, there is a plateau" and they have argued it even as inflation rose from 100 percent to 500 percent to 5000 percent.

The complacency comes at a disastrous price: society falls apart as the middle class disappears and society is divided between those who know how to get ahead with inflation and those that fall behind.¹ Pauperization of the middle class -- the very poor were always poor and it is not even clear that they get much poorer-- rapidly corrodes social institutions. The tax system becomes undermined by corruption and fraud and so do all social relations. The middle class revolts against the State and the poor revolt against property. The New York Times reports (February 11th, 1990) from Brazil:

¹See the dramatic descriptions in Guttman and Meehan (1976) and Fergusson (1975) for the German experience.

"..about 800 impoverished Brazilians broke into Rio's largest wholesale fruit and vegetable market [..which] briefly became a tableau of Brazil's sharpening economic chaos. Security guards stood by, arms folded, because they are striking for inflation-adjusted salaries. A platoon of military police arrived, firing guns in the air. Newspapers reported Friday that several of them started stealing food from the looters.

A second lesson to be drawn from the experience of the past concerns the interaction of politics and economics. Political change toward a more participatory democracy has not been traditionally the vehicle for stability. Political change that carries with it the expectation of an improvement of opportunities and living standards, just as in the 1920s, has created a situation where the printing press is overworked. Europe in the 1920s had that experience, so did the Soviet Union in 1919-1921. Allende in Chile or Solidarity in Poland. It is common to hear that financial disorder is the reflection of a weak government. Of course, if the government were strong and governance were easy, financial instability would be prevented in the first place. But the excuse is carried to an expensive extreme and the phrase "politically impossible.." is used too easily. When destructive inflation has gone all the way, ultimately, all the politically impossible things will be accomplished and more! More, because the destruction that will have taken place calls for extra stern measures to rebuild confidence and stability. Because democratic institutions do not facilitate hard choices, history shows that democratic countries have almost invariably adopted special procedures to adopt and implement the hard measures necessary for stabilization. The arrangements differ from national unity governments (Israel in 1985) to restricted special powers for the executive (Poincare in France in 1926) or

special Parliamentary Committees charged to interact expeditiously with the Executive (Germany in 1923). In the end, the politically impossible does get done because the destruction brought about by uncontrolled inflation is so devastating that it forces cooperation.

A third area of findings concerns the question of what targets to set for stabilization. Financial terrorists in high inflation countries are rendering a disservice when they argue that zero-inflation must be achieved at any cost; the rhetoric is appropriate, but applying it in fact fosters unacceptable social chaos. Once again, a clear line must be drawn between policies that accept a moderate inflation because there is a steeply rising cost of disinflation and policies that do not set a limit on inflation, or policies that merely repress it for a while, and thus do not erect a dam of confidence and stability. Policy makers need to have a good grasp of what is the role of orthodoxy, meaning quite unambiguously control of the budget, and incomes policy as ingredients in stabilization. Without fiscal austerity stabilization cannot last, without incomes policy it cannot start.

A fourth set of issues regards the transition from stabilization to growth. Can we be sure that, following stabilization, growth resumes readily on the wings of a gain in confidence. Or, in the contrary, is there a risk of protracted stagnation. And if the risk of stagnation is present, what kind of policies at home and broad can help improve the odds. This is where structural reform must come in and play a role, but so should foreign support that reassures investors and thus tilts the economy from idling to growth.

We now review varieties of inflationary experience and proceed from there to a discussion of the inflation process, stabilization and the difficult transition toward growth.

1. VARIETIES OF INFLATIONARY EXPERIENCE

Hyperinflation remains an extreme experience. The generally accepted operational definition proposed by Cagan (1956) sets the benchmark at an inflation rate of 50 percent per month (12,875 percent at an annual rate):

"The term hyperinflation must be properly defined. I define hyperinflation as beginning in the month the rise in process exceeds 50 percent and as ending in the month before the monthly rise in prices drops below that amount and stays below for at least a year. The definition does not rule out a rise in prices at a rate below 50 percent per month for the intervening months, and many of these months have rates below that figure."

With these definitions in mind, Table 2 shows inflation averages and the distribution of countries. Mega and Hyperinflation are extremely rare as is, indeed, the occurrence of inflation rates above 100 percent. High inflation is a problem of the developing countries of Europe and Latin America, it is not endemic to Africa, Asia or to industrial countries.

Table 2 Inflation Around the World
(Percent per year)

	Ind.Countries	Dev.Countries				
		Africa	Asia	Europe	M.East	W.Hemisphere
1970	5.6	5.4	6.5	n.a.	3.0	12.4
1979	9.2	15.4	7.5	20.9	10.2	50.2
1988-89	4.7	23.3	11.8	126	n.a.	208
Number of Countries With 12-Month Inflation Rates of:						
	<5	5-10	10-20	20-100	100-300	300+
1979	17	34	47	18	2	0
1988-89	30	27	19	19	4	4

Source: IMF

Megainflation: Until recently the number of cases of hyperinflation in modern history could be counted on the fingers of both hands. But now with three fresh cases emerging in Latin America and possibly in Eastern Europe the phenomenon becomes a little bit more pervasive. But the distinction between hyperinflation and cases of lower and yet extreme inflation is somewhat arbitrary; when Brazil's finance minister Mailson de Nobrega announced in December 1989 that his country did not have hyperinflation, he was right by Cagan's definition. Yet the situation of the country was basically one of devastating and accelerating inflation, not far away from the abyss. It is useful therefore to add to the terminology the class of countries suffering megainflation -- somewhat arbitrarily, inflation rates averaging more than 15 percent per month (435 per year) for several months. The definition draws a distinction between a single inflation blip that may be very substantial and an ongoing experience of very high inflation blip. Countries experiencing megainflation are on the straight course toward hyperinflation, and there is no automatic mechanism to draw them away from the undertow. Nor can gradualism be an answer to their problem. Their problems are basically those of hyperinflation countries and, without stabilization, it is only a matter of time before they share the full experience.

The 1920s: Prior to the 1920s, in modern history, major currency instability was exceptionally rare. The recorded cases involve the assignats in revolutionary France, the Continental Currency of the US revolution, the

Confederate currency during the U.S. Civil War and isolated experiments with paper currency in Russia and in Austria, in Argentina, Brazil and Peru. Until fiduciary money became the rule, the scope for inflationary finance was severely limited.

World War I is the watershed for financial orthodoxy and stability of prices. In the U.S., remaining on the gold standard, prices doubled during the war. Countries that experienced more inflation, or a deteriorating external balance position, were forced off gold. In the 1920s, one by one, they made their return to fixed dollar rates or gold. Table 3 shows the facts for European countries.

Table 3 Currency Stabilization in the 1920s

Country	Initial Stabilization	Level Relative to Prewar Par
Sweden	1922	1
UK	1925	1
Netherlands	1924	1
Denmark	1926	1
Norway	1928	1
Albania	1922	+
Lithuania	1922	+
Italy	1927	1/4
France	1926	1/5
Belgium	1926	1/6
Czechoslovakia	1923	1/7
Finland	1923	1/8
Yugoslavia	1925	1/11
Greece	1928	1/15
Portugal	1929	1/22
Bulgaria	1924	1/27
Roumania	1927	1/33
Estonia	1924	1/90
Latvia	1922	1/125
Austria	1923	*
Hungary	1924	*
Poland	1927	*
Germany	1923	*
Russia	1922	*

Note: + first own currency.

* new currency after hyperinflation. Cagan (1958) reports the extent of hyperinflation as measured by the ratio of prices at stabilization to those at the outset as follows: Austria 69.9, Germany 1.02×10^{10} , Hungary 44, Russia 1.24×10^3 .

The experience hyperinflation as it occurred in Germany and Austria, Poland, Hungary and Russia was unprecedented in history. Much further work needs to be done to understand why Romania, for example, managed to avoid hyperinflation, or France, while Austria or Germany did not.

The more recent hyperinflation experiences in the 1940s.

Table 4 Hyper and Megainflation in the 1940s and 1980s

Country	Stabilization	Cumulative Inflation
Hungary	1946	399.6×10^{27}
Greece	1948	0.21×10^{12}
China	1948	151.7×10^{12}
Taiwan	1950	
Bolivia	1985	1.4×10^4

Source: Chou (1956), Makinen and Woodward (1989) and IFS

Table 5 concludes with high and megainflation experiments of the 1980s some of which are still in progress. Unlike the inflation experiences associated with war dislocation or civil war, these have their roots in domestic mismanagement and, to some extent, in external shocks.

Table 5 Recent High Inflation Experiences
(Annual and quarterly averages of monthly inflation rates)

	Argentina	Bolivia	Brazil	Mexico	Peru	Israel
1980	6.0	3.3	5.0	2.0	4.0	7.2
1981	6.2	2.2	6.2	2.0	4.7	6.6
1982	8.5	7.4	6.0	3.9	4.7	6.8
1983	13.2	11.5	7.6	6.0	6.4	7.8
1984	18.0	24.4	9.5	4.3	6.4	13.8
1985:1	24.1	92.4	12.0	5.1	10.5	10.3
1986:1	3.1	13.7	10.1	6.0	4.9	0.6
1987:1	7.4	1.6	14.1	7.3	5.8	1.5
1988:1	11.0	0.4	18.0	9.5	15.4	1.4
1989:1	8.7	0.6	18.8	1.3	44.0	2.9
1989:2	105.0	0.5	14.6	1.3	33.0	1.3
1989:3	64.1	0.5	37.7	1.0	25.4	1.2
1989:4	16.3		43.8			

Source: IMF

II. THE SOURCES AND DYNAMICS OF HIGH INFLATION²

This part investigates the economics of high and explosive inflation. We develop a model of the main determinants of the inflation process and make the point that explosive inflation arises from the disintegration or melting of several institutions. The framework proposed here highlights the roles of budget finance, tax and financial institutions, and contracts in creating a high inflation scenario. The analysis not only identifies the determinants of inflation but has as its principal objective to explain the mechanics of the very sharp acceleration that has been witnessed on several occasions.

1. Deficit Finance

There is considerable controversy in high inflation countries about the exact or even the approximate size of budget deficits. Reliable public data, covering an extended period of time in a comparable fashion, are simply unavailable. Various series differ in their coverage of the public sector, in the distinction between budget and cash bases, and in the inclusion of certain expenditure items, especially with respect to the quasi-fiscal deficit of the Central Bank.

The most common view, certainly held by a group far wider than the monetarists, also asserts that high inflation is the result of budget

²On the material of this section, in the context of Argentina, see Dornbusch and de Pablo (1988).

deficits. If the government spends more than it receives in tax collection the remainder is financed by creating money. That means more money, too much money, chasing too few goods with the predictable outcome of inflation.

This view, while basically correct, needs considerable refinement to be entirely correct. Three directions of correction are essential. First, there is some room for noninflationary deficit finance. Second, deficits can also be financed by debt. Third, there is also a channel of causation that runs from inflation to deficits, as well as the other way around. This section elaborates a model of these important qualifications.

The deficit can be financed in one of three ways, with highpowered money, with domestic debt or with foreign debt:

$$\dot{M}/P + \dot{B}/P + \dot{B}^*e/P - gY \quad (1)$$

where

g	is the deficit ratio
Y	is real GDP
M	is the domestic base money
B, B^*	are domestic and foreign debt
e	is the exchange rate (Austral/\$)

and where a dot over a variable denotes the rate of change.

It is immediately clear that deficits can be financed by borrowing from abroad or at home, entirely avoiding an increase in the money stock, at least for the time being. But we focus on the situation in which the entire deficit is financed by money. We are interested in how much inflation is generated by such a system.

Inflationary Finance: Financing deficits by money creation means that any money that is not demanded at the current level of prices must be forced on the public by inflation. In a growing economy some extra real balances are demanded in order to finance the growing level of transactions. But beyond that, the demand for nominal money expands only to the extent that inflation erodes the purchasing power of existing real balances. To restore their real balances (at least partially) the public has to add to nominal money holdings. Thus inflationary finance automatically creates a demand for the money issue which finances the deficit.

Keynes (1923), in his splendid description of the inflation tax noted the scope for inflationary finance even in a country with the poorest economic and political conditions:

"A government can live for a long time, even the German government or the Russian government, by printing paper money. That is to say, it can by this means secure the command over real resources, resources just as real as those obtained by taxation. The method is condemned, but its efficacy, up to a point, must be admitted.

..so long as the public use money at all, the government can continue to raise resources by inflation. ..a government can get resources by a continuous practice of inflation, even when this is foreseen by the public generally, unless the sums they seek to raise in this way are very grossly excessive.

...What is raised by printing notes is just as much taken from the public as is a beer duty or an income tax. What a government spends the public pays for. There is no such thing as an uncovered deficit."

But, as Keynes has noted, major inflation reduces the amount of money people choose to hold, because they will substitute toward assets

that are more inflation proof. Thus, just as high taxation erodes the tax base, high inflation leads to a reduction in real balances and hence to an increase in the rate of inflation necessary to finance a given deficit. Moreover, there may be a maximum amount of resources the government can extract.

In the appendix we derive the relation between the budget deficit and the rate of inflation that results from financing that deficit by money creation. Equation (2) (which is derived in the appendix) shows this long run relation between deficits and inflation:

$$\pi = (\alpha g - y) / (1 - \beta g); \quad 1 > \beta g \quad (2)$$

where π and y are the rate of inflation and the growth rate of real GDP. The term α represents the noninflationary level of velocity and β is the responsiveness of velocity to the rate of inflation. This equation shows that because the deficit is financed by money creation there is inflation. But it also shows that the inflationary impact of a given deficit can differ widely, depending on the financial structure and the growth rate of output.

The key points of this relation are the following:

- The inflation rate is lower the higher the growth rate of output. The reason is that when output grows strongly, so does real money demand. Accordingly there is room for some extra money to be issued without introducing the risk of inflation.

- Inflation is higher the larger is the budget deficit. Moreover this relation is very nonlinear. As the government tries to finance a larger deficit the required rate of inflation increases steeply. Depending on the particular form of the money demand equation there may even be a maximum deficit that can be financed by money. Going beyond that range implies hyperinflation.

- The inflation rate depends also on the parameters of the velocity equation, α and β . The higher is the level of noninflationary velocity (i.e. because of dollarization as we argue below), the higher the rate of inflation associated with any given deficit. The parameter β , which captures the reaction of velocity to inflation, plays the same role. A high degree of responsiveness implies a larger rate of inflation.

The increase in inflation brought about by a one percentage point increase in the deficit is higher, the higher are inflation and the budget deficit from which one starts. Inflationary finance thus exerts a very powerful impact on inflation if it is used in large doses or in an environment where a high level of velocity, and strong responsiveness of velocity to inflation, leaves little scope for an inflation tax. Likewise, dollarization or a drop in growth bring about large increases in the inflation rate, more so the higher the initial extent of deficit finance.

The Olivera-Tanzi Effect: One of the striking effects of inflation is the erosion of the real value of taxation. The point is quite obvious: if there is any delay between accrual and payment of taxes, the inflation in

the interim will mean that the real value of what is paid is lower the higher the rate of inflation. With moderate inflation it makes no difference that 1987 taxes are paid in 1988. But when inflation is high this effect wreaks havoc with the real value of tax collection.

Keynes, commenting on the impact of inflation on the budget noted this point as did Bresciani-Turroni (1937) and Graham (1928). Olivera (1967) and Tanzi (1977, 1978) have recognized this effect in the specific context of Latin American inflation. The empirical importance of this effect is large whenever inflation is high and tax collection lags are long and when there is no provision for tax indexation.

External Shocks and Inflation: Consider now the working of this model. Suppose, as is the case in Argentina, that the public sector has a large external debt an external debt shock occurs. Specifically, assume that prior to the disturbance any existing external debt was rolled over with interest fully capitalized through automatic "new money". Suppose there is no domestic debt and let b^* be the external debt service which is financed by money creation.

$$g = \sigma(\pi) + b^* \quad (3)$$

It is immediately apparent that reduced access to automatic capitalization of interest payments implies that external debt service leads to increased deficit finance by money creation. Now the country has

to earn the resources for external finance, or else finance the purchase of foreign exchange by money creation. First, the government will issue more money to finance the purchase of foreign exchange for interest payments (assuming, of course, that there are no expenditure cuts or tax increases). Second, there will typically be a real depreciation in order to improve the external balance.

The increase in inflation resulting from an external financing disruption is larger, the larger is the debt service shock and the real depreciation, but it also depends on the responsiveness of velocity to inflation and on the degree to which increased inflation erodes real tax collection. The important point to recognize is that each of these factors will increase the inflationary impact of the debt shock significantly.

In high inflation episodes there is invariably a discussion between two schools of thought: the "balance of payments school" will argue that external balance problems and the resulting depreciation of the exchange rate are the primary cause of the deficit. In the German hyperinflation, for example, the "balance of payments school" considered reparation payments as the reason for exchange depreciation and the resulting high inflation. By contrast, the "quantity theory school" will point to budget deficits and their financing by money creation as the reason for inflation.

The distinction between the two schools is much less clear cut than the labels suggest. In fact, money is endogenous and an external shock is a very plausible source of an inflationary spiral. Passive money

is the essential ingredient in reconciling the quantity school and the balance of payments doctrine. Not surprisingly, suspension of reparation payments in Germany, and of debt service in Bolivia in 1985 were essential steps in the stabilization of inflation. In Argentina, involuntary external debt service, after 1982, became an important source of inflation in exactly the manner the balance of payments school emphasizes. Terms of trade deterioration further aggravated the external debt shock by forcing real depreciation and hence an increase in the real value (in terms of GDP or the tax base) of the existing external debt service.

Endogenous Financial Innovation and Liberalization: When an inflationary process develops we often observe an endogenous financial adaptation. Traditional depository institutions are typically controlled as to the interest they can pay. There may be an outright limitation on interest rates, or else institutions may be required to hold reserves or government debt at controlled rates. These restrictions make institutions unable to compete in financial markets where nominal interest rates more nearly reflect the ongoing inflation. New, unregulated financial institutions that offer depositors higher interest rates spring up and thus draw customers away from traditional depository institutions. In terms of the velocity equation above there is a fall in the ratio of conventional money to GDP. The government loses part of its inflation tax base and hence equilibrium inflation increases. In terms of equation (2) above, we have an increase in the parameters α and/or β .

The government may aggravate matters when it responds to the increasing inflation by raising reserve requirements or forced holding of government debt by traditional banks. This merely restricts their ability to compete yet further and accelerates disintermediation.

Governments often actively (and ignorantly) promote this process, most obviously under the guise of financial liberalization. Since inflation is a tax on money (or commercial bank noninterest bearing reserves), financial liberalization, not surprisingly, means that the public can avoid the tax on money.

As a result of these incentives financial liberalization will be pressed on the government; velocity rises and so does the inflation rate associated with the financing of a given deficit by money creation. Thus, from an inflation point of view, financial repression, not liberalization, is appropriate. Financial liberalization requires that extra tax revenue be available to avoid the inflationary impact of a reduction in the captive inflation tax base. Governments that condone dollarization, likewise, promote inflation. Dollarization is captured in equation (2) by both the coefficients α and β . The shift from the domestic monetary base or M_1 into dollars reduces the base for the inflation tax and hence must increase inflation.

One is tempted to explain inflation experiences in some countries altogether by dollarization and new financial intermediaries in the sense that countries with stronger dollarization have higher inflation. But that would go too far since dollarization is also a response

to inflation. Our point is that a government that experiences some inflation and makes dollarization easier will experience even more inflation.

The financial adaptation to inflation intensifies the inflationary process. In response to inflation there is a flight from money into interest bearing financial assets, to the extent that they exists at all, or into the dollar. But there is also an institutional adaptation: financial institutions spring up that offer protection against inflation. The better the protection they offer, the more substantial the flight from money or the larger the increase in velocity. The demonetization of an economy is not an instant process. Table 6 shows the gradual decline in real balances in Argentina.

Table 6 Argentina: Demonetization
(M1 as Percent of GDP)

1970	15.4	1985	5.8
1975	10.7	1988	3.6
1980	7.9		

Source: World Bank

Table 7 reinforces the point that there is no tight link between the current deficit, money creation on one hand and the rate of inflation on the other. Inflation controls and managed exchange rates can slow down the build-up of inflation and reserve losses or forced saving are alternative modes of financing. But in the end deficits do imply money creation and they do imply inflation. Moreover, the longer the delay the more dramatic the inflationary explosion. This is specially the case when

a managed exchange rate and reserve losses have financed the deficit in a relatively noninflationary manner. When these mechanisms are no longer possible there will be a sudden shift toward the inflation tax at the same time that a real depreciation is required. The combination, in the case of Peru, accounted for the hyperinflation of 1988.

Table 7 Deficit, Money Growth and Inflation
(Percent of GDP)

	Argentina			Deficit ^a	Peru	
	Deficit ^a	Money	Inflation		Money	Inflation
1981	5.9	60	104	5.0	43	75
1982	6.7	196	164	1.6	34	64
1983	12.9	288	343	4.2	75	111
1984	11.2	523	627	4.6	97	110
1985	9.9	650	672	11.2	205	163
1986	5.4	144	90	5.7	176	78
1987	7.9	98	131	9.8	158	127
1988	7.5	234	343	6.9	523	2280
1989 ^b		865	3911		1356	3340

^a Deficit financed domestically. ^b 12 month rate at midyear

Both the adjustment of velocity and the presence of alternative means of financing the deficit (foreign borrowing, use of reserve and domestic debt finance) help explain the lack of a tight link between inflation and the deficit. Controversies arise about the reason for the budget deficits, their endogeneity as a result of inflation and their amplification by financial adaptation. The fact that the actual outburst of inflation is often triggered by a foreign exchange crisis does not change the basic truth that high inflation is a fiscal phenomenon.

We next look at the role of contracts in the inflation process.

2. Contracts

So far we have only looked at the interaction of financing requirements and the financial structure. We were able to do so by assuming full wage-price flexibility. But that, of course is not realistic. On the contrary, an essential feature of the inflation process is a melting of contract structure. As inflation accelerates contracts shorten, and that shortening of contracts is itself a factor that causes inflation to accelerate.

The Shortening of Contracts: Institutional wage setting mechanisms often rely on a fixed contract length, with wage adjustments occurring at specified intervals. The adjustments are based on the cumulated increase in prices since the last adjustment. For example, earners might receive full compensation for past actual price increases at regular intervals, say yearly. Now suppose there is a shift to six-months intervals. There are two interesting questions. The first concerns the dynamics of shifting to shorter contracts. What is the threshold for inflationary erosion of wages that causes the shift and what makes it economy-wide rather than just for a particular firm? The other interesting question is what happens when the frequency of adjustment increases yet further. This point has been developed especially by Pazos (1972). It is of interest here because contract deterioration is one of the important characteristics of an accelerating inflation, and because exchange depreciation often plays an important role in setting off the process.

If nominal wages are adjusted only periodically, the real wage follows a sawtooth pattern. On each adjustment date, the nominal wage is increased by the cumulated inflation since the preceding adjustment, say 50%. Until the next adjustment date, the real wage declines as the ongoing inflation erodes the purchasing power of the constant nominal payments. By the end of the adjustment interval, the real wage has declined below its period average. The higher the rate of inflation, moreover, the lower the average real wage, given the interval of adjustment.

In a system of full, but lagged, indexation, the real wage can be cut only by moving to a higher rate of inflation. Thus, once and for all depreciation of the currency immediately raises the rate of inflation and erodes existing contracts, but the catchup through indexation ensures that inflation must be pushed to an even higher rate so that there is always some group of wage earners whose wages are still lagging the increasing rates of price increases. The same principle applies to the removal of subsidies undertaken to correct the budget. Measures undertaken to correct competitiveness or the budget can be effective only if they achieve a cut in the real wage, but because of full indexation that cut can take place only if inflation is allowed to run at a higher rate. This mechanism often sets the stage for inflation explosions.

Consider a country that requires adjustments in the budget and external competitiveness. Suppose that the government lacks the political force to suspend full indexation, so that the removal of subsidies or a real exchange depreciation will speed up the inflation rate. Workers in

the middle of their contracts, for example, will find that their real wages fall below what they consider a minimum standard of living. They cannot borrow, even in perfect capital markets. Hence they will call for a shorter interval between wage adjustments in order to recover the real wage losses imposed by inflation. They will ask for an advance of what they think is due. If the economy does, in fact, shift from say 6 month to 3 month indexation intervals the inflation rate will simply double.³ But once the contract structure has moved to a three month scheme, two facts are clear. First, it is exceptionally unlikely that the indexation structure will return spontaneously to a longer interval, even if shocks are favorable. Second, there is nothing to make the 3 month interval more stable than the 6 month interval that was just abandoned. New shocks will shift the economy to even more frequent adjustments and hence to correspondingly higher rates of inflation. At this stage, the exchange rate becomes critical.

The dramatic escalation of inflation, seemingly out of proportion to the disturbances, arises from the endogeneity of the adjustment interval. This is due not so much to the direct impact on inflation of corrective exchange rate or price policies. It occurs because increases in inflation, which may be minor but highly visible such as a 10% devaluation over and above a PPP rule or a removal of bread subsidies, are the straws that break the camel's back. They lead to an increase in the frequency of wage adjustments, which brings on a much higher inflation

³See the discussion in Simonsen (1985) on this point.

rate. The endogeneity of adjustment intervals is the mechanism that connects small inflation disturbances with a shift from 50 to 100 percent inflation or beyond to hyperinflation.

The exact mode of the shift to increased frequency of adjustment will differ from one experience to another: the government may cave in under the impact of a strike, business may find it easier to give an "advance" on the real wage adjustment rather than risk labor unrest in the middle of a recovery or boom, or a planning minister may seek the popularity that comes from a wage policy which appears to favor labor. One way or another, the frequency will increase, and once it increases in a large part of the economy, it cannot fail to become generalized. It is interesting to note that there are no models to explain the actual process of shortening for the indexation period available.

We have left unanswered the very interesting issue of the exact model of socioeconomic interaction that brings about contract shortening. Clearly inflation is the reason, but why are there discrete steps only: one year, six month, three month, one month, the dollar and why does it take such large steps in inflation before the economy shifts to the next level? Perhaps the answers might come from the Schelling model, but it is certainly clear that this is a critically important research area for a better understanding of inflation dynamics.

The optimal incomes policy designed to avoid inflationary explosion context is one that monitors above all the frequency of adjustments. An entirely different view emerges with respect to exchange

rate and budget policy. As long as full indexation remains, even seemingly small corrections are a dramatic threat to the stability of the inflation rate and hence may not be worth undertaking.

3. Dynamics

So far we have looked separately at the inflationary aspects of deficit finance and at the contracting process separately. The actual dynamics of the economy, however, emerge from the interaction of all these processes. A stable equilibrium may not actually exist. The dynamics of the interaction among deficit finance, institutional innovation in financial markets, dollarization and shortening contracts may not lead us there, even if a stable equilibrium does exist.

A more appropriate view of the inflation process is conveyed by the notion that when inflation gets to be high it can only go higher. Moderate inflation has some inertia, because there are many institutions that do not give way at the slightest sign of an inflationary shock. But when inflation rises significantly and permanently, institutions adapt. In doing so, they themselves feed the process of increasing inflation. Extreme inflation, in this view, stems from a radical melting of all institutions: near-abandonment of domestic money which means the government must inflate at infinite rates to get any seigniorage, and contracts of short duration, namely dollar-based contracts.

The most striking fact is the sharp asymmetry between low and high inflation experience: at moderate rates of inflation there is

virtually no response of institutional behavior: contracts remain annual even when there is 50 or 100 percent inflation; people hold domestic money even though they lose in real terms. But institutional adaptation accelerates when inflation gets high. The institutional meltdown may take only a few months records.

When interpreting the historical record of inflation shown in experiences it is common to assume adaptive inflationary expectations, as did Cagan (1956). The reason is that there appears to be a significant sluggishness in the initial phases and a subsequent acceleration, which is suggestive of exactly such an expectations mechanism. Adaptive inflationary expectations are often the key model device to slowing the impact of money on inflation. An alternative and perhaps more accurate model focuses much more on the dynamics of deterioration in contracts, both in the goods and labor markets, and on the inflationary adaptation of financial institutions. Institutional dynamics, their inertia at low rates of inflation and their gradual and ultimately total melting, seem to offer a more suitable framework for the study of high inflation.

In a model that emphasizes the melting of institutions, the inflation process is quite naturally explosive and there is also an accurate description of the fact that events play themselves out in shorter and shorter time intervals. The economic time horizon shrinks along with contracts and maturities of financial assets until, when the economy converges to a spot market with dollar pricing, the budget or external balance deficit leads to hyperinflation. Hyperinflation

ultimately is inevitable because the inflation tax, with sufficient financial adaptation, can be almost totally evaded and hence the budget deficit cannot, in fact, be financed. The Olivera-Tanzi effect, the shortening of contracts and financial adaptation all react in a perverse way (from the point of view of stabilization) in that they widen the deficit and accelerate explosively the inflation process.

III. STABILIZATION

The preceding discussion helps understand why stabilization is difficult and often takes more than one attempt to succeed. In the process of high inflation all institutions melt. When stabilization is undertaken, there is neither immediate, spontaneous resumption of longer adjustment periods for wages and prices nor an instant increase of real money demand to noninflationary levels. As a result, more sizeable adjustments in the budget are required, and more dramatic measures are necessary to create the confidence that stabilization will, in fact, last. Because the fiscal measures have to be extra large they are also extra difficult and hence often can not be sustained. When they fail, inflation returns instantly at exceptionally high levels because institutional inertia had not recovered.

We will see in the next part how incomes policy--- freezing exchange rates, wages and prices-- can be an effective supplement to the inevitable budget cut. It makes up for institutional inertia and, to that extent, gives a government a better chance to start stabilization. But, as is clear from the experiences of Argentina, Brazil and Peru, failure to

correct the budget implies inevitably that quite soon high inflation will return quite soon. The decline in the ratio of M1 to GDP is not typically fully reversed in the initial stabilization. As a result, financing even a moderate deficit is much more inflationary than it was prior to the experience of extremely high inflation. This hysteresis effect of high inflation (similarly apparent in contracts, pricing and tax collection) sharply reduces the chances of stopping inflation with anything short of a dramatic budget cut.

The task of inflation stabilization involves two issues, to stop inflation fast and to avoid the resurgence of inflationary pressures. To end inflation by incomes policy is relatively easy, but to keep it down is requires fiscal support. The chief mistake in stabilization policy is to rely excessively on incomes policy -- fixed exchange rates and wage-price freezes and insufficiently on fiscal austerity. Such programs quickly lead to repressed inflation and overvaluation. at that stage tight monetary policy is introduced to sustain the imbalances. Ultimately that does not work and another inflationary explosion offers the starting point for yet another stabilization. Argentina offers a clear example of this process with its successive failed stabilization programs in the past 4 years.

Budget Balancing:

Budget deficits are the ultimate source of inflation. When external financing or the domestic capital market cannot finance deficits then the deficits must be adjusted. Two questions immediately emerge. The

first is how large a deficit is consistent with stability, the second is how to cut deficits down to the required size.

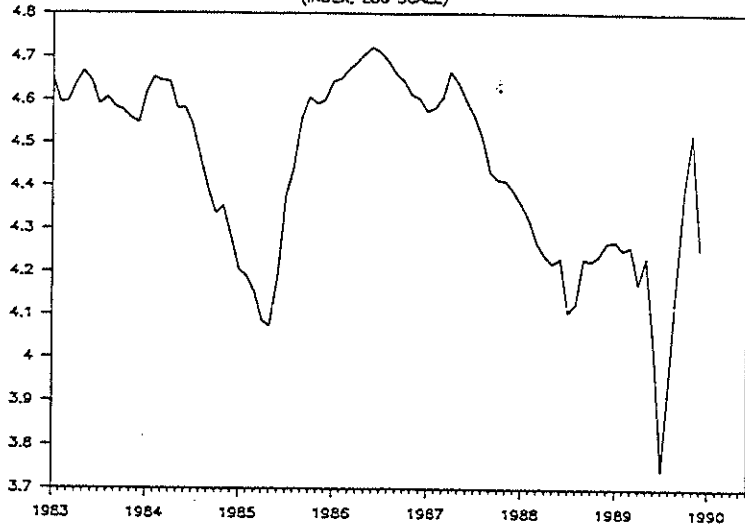
Brazil, Argentina and Peru failed to adjust fiscal deficits in the aftermath of their 1985 heterodox stabilization. Wage-price controls and fixed exchange rates provided immediate results in stopping inflation and raising the political popularity of the President. The resulting possibility for fiscal stabilization was, however, not used. Instead the deficits persisted and were financed by money creation.

Figure 2 shows the remonetization in Argentina and the same occurred in Peru or Brazil.⁴ Both countries have since undergone a hyperinflation and are starting yet another phase of heterodoxy and remonetization. The fact that there is scope for some remonetization, once and for all. But this is at best a bridge for fiscal policies to be implemented, it is definitely not a substitute.

Quasifiscal Deficits: The starting point for budget balancing is the need for a transparent accounting of the consolidated government. Since the issue is control of monetary emission it is essential that the central bank's "quasi-fiscal" deficit be part of the accounting. In 1986, for example the Central Bank of Argentina made losses of 1.8 percent of GNP, Costa Rica's central bank losses amounted to 2.8 percent of GDP and in Uruguay they were as high as 4 percent.

⁴On the Brazilian experience see Cardoso (1989).

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Quasi-fiscal deficits arise from loans by the central bank at subsidized rates, losses on foreign exchange operations in the form of guarantees, forward contracts or from simply buying at a high rate (under multiple exchange rates) and selling low. In Peru in 1986-87, for example, exchange losses accounted for 2.3 percent of GDP. But central bank losses also arise from credit operations. Subsidized credit is no different from any other subsidy; in fact, credit subsidies have long ceased being investment subsidies and have become simply a production subsidy that finances wages when prices are not allowed to reflect costs.

Revenues: The second point on the reform agenda is to achieve a productive tax system. Consider the example of Argentina in Table 8. The reform must go in two directions: first, to raise revenue on a substantially larger scale. Second, to raise revenue far more efficiently.

Table 8 Argentina: The Tax Structure
(Percent of GDP)

	1970-74	1975-79	1980-84	1985-88	1988
National Tax Revenue	14.7	16.0	17.3	17.7	14.1
Income Tax	1.9	1.3	1.3	1.3	1.2
Sales & Excise Taxes	5.3	6.7	9.1	8.0	6.2
Property Taxes	0.5	0.4	0.9	0.9	0.9
For. Trade Taxes	2.0	1.8	1.9	2.2	1.2
Social Sec. Taxes	4.7	4.6	3.9	4.5	3.2
Provincial Taxes	2.2	2.5	3.5	4.0 ^a	

^a1985-87

Source: World Bank

Increasing the yield of the tax system is dictated by the need to eliminate deficits. Inflation stabilization makes an immediate

contribution because the inflationary erosion of revenues ceases. But that is only a small part, perhaps as much as 2 percent of GNP in revenues. The major effort must be in the reconstruction of the tax system. Two steps are essential here: Corruption and evasion which now undermine the collection of taxes must be stopped. Mechanisms to increase compliance must be introduced and demonstrated. Just as Spain and Italy finally attacked the issue of compliance, so must all of Latin America. The complacent acceptance of pervasive tax evasion is the most regressive aspect of the Latin American tax system. A good case in point is the Brazilian experience in the 1960s. Revenue was raised in a few years from an average of 18.8 in 1961-65 to an average of 22.1 percent in 1966-69. The difference appears small, but of course it represents the difference between financial instability and a firm financial foundation for growth.

As a side remark, it is striking that in periods of economic populism the revenue system invariably deteriorates. One would have thought that populist governments with their emphasis on redistribution would seek the mechanism of the tax system. In fact, however, they use inflation and as a result fail miserably in that income distribution deteriorates under their auspices and they leave behind a wrecked tax system. A case in point is Peru today where tax revenue has declined to 4 percent of GDP or less.

The revenue effort must concentrate both in the collection of taxes and on the elimination of subsidies in public sector enterprises. In many countries there is now in place a pervasive management of public

sector prices both to control inflation and to try and prevent a decline in real wages. The implied revenue losses are extraordinarily large and cannot be justified by any of the objectives. For example in Peru control of telephone rates has reduced the real price of the service to one-tenth the 1985 level. It is difficult to argue that telephone rates have an important incidence either on inflation or on welfare of the poor, but they do contribute to deficits.

Governments should therefore eliminate totally all and any subsidy. The resulting revenue gains must be applied to eliminate inflation which in itself raises the welfare of the poor since inflation is a highly regressive tax. Part of the revenues should also be used for targeted food and employment programs for the poorest groups.

Beyond cutting all subsidies and raising revenue under the existing structure, governments should use the crisis to institute a more efficient tax system. The system should produce more revenue with fewer distortions. Effectively that means eliminating the pervasive exemptions from direct taxes and raising the rates to higher levels. A comprehensive value added tax of 15 percent, with a five percent surcharge for luxuries, might be the starting point for discussion.

Government Spending: For many observers the right direction for adjustment is to cut government spending, not to raise taxes. Inefficiency in government, they believe, is so pervasive that the fiscal problem can be solved right there. They would propose massive firing of public sector employees and privatization as the appropriate remedy.

Inefficiency is indeed pervasive and public sector employment in many countries is unjustifiably high. But there is no presumption that budget adjustment should fall primarily here rather than on the tax side. There is a need for restructuring public sector spending, from consumption to investment and productive services. But as to the level of spending, it certainly is not excessive. More of the spending absolutely and relatively should fall on infrastructure, health and on social services for the poorer groups. The current composition of spending is not only unproductive but probably also regressive.

The example of Mexico makes our point most strikingly. A major decline in oil revenues was offset to a minor extent by increased taxes and primarily by a dramatic cut in government spending. Much of the spending cut has fallen on investment, health and education.

Table 9 Mexican Budget Adjustment

	1982-85	1986	1987	1988
Revenues	31.3	30.3	30.6	29.8
Oil	12.2	9.0	9.8	7.5
Taxes	10.2	11.2	10.7	11.9
Outlays	41.0	44.8	45.0	39.0
Noninterest	30.0	28.3	25.2	22.4
Investment	9.5 ^a	5.8	5.0	4.5
Interest	11.0	16.5	19.8	16.6

^a1980-85

More infrastructure investment could be done by the private sector. That is certainly the case, for example, for telephone services, but also for public transport and even the road system. Mexico is now

exploring such options. But the fact remains that infrastructure spending should not be the priority in budget balancing.

Incomes Policy

Fiscal austerity is the sine qua non of stabilization. Incomes policy is an important, desirable component. Without budget balancing a stabilization will not last, without incomes policy it may not even start.

Incomes policy is designed to bring about a rapid, coordinated end of inflation. In a hyperinflation, incomes policy amounts to fixing the exchange rate. Because price setting is geared to the movements of the dollar, the move to a fixed exchange rate is enough to break the inflation and the expectation of inflation.

But when inflation is only 100 or 200 percent incomes policy is both more essential and more complicated. Without incomes policy the end of inflation by demand management alone would create an extraordinary depression. This point is quite apparent from the inflation prices as shown in Eq. (5). The current inflation will be a weighted average of cost increases which are equal to past inflation which enters costs by explicit or implicit indexation, and the current rate of exchange depreciation, e , plus a cyclical component which we denote by "gap":

$$\pi = \gamma\pi_{-1} + (1-\gamma)e + \psi\text{gap} \quad (5)$$

Because of the inertia represented by the cost increases due to explicit or implicit indexation, current inflation cannot get away from

past inflation unless the government breaks the process by incomes policy. Incomes policy means fixing the exchange rate and stopping wage inflation. The government will have to intervene in loan contracts to reduce real interest burdens that otherwise would result from the unanticipated decline in inflation, and intervention will be required in wage contracts. Because these contracts have periodic adjustments for inflationary erosion, a sudden ending of inflation requires intervention. Some wage contracts have to be rolled back and others need to receive an upward adjustment.

Exchange Rate Policy: Exchange rate policy assumes a strategic role in stabilization as does the pricing in the public sector.⁵

The starting point of a program is invariably a fixed exchange rate. But the next issue is when to give in. If inflation does not end completely, sooner or later an adjustment in the exchange rate and public sector prices is called for. The decision to abandon the fixed rate is a difficult one because it signals the government's acceptance of inflation as something inevitable. as a result there is a temptation to postpone exchange rate adjustment until a significant overvaluation has developed.

Overvaluation in turn creates an expectation of a devaluation and it becomes necessary to practice very high real interest rates to ward off a speculative attack. High real interest rates in turn increase

⁵We have not explicitly stipulated the behavior of public sector prices. The equation assumes that they proceed at the same rate as the exchange rate.

domestic debt service and worsen the budget. Ultimately the exchange rate adjustment does have to come, but often the overvaluation has gone so far that an outright exchange crisis and collapse are the end of the abortive attempt to practice a fixed exchange rate.

The pragmatic answer is to move after 2 or 3 months to a crawling peg, depreciating the exchange rate at a pace that maintains external competitiveness. Figure 3 shows the Argentine real exchange rate. The Primavera Plan of 1988 is shown as a major real appreciation, followed by the collapse of early 1989. The Menem stabilization started with an extremely competitive real exchange rate, but the process of real appreciation is once again underway.

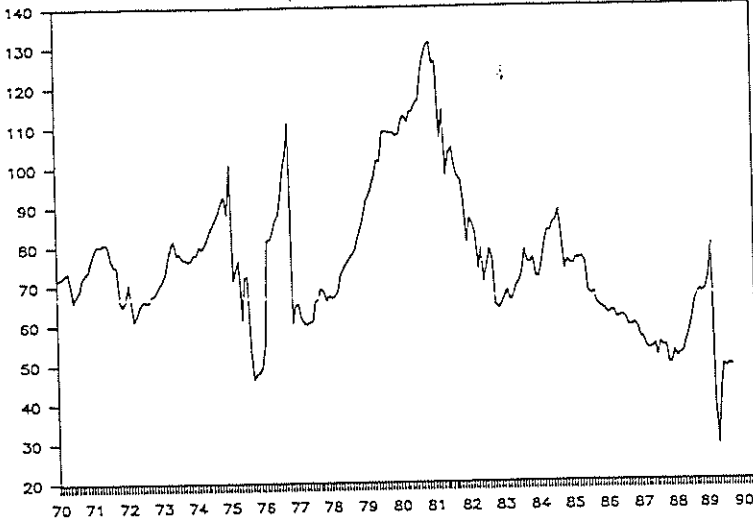
The risk of an overvaluation maintains short economic horizons and stands in the way of recovery. The right time for a crawling peg is very early because the government should try and preserve maximum competitiveness. Holding onto an exchange rate too long may yield an extra month of low inflation, but it also sacrifices competitiveness and therefore prejudices the return of growth.

Indexation: A major stabilization decision regards indexation. The common view is that indexation is responsible for the inflation and that accordingly it should be abolished. Moreover, governments should declare a zero inflation target rather than to create mechanisms that make it easier to live with inflation.

The view that without indexation there is inflation stability represents wishful thinking. It assumes that any inflationary shocks such

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(INDEX 1980-82=100)



as public sector price increases and depreciation, are fully absorbed into lower real wages. Of course, that does not happen easily. Without explicit indexation the government becomes the judge of what wage increases to grant. Two consequences result immediately. First, the wage becomes politicized and that means invariably larger rather than smaller wage increases. Second, wage increases come sooner rather than later. In fact, economies where a government seeks to avoid explicit indexation, as was the case in Brazil after 1985, soon find that inflation becomes more unstable and susceptible of a far more rapid escalation than had ever been experienced under indexation.

Indexation is a mechanism that creates inertia and also preserves inertia. Reintroducing half-yearly indexation may therefore be a key step in establishing the expectation of low inflation. Once the wage is locked away there will not be an expectation of a very rapid resumption of inflation. As a result horizons can lengthen far more effectively than is the case under threshold provisions or in the absence of any kind of formal indexation.

Monetary Policy: Monetary policy does not play an independent role in stabilization; it is dictated by the budget and the exchange rate policy. There are two possible concerns. One is that following stabilization real interest rates are too high. The argument might be brought that to resume growth the economy needs reliquification. There is a very limited room for reliquification, but that is best done by monetizing reserve inflows rather than by deficit finance or domestic credit creation.

The alternative is an overly firm commitment to a zero inflation target. The policy maker might be tempted to make monetary policy (and the exchange rate) do what fiscal policy has not achieved. The risk is a long period of extraordinarily high real interest rates and possibly an exchange overvaluation. They might stop inflation, but they also will destroy the real economy.

The best way to bring about low real interest rates, and the only lasting way, is by a balanced budget and a supercompetitive real exchange rate. Any other way cannot last. That is also the only way to achieve moderate inflation.

Whether inflation is zero or 20 percent is ultimately irrelevant. The policy of committing to zero inflation is an excess that developing countries can really not afford. Inflation should be as low as the fiscal situation and incomes policy allow, preferably below 20 percent and certainly below 40.

IV. CONCLUDING REMARKS

What is needed to move from stabilization to growth? Books on "Invest to Get Rich" are plenty; they recommend a habit of steady saving, investing prudently and, switching off the light when leaving a room. It comes as no surprise that without a good dose of luck that will not be enough.

The profession is much better at negative advice: large budget deficits financed domestically, significant distortions, corruption,

overvalued exchange rates are safe ways to go into deeper trouble. There can be no doubt about appropriate policies to fight inflation, -- they are as old as the disease. Latin America must take four essential steps:

- Balanced budgets and fiscal reform is priority number one. Reform of the tax system, and especially of tax administration, to assure a more substantial and a more efficient revenue collection needs full and urgent attention. In some countries governments print money outright rather than collecting income taxes. In other countries they collect at extravagantly high rates from very few, with most people paying nothing. Taxation on a broad base where everybody pays (or faces jail) goes along with moderate rates. In Latin America today the rich pays little, and revenue comes from emergency taxation at extravagant rates on payrolls or exports. Economic development starts with serious efficient taxation; Most Latin American countries, specifically Brazil and Argentina, have slipped back by a decade or more. There is little doubt that the single most important issue is an effective administration of the tax laws; of course, that is almost counter-cultural in some parts of the world.

- The public sector should receive an emergency screening for privatization prospects. When governments are bankrupt they can hardly afford the indulgence of extremely inefficient public sectors; simply closing many of the operations would advance the budget, selling them would provide the resources for and confidence in financial stability.

There is no easy path. Inefficiency in the government sector requires spending cuts and privatization. Start with the telephone company and work down the list.

• Latin America and Eastern Europe have dismally neglected all aspects of investment, not only in physical capital but also in education and technology. We are finding out today from Asia's super competitors just how critical education is in the process of economic development. Latin America is running down its capital, not only physical, but far more critical, its human capital.

Countries who do not invest will have to resort to the competitive weapon of last resort, low wages. That is increasingly Latin America's fate.

APPENDIX THE BUDGET AND INFLATION

We show here the derivation of the central equation representing the interaction of inflation and financial structure.

We start with the central equation which shows that the deficit is financed by money creation:

$$\dot{M}/P - gY \quad (A-1)$$

or, using the definition of money growth, $\delta = \dot{M}/M$

$$\lambda(M/P) - gY \quad (A-2)$$

Next we impose the assumption of a linear velocity equation and of monetary equilibrium. This implies equality of actual and planned velocity:

$$PY/M - \alpha + \beta\pi \quad (A-3)$$

The parameter β thus represents the responsiveness of velocity to the cost of holding money. We do not make any allowance for lags in the adjustment of velocity to the cost of holding money.

Substituting from A-3 in A-2 we have:

$$\lambda = g(\alpha + \beta\pi) \quad (\text{A-4})$$

Next we use the steady state relationship between money growth and inflation, having implicitly assumed a unit income elasticity of money demand:

$$\pi = \lambda - y \quad (\text{A-5})$$

This equation states that the inflation rate is equal to the growth rate of money less the growth rate of real output. Combining A-5 and A-4 yields the key equation used in the text:

$$\pi = (\alpha g - y)/(1 - \beta g) \quad ; \quad \beta g < 1 \quad (\text{A-6})$$

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