

LATIN AMERICA'S ECONOMY:  
DIVERSITY, TRENDS, AND CONFLICTS

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Eliana Cardoso  
Ann Helwege

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Chapter 6  
INFLATION

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Latin America has a longstanding reputation for its battles with runaway inflation. The most notorious example is Bolivia's recent hyperinflation. Between May and August 1985, Bolivian inflation reached an annualized rate of 60,000 percent, the seventh worst case of hyperinflation in world history. Shopkeepers found themselves rushing into the street to exchange pesos for dollars as soon as they made a sale; to wait even an hour could mean a noticeable loss. Although none of Bolivia's neighbors has managed to match this experience, three-digit inflation rates are a recurrent problem in the region.

The cost of very high inflation in terms of economic growth is substantial. Uncertainty about prices brings about short horizons for production decisions and concentration of assets in inflation hedging. The economic structure that results emphasizes finance at the expense of production. Hoarding and speculation displace real production. As one Nicaraguan described the response to the 30,000 percent inflation rate in his country in 1988, "It's a hassle economy. Everyone is out to beat the market and no one is producing anything."

Capital flight also rises with inflation. The World Bank estimates that capital flight from Argentina between 1974 and 1982 amounted to 72 percent of the country's external debt, implying that if the Argentine government were able to restore confidence in the local currency, most of its foreign exchange crisis would be resolved.

Although the extreme cases of inflation in Latin America have caught world attention, inflation rates in Latin America have differed widely over time and among countries. On the whole, inflation

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rates have increased markedly during the 1980s. Table 6.1 divides the Latin American countries (except Cuba and Nicaragua) into three groups. During the twenty-five years between 1960 and 1985, the high inflation countries experienced average inflation rates of more than 30 percent per year. All the countries in this group are found below the equator. The low inflation countries had average inflation rates below 10 percent during the 1960-1985 period. Almost all countries in this group are situated in Central America.

After 1985, Bolivia and Chile (which used to be among the most inflationary economies in Latin America) brought inflation under control, in contrast with most other countries in the region, where inflation increased further. Figure 6.1 shows the decline of inflation in Chile, and figure 6.2 shows how Mexican inflation rates, which historically were very low, increased in the 1980s. Table 6.2 shows the annual inflation rates in countries subject to acute inflation acceleration after 1985.

One single model could hardly explain the behavior of inflation in all these countries. This chapter looks at different theories and describes various experiences with inflation in Latin America. The first section reviews the longstanding debate between monetarists and structuralists about the causes of inflation. Over time both schools have evolved but neither has yet to offer a complete diagnosis of inflation. Consequently, prescriptions for reducing inflation invariably fail at the combined task of achieving price stability and growth.

Further progress in explaining inflation depends on integrating the insights offered by conflicting points of view. In the second section of this chapter, we address five concepts central to understanding inflation: seigniorage models, foreign exchange crises, dollarization, capacity constraints, and indexation.

## MONETARISM VERSUS STRUCTURALISM

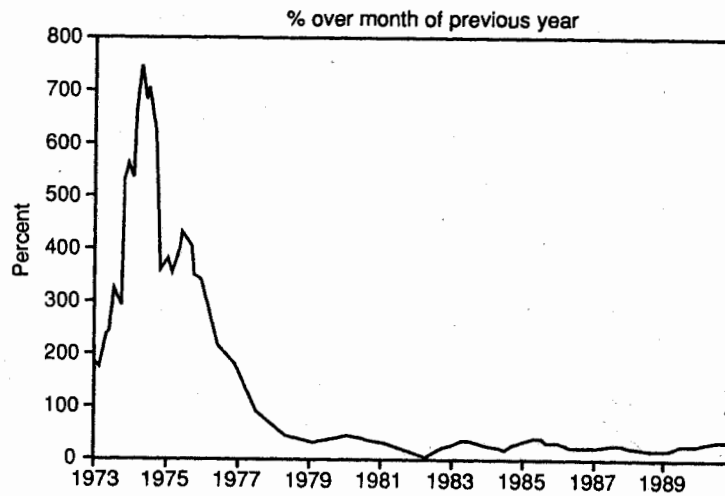
In the 1950s and 1960s, two schools of thought, monetarism and structuralism, dominated the analysis of Latin American inflation. Monetarists argued that the main cause of inflation was deficit spending financed by money creation. Structuralists argued that inflation had its roots in real shortages of key goods in the economy and struggles between different groups in society to increase their

## Inflation

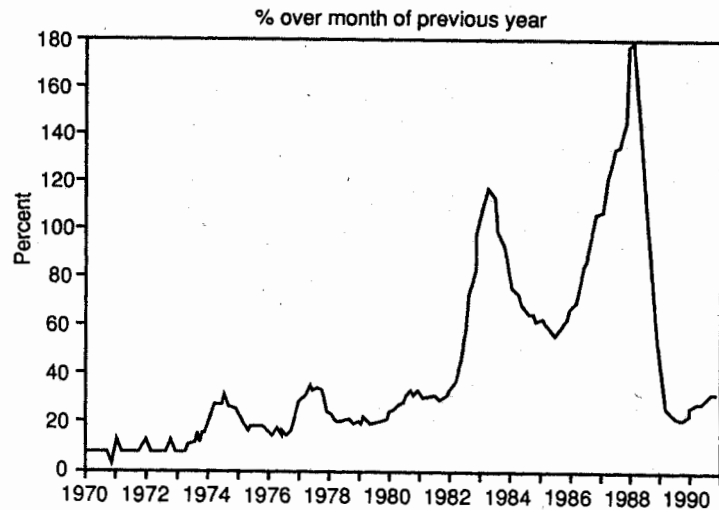
**Table 6.1**  
Inflation rates, Latin American countries, 1960-1989  
(percentage per year)

|                                   | 1960-1969 | 1970-1979 | 1980-1985 | 1986-1989 |
|-----------------------------------|-----------|-----------|-----------|-----------|
| <b>High inflation countries</b>   |           |           |           |           |
| Argentina                         | 22.9      | 132.8     | 335.5     | 1,392.1   |
| Bolivia                           | 6.3       | 15.9      | 2,251.5   | 28.7      |
| Brazil                            | 45.8      | 30.5      | 142.0     | 795.6     |
| Chile                             | 25.1      | 174.0     | 23.8      | 18.3      |
| Peru                              | 9.8       | 26.5      | 97.3      | 1,169.2   |
| Uruguay                           | 50.1      | 59.3      | 48.9      | 73.0      |
| Weighted average <sup>a</sup>     | 36.6      | 53.7      | 224.0     | 844.8     |
| <b>Middle inflation countries</b> |           |           |           |           |
| Colombia                          | 11.2      | 19.3      | 23.1      | 24.8      |
| Costa Rica                        | 2.0       | 10.4      | 34.2      | 16.8      |
| Ecuador                           | 4.2       | 11.9      | 25.6      | 49.9      |
| Mexico                            | 2.7       | 14.7      | 56.4      | 84.1      |
| Paraguay                          | 4.3       | 11.1      | 17.0      | 25.4      |
| Weighted average <sup>a</sup>     | 4.7       | 15.3      | 45.1      | 63.5      |
| <b>Low inflation countries</b>    |           |           |           |           |
| Dominican Republic                | 1.3       | 9.2       | 16.9      | 32.6      |
| El Salvador                       | 0.4       | 9.4       | 15.2      | 22.9      |
| Guatemala                         | 0.5       | 8.9       | 8.2       | 16.7      |
| Haiti                             | 2.2       | 9.2       | 10.6      | 0.9       |
| Honduras                          | 1.9       | 6.6       | 8.8       | 6.0       |
| Panama                            | 1.0       | 6.0       | 5.0       | 0.4       |
| Venezuela                         | 1.1       | 6.6       | 12.9      | 42.3      |
| Weighted average <sup>a</sup>     | 1.1       | 7.9       | 11.9      | 24.0      |

a. Weights equal the share of each country's population in its group.  
Source: International Monetary Fund, *International Financial Statistics* (Washington, D. C.: IMF, various issues).



**Figure 6.1**  
Inflation rate, Chile, 1973–1990.  
Source: IMF, *International Financial Statistics* (Washington, D. C.: International Monetary Fund, various issues).



**Figure 6.2**  
Inflation rate, Mexico, 1970–1990.  
Source: IMF *International Financial Statistics* (Washington, D. C.: International Monetary Fund, various issues).

**Table 6.2**  
Inflation rates, selected countries, 1985–1990  
(percentage per year, December–December)

|           | 1985 | 1986 | 1987  | 1988   | 1989  | 1990 <sup>a</sup> |
|-----------|------|------|-------|--------|-------|-------------------|
| Argentina | 385  | 82   | 175   | 388    | 4,924 | 1,833             |
| Brazil    | 228  | 58   | 366   | 993    | 1,765 | 2,360             |
| Ecuador   | 24   | 27   | 33    | 86     | 54    | 48                |
| Mexico    | 64   | 106  | 159   | 52     | 20    | 30                |
| Nicaragua | 334  | 747  | 1,347 | 33,603 | 1,690 | 8,500             |
| Peru      | 158  | 63   | 115   | 1,723  | 2,777 | 8,292             |
| Uruguay   | 83   | 76   | 57    | 69     | 89    | 130               |
| Venezuela | 6    | 12   | 40    | 36     | 81    | 32                |

a. Preliminary.  
Source: ECLAC, *Preliminary Overview of the Economy of Latin America and the Caribbean* (New York: ECLAC, 1991).

shares of national income. The debate focused not only on the theoretical causes of inflation but its appropriate solutions, which invariably involve political consequences. According to the monetarist view, to stop inflation, deficits must be cut and free enterprise encouraged. In general, structuralists are more inclined toward government intervention in the economy to overcome supply constraints. In recent years, structuralism has also put more emphasis on the inertial forces that sustain inflation.

**Monetarism**

Monetarism explains inflation as the result of too much money chasing too few goods. The most common explanation for sustained money growth is the financing of budget deficits by money creation. Inflation is a monetary phenomenon in the sense that it could not persist without sustained money growth. Table 6.3 and figures 6.3 and 6.4 illustrate this by showing a striking positive correlation between inflation and money growth in Latin America.<sup>1</sup> The observation that sustained inflation is always accompanied by monetary expansion is the basis for the hypothesis that monetary expansion causes inflation. This leaves open the question of what determines money growth (discussed later in this chapter). Monetarists see

**Table 6.3**

Average inflation and money growth, Latin American countries, 1965–1985 (percentage per year)

|                    | Inflation rate | Money growth rate |
|--------------------|----------------|-------------------|
| Bolivia            | 528.1          | 360.2             |
| Argentina          | 137.3          | 120.9             |
| Chile              | 82.1           | 97.7              |
| Brazil             | 62.1           | 63.8              |
| Uruguay            | 53.4           | 51.5              |
| Peru               | 36.4           | 38.5              |
| Mexico             | 19.7           | 22.6              |
| Colombia           | 17.1           | 20.8              |
| Costa Rica         | 12.4           | 18.6              |
| Ecuador            | 12.1           | 19.0              |
| Paraguay           | 9.8            | 15.4              |
| Dominican Republic | 7.9            | 10.3              |
| El Salvador        | 7.3            | 9.2               |
| Haiti              | 6.8            | 11.3              |
| Venezuela          | 5.9            | 13.2              |
| Guatemala          | 5.5            | 9.5               |
| Honduras           | 5.3            | 10.3              |
| Panama             | 3.9            | 9.1               |

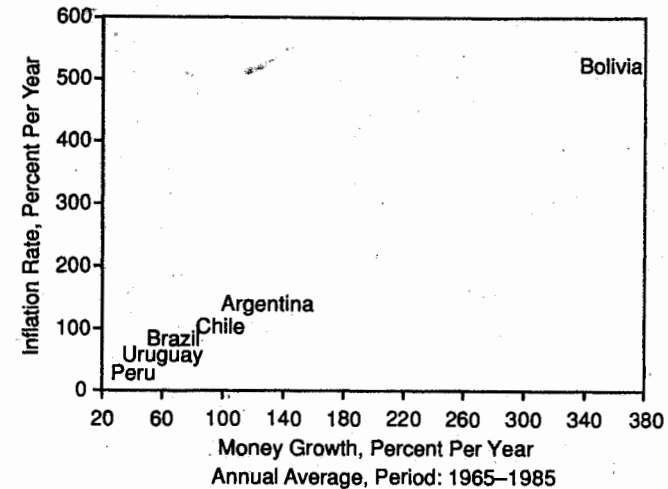
Source: IMF, *International Financial Statistics*.

government deficits as the cause of the problem; structuralists see deficit spending and money creation as a necessary response to inflation caused by bottlenecks in the economy.

If government expenditures exceed tax collections, the government must finance its deficit by borrowing or by printing money. The financing of the government budget deficit can be written as:

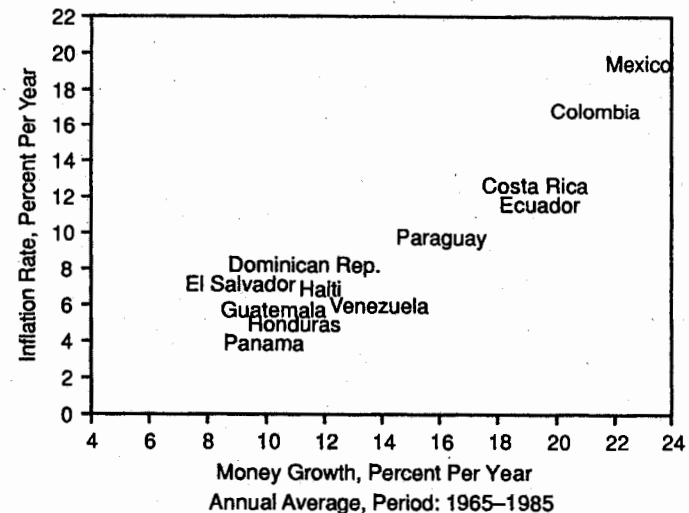
$$\text{Budget deficit} = \text{sales of bonds} + \text{external borrowing} \\ + \text{increase in money base.}$$

There are two possible links between the budget deficit and money growth. First, the government may directly finance the deficit by increasing the money stock, as often occurs when the central bank is not independent. Second, an increase in the budget

**Figure 6.3**

Inflation and money growth in high-inflation countries, 1965–1985.

Source: IMF, *International Financial Statistics* (Washington, D. C.: International Monetary Fund, various issues).

**Figure 6.4**

Inflation and money growth in low-inflation countries, 1965–1985.

Source: IMF, *International Financial Statistics* (Washington, D. C.: International Monetary Fund, various issues).

deficit financed by the sale of domestic bonds will increase interest rates. If the central bank wants to keep interest rates low in order to encourage investment, it will increase money growth, indirectly financing the deficit through the printing press.<sup>2</sup>

In the view of monetarists, deficit spending not only causes inflation, but it makes very little contribution to real growth in the economy. A central assumption in the monetarist model is that economies naturally move toward an equilibrium with all markets clearing and full employment of resources. Any increase in aggregate demand that the government creates by raising spending (and the stock of money) will manifest itself in the long run in higher prices, not higher output. Because resources tend to be fully employed, deficit spending can only raise prices in the long run. Short-run increases in output may occur but only so long as people fail to anticipate price increases. Once inflation is built into the public's expectations, an increase in the money supply merely increases the level of prices. This reaction can be extremely fast if people anticipate the consequences of money growth or have learned from past experience with inflation. Thus, for example, the rapid takeoff of inflation in Argentina after the Austral Plan failed to stabilize the economy without austerity in 1986 is partly the result of Argentines' past experience with hyperinflation.

Because monetarists generally assume that private individuals allocate resources more efficiently than government, deficit spending hurts the economy not only by forcing people to adjust to rapidly changing prices but also by substituting public consumption for private consumption and investment. The traditional monetarist solution to inflation is to limit money creation to the economy's real rate of growth. To the extent that shortages of goods are also a factor causing inflation, monetarists argue that liberalization, or a freeing of markets from government intervention, will increase output.

## Structuralism

The structuralist interpretation of inflation was developed in the 1950s and 1960s at ECLA. It claimed that different sectors of the economy develop at different speeds, giving rise to bottlenecks. Shortages in sectors that fail to grow as rapidly as the rest of the economy generate price increases that may be transmitted throughout the economy.

An important bottleneck to which structuralists often point is low productivity growth in the agricultural sector. During the process of industrialization, there is a shift of workers from agriculture to industry. The failure to address the need for credit, technical assistance, and land reform, as well as the export bias of large producers, leads to stagnant food production. As the industrial sector grows, the demand for food increases faster than its supply. Basic food prices increase, and urban workers insist on higher nominal wages. Industry tries to recover the cost of higher wages by raising prices, and economy-wide inflation is set in motion.

Similarly, inflation results when basic supplier industries (steel, cement, petroleum refining) fail to grow as rapidly as industry as a whole. Shortages of key inputs raise production costs and are passed on in the form of higher prices of final goods, which, in turn, generate worker demands for increased wages.

Three factors make this situation possible. First, the inadequate purchasing power of exports prevents the economy from importing sufficient food to keep urban food prices down. Structuralist explanations for slow growth in the export sector are linked to the Prebisch hypothesis and arguments for import substitution industrialization (described in chapter 4).<sup>3</sup>

Second, labor markets are neither homogeneous nor competitive. Despite widespread underemployment of unskilled workers, the skilled workers that industry needs are well enough organized to demand wage increases when rising prices threaten their standard of living.

Third, industry is able to pass on price increases because most markets are oligopolistic. The small size of the local market relative to efficient minimum scale prevents competitive pressure in most industries. Instead, price is often a markup over cost. Any increase in the wage bill is passed along in the form of higher prices.

In short, neither workers nor industrialists accept a decline in real income when shortages occur. Behind inflation lies the struggle of different groups in society trying to maintain, or even increase, their share of the pie.

In the structuralist view, inflation is ratified by monetary policy, which accommodates these forces in order to maintain employment. Accommodation refers to expansion of the money supply in response to inflation. If prices rise because of underlying structural

forces, more cash is needed to cover nominally larger transactions. Were the monetary authorities to refuse to accommodate this demand by restraining credit, slower growth would follow. Yet industrial growth was seen as essential to achieve the skills and economies of scale necessary for Latin America to become internationally competitive.<sup>4</sup>

Structuralists have been inclined to accept inflationary pressure as a necessary consequence of growth. Some dampening of inflation has been sought in wage and price controls, which effectively serve as a truce in the struggle for changes in the share of income going to labor and capital. The social pact concluded in Mexico in 1988 was an attempt to establish this truce with the cooperation of workers and industrialists rather than to impose controls by government fiat.

In the past, structuralists have also lobbied for investment in areas where bottlenecks occur, particularly in supplier industries with high capital costs, where the private sector might shy away from risk. Deficit spending aimed at relieving bottlenecks in the economy could contribute to long-run growth, even if it were financed by money creation and higher inflation rates.

Discussing definitions and labels is always arbitrary and risky. Nonetheless, box 6.1 lists some beliefs and characteristics commonly attributed to monetarists and structuralists. Even economists who once held up the banner of monetarism or structuralism will not agree with all of their listed attributes and will agree with one or two propositions listed under the opposing column.

By now, most economists agree that inflation can be induced by both demand and supply shocks, that sustained inflation requires sustained money growth, and that the workings of inflation depend on the institutional and structural characteristics of each economy. Recent models of inflation have become more sophisticated, incorporating into their framework a better understanding of the importance of seigniorage, exchange rates, foreign debt, and indexation schemes. While models of inflation increasingly overlap in their methodology, they diverge quite a bit on the weight assigned to various factors and the expected speed of adjustment. Since empirical tests so far have not been strong enough to reject different hypotheses, economists continue to develop their analyses and policy recommendations partly based on subjective judgment and political priorities.

**Box 6.1**  
The Monetarist/Structuralist Debate

| Monetarists   | Structuralists   |
|---|--|
| 1. Inflation is bad.  | 1. Inflation is not as bad as the slow growth that accompanies tight monetary policy.                    |
| 2. The main source of inflation is excess demand due to budget deficits financed by money creation. | 2. The main sources of inflation are structural imbalances and rigidities accommodated by passive money. |
| 3. To reduce inflation, one must cut domestic credit creation.                                      | 3. Costs of reducing inflation are large. Use of incomes policy and price freezes are recommended.       |
| 4. Monetarists prefer to work with full employment models.  | 4. Structuralists emphasize unemployment.  |
| 5. Monetarists are usually identified with conservative groups in society.                          | 5. Structuralists are thought to be progressive reformers.   |

Because inflation is increasingly viewed as a phenomenon linked to balance of payments problems, the proposed solutions for inflation have become closely intertwined with stabilization programs. Throughout the 1970s and 1980s, monetarists were associated with either IMF stabilization programs (often tagged as orthodox) or global monetarism. The main difference between the two is a matter of exchange rate policy. Orthodoxy recommends devaluation along with budget cuts on the theory that inflation leads to overvaluation of the exchange rate, further aggravating balance of payments problems. Global monetarism calls for guaranteeing a fixed exchange rate to reduce inflationary expectations while sharply cutting government deficits to avoid overvaluation through inflation.

By contrast, while structuralists have increasingly acknowledged the need for fiscal discipline, they have also put more emphasis on

the role of inertial inflation caused by conflict over income shares. The changes in this school of thought have been substantial enough that few economists now identify themselves as structuralists, preferring instead the term *interventionist* or *inertialist*. Their view is that tight monetary policy and fiscal contraction can force the economy into a sharp recession with high unemployment yet still fail to correct inflation caused by the indexation process. The measures proposed by this new poststructuralist school have been baptized as heterodox and are discussed in chapter 7. In brief, heterodoxy calls for a combination of fiscal consolidation, monetization to avoid rising interest rates, and an incomes policy to reduce conflict over the share of income accruing to labor and capital.

Dudley Seers observed in 1970 that the controversy between monetarists and structuralists "is not just a technical issue in economic theory. At the heart of the controversy are two different ways of looking at economic development, in fact two completely different sets of value judgments about the purposes of economic activity and the ends of economic policy, and two incompatible views on what is politically possible."<sup>5</sup> Today the gap between orthodoxy or global monetarism and heterodoxy is every bit as wide.

## FIVE FACTORS IN THE INFLATION PROCESS

Five concepts are essential to the analysis of inflation: seigniorage, balance of payments crises, dollarization, capacity constraints, and indexation.

### Seigniorage

The government's ability to buy goods and services by printing money is called seigniorage. As the sole supplier of cash, the government is able to obtain goods and services in exchange for the money that it prints. Since no government uses a pure gold standard, an increase in the supply of cash is nearly costless to the government. The public accepts this money created by the government because they need it for transactions; other media of exchange (gold, cows) are usually too costly, too risky, or too inconvenient to use. Even if there is no inflation, a government enjoys some seigniorage as the economy grows and the need for cash increases.

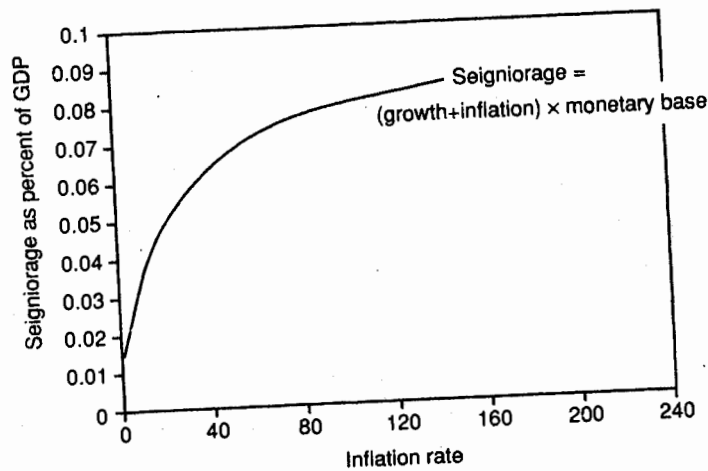
When the government finances a deficit by creating money, it makes a claim on real output without reducing (by direct taxation) claims on output made by the private sector. If prices rise, either because the economy is already at full employment or because sector-specific shortages prevent an expansion of output, the purchasing power of the outstanding stock of money falls. The cash that people hold (their nominal balances) drops in value. To maintain the real value of their cash holdings, the public has to add to their nominal balances. Inflation acts like a tax: people are forced to spend less, while the government is able to buy real goods and services with the money it prints.<sup>6</sup>

Deficit finance inevitably leads to two types of vicious circles. First, if taxes are collected with a lag, inflation itself increases the budget deficit, inducing even larger increases in money.<sup>7</sup> Second, a sustained increase in money growth and inflation ultimately leads to a reduction in the real money stock. The reason is that a higher inflation rate raises the cost of holding cash. People are likely to shift some of their wealth into real goods (houses, consumer durables), a response that only increases inflationary pressures. In addition, they send their wealth abroad, reducing the amount of foreign exchange available in the economy and raising the cost of imported goods.

The amount of revenue the government can generate by printing money is shown in figure 6.5. When the economy is growing, the government can obtain limited revenue from seigniorage without causing inflation. Because the demand for money rises as real income grows, the government can print some money without raising prices. But as money growth rises above the real growth of income, inflation rises. Seigniorage increases but at a decreasing rate. This happens because people reduce their real holdings of the money base as it becomes more and more costly to hold. Thus, seigniorage increases less than proportionately with the increase in money growth and inflation. Eventually inflation will become so high that no increase in money growth can produce an increase in real seigniorage.

How much revenue do governments in Latin America obtain from the printing of money? Can we explain inflation in Latin America by making use of the model just described?





**Figure 6.5**  
Seigniorage.  
Source: IMF *International Financial Statistics* (Washington, D. C.: International Monetary Fund, various issues).

The classic illustration of seigniorage is a war economy where a government is unable to boost taxes and must finance its defense expenditures by printing money, as Nicaragua did between 1986 and 1990. Although news from Nicaragua during that period was dominated by political events, the important issue for Nicaraguans was the dramatic deterioration in their living standards. The proliferation of conflicting data makes an evaluation of the Nicaraguan economy difficult, but there is wide agreement that the economic nightmare stemmed in good measure from the contra insurgency. The toll was heavy in both lives and resources. Between 1988 and 1990, more than half of the national budget was devoted to defense. Much of the budget was financed by printing money, resulting in an acceleration of inflation.

At the beginning of the Sandinistas' rule in 1979, the exchange rate was 10 cordobas to the U.S. dollar. By February 1987, when the government exchanged the old bills for new ones at a rate of 1 to 1,000, the black market rate was 40,000 cordobas to the dollar. It was hoped that this monetary reform would stop inflation, which had reached 7,000 percent per year. With no substantial relief in the country's military and economic situation in sight, the government

continued to run deficits, and inflation persisted. In 1988, the annual inflation rate in Managua reached 30,000 percent. Deficits were financed on the backs of workers as real wages fell by 75 percent.<sup>8</sup>

The Sandinistas lost the presidential election in 1990. Despite expectations of a turnaround after the inauguration of President Violeta Chamorro in April 1990, the economy continued to deteriorate amid large deficits and high military spending. Output shrank by 5 percent in 1990 (even more than during the last year of the Sandinista rule), while inflation continued. In January 1991, the cordoba (reissued by the Sandinista government at an exchange rate of ten to the dollar in 1988) traded at roughly 3.2 million cordobas to the dollar.

Table 6.4 shows the data for inflation and seigniorage elsewhere in the region. Seigniorage generally rises with inflation in Argentina, Mexico, and Chile. We cannot reject the hypothesis that governments in these countries use their ability to print money as a means of raising real revenue and in doing so accelerate inflation. In no case, however, does seigniorage seem to explain inflation fully, and in the case of Brazil, there is no apparent relationship between the two

**Table 6.4**  
Seigniorage and inflation, Argentina, Brazil, Chile, and Mexico, 1978–1986  
(percentage)

| Year | Argentina      |           | Brazil         |           | Chile          |           | Mexico         |           |
|------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|
|      | $\Delta H/GDP$ | Inflation | $\Delta H/GDP$ | Inflation | $\Delta H/GDP$ | Inflation | $\Delta H/GDP$ | Inflation |
| 1978 | 4.2            | 175.5     | 2.0            | 38.7      | 3.4            | 40.1      | 3.6            | 17.5      |
| 1979 | 3.2            | 159.5     | 3.3            | 52.7      | 2.5            | 33.4      | 4.3            | 18.2      |
| 1980 | 3.0            | 100.8     | 2.0            | 82.8      | 2.4            | 35.1      | 4.9            | 26.4      |
| 1981 | 2.5            | 104.5     | 2.0            | 105.6     | -0.7           | 19.7      | 5.5            | 27.9      |
| 1982 | 3.9            | 164.8     | 2.1            | 97.8      | -1.7           | 9.9       | 10.9           | 58.9      |
| 1983 | 5.5            | 343.8     | 2.0            | 142.1     | 0.7            | 27.3      | 6.7            | 101.8     |
| 1984 | 5.1            | 626.7     | 2.7            | 197.0     | 0.8            | 19.9      | 5.8            | 65.5      |
| 1985 | 4.3            | 672.1     | 2.7            | 226.9     | 1.0            | 30.7      | 1.8            | 57.7      |
| 1986 | 2.6            | 90.1      | 3.6            | 145.2     | n.a            | 19.5      | 1.8            | 86.2      |

Note: Seigniorage,  $\Delta H$ , is the increase in the money base,  $H$ , defined as line 14 in *International Financial Statistics*, except for Argentina, where it is line 14a. Inflation is the annual change in consumer prices, line 64.

Source: Ibid.



variables. Nor does the existence of a relationship between the two variables explain why governments would turn to this source of revenue despite its destabilizing consequences. Clearly the inflation story is more complicated. Latin American experiences with inflation must be interpreted in the light of local financial markets, mechanisms for adjustment to inflation, and growing external debt.

### Balance of Payments Crises

Inflation in Latin America since 1950 has been linked to the external balance. Easily financed current account deficits make for low inflation. A balance of payments crisis, originating in either a sudden fall in the terms of trade or a halt of capital inflows, generates an immediate jump in the inflation rate. This contrasts sharply with the conventional view of inflation linked simply to money growth and budget deficit finance.

The sharp jump in inflation rates throughout Latin America during the 1980s was linked to the debt crisis. In the preceding decade, governments were able to finance deficit spending by borrowing abroad. Interest rates on foreign loans were low, and obtaining credit was easy. Few governments felt an urgent need to resort to the printing press as a means of raising revenue in the mid-1970s.

With the rise in international interest rates and the sudden withdrawal of foreign lending in the early 1980s, Latin American governments were deprived of foreign capital to finance interest payments and noninterest deficits. The governments' answer to forced debt service has been increased taxes and reduced expenditures, but it has also been to incur higher budget deficits and to finance these by issuing domestically denominated debt or by printing money. It is no accident that Argentina, Brazil, and Bolivia experienced extraordinary inflation in the aftermath of the debt shock in 1982.

A terms of trade shock can also generate inflationary pressure. If the international prices of major export commodities drop—or if the price of an important import like oil rises—shortages of foreign exchange develop. Imported intermediate and final goods become scarce. The price of any good with imported components rises. Particularly where basic wage goods like food are imported, higher prices lead to demands for higher wages and ultimately generate inflationary pressure throughout the economy.

Another way in which a terms of trade shock can cause inflation is through the government budget. Many countries depend heavily on export taxes as a source of revenue. Mexico, Venezuela, Ecuador, and Bolivia, for example, earn much of their revenue from oil and mineral exports. Argentina taxes some of its agricultural exports. A decline in the world price of exports reduces tax revenues. If government expenditures are not reduced as tax collections fall, the primary budget deficit increases. Unless borrowing is possible, it is tempting to finance this increase in the deficit by printing more money.

A widely recommended response to a sudden loss of capital inflows or to a terms of trade shock is to devalue. By raising the price of traded goods in terms of the local currency, export production is encouraged and import demand is dampened. An improvement in the trade balance helps to generate the foreign exchange needed to service an external debt or to relieve shortages of imported goods. But devaluations also carry their own inflationary consequences. First, an increase in the price of imports raises the cost of any good involving imported inputs and directly increases the price of imported final goods; in response, well-organized workers insist on higher nominal wages.

Second, frequent devaluation may lead to the perception that further devaluations are likely. In this case, people shift their wealth into dollars, anticipating profits from reconversion after later devaluations.<sup>9</sup> Dollarization contributes to inflation.

Third, devaluations have an important impact on the domestic cost of servicing the external debt. Foreign debt service measured in domestic currency increases. For example, if the currency is devalued from 200 pesos per dollar to 230 pesos per dollar, the government must now offer more pesos to people who hold dollars in order to raise a dollar to pay foreign creditors. As a result, the budget deficit measured in local currency also increases. If the government prints more money to cover the higher cost of obtaining dollars, it stimulates inflation further.

Finally, devaluations can cut real growth in the short run by lowering the real wage rate and reducing domestic aggregate demand. The drop in real growth reduces the amount of noninflationary seigniorage that the government can collect. Moreover, the political consequences of recession are unpalatable.

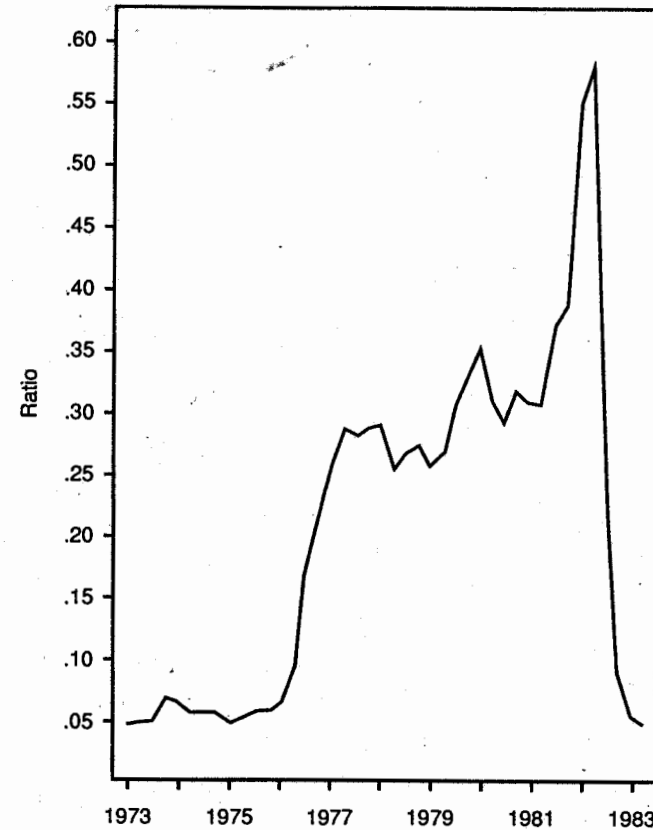
## rization

As inflation rises and confidence in domestic money declines, people tend to substitute away from domestic money in favor of foreign money. The use of U.S. dollars by Latin Americans in place of domestic currency is referred to as the dollarization of Latin America.

There are several reasons for dollarization. In terms of transactions, it becomes difficult to keep measuring prices on a current basis when they change rapidly. Setting prices in terms of U.S. dollars becomes less costly than constantly changing price tags. Furthermore, any negotiation that involves a time lag is difficult to carry out unless discussions take place in terms of a more stable currency. If local interest rates do not keep up with inflation, there is also an incentive to store one's wealth in a foreign currency that will not lose its value so rapidly. Moreover, as inflation proceeds, devaluation or depreciation of the local currency is inevitable; without it, imported goods become increasingly cheap relative to domestic goods, and balance of payments problems develop. In anticipation of a devaluation, people will convert their money to dollars in order to be able to exchange them for more pesos after the devaluation.

To measure dollarization, we need to know to what extent U.S. dollars are used for transactions and speculation. There are no data on U.S. currency circulating in the region; however, we can use data for dollar-denominated bank deposits in Mexico and Bolivia to illustrate this phenomenon.

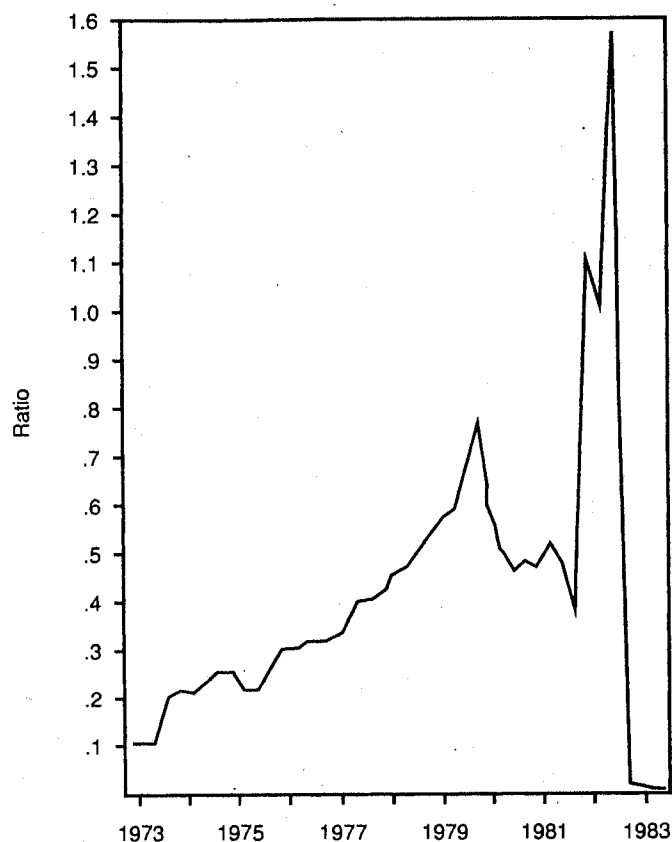
Figure 6.6 shows the ratio of dollar- to peso-denominated deposits in Mexico. This ratio rose from 5 percent in 1975 to 25 percent by the first quarter of 1977. With higher inflation, the ratio rose dramatically to 58 percent in 1982. Years of marked increases in the dollarization ratio have also been the final years of an administration. Both expectations of a devaluation and perceptions of possible changes in the economic regime play an important role in explaining the Mexican dollarization. At the end of 1982, when the government froze dollar-denominated deposits and introduced radical financial reforms, the ratio suddenly dropped. Dollarization no doubt continued, but by threatening to expropriate dollar deposits in Mexican banks, the government sent the phenomenon underground.



**Figure 6.6**

Dollar/peso deposit ratio in the Mexican banking system, 1973-1983. Source: M. Melvin, "The Dollarization of Latin America as a Market Forced Monetary Reform," *Economic Development and Cultural Change* 36 (April 1988), 549.

Figure 6.7 shows the ratio between dollar-denominated and Bolivian peso-denominated time deposits in Bolivian commercial banks. The ratio increased from 10 percent in 1973 to more than 150 percent in 1982, a period during which inflation had risen from one to three digits. In November 1982, domestic contracts denominated in foreign currency were forbidden, and the ratio plummeted, eliminating the record of dollarization.



**Figure 6.7**  
Dollar/peso deposit ratio in the Bolivian banking system, 1973-1983.  
Source: M. Melvin, "The Dollarization of Latin America as a Market Forced Monetary Reform," *Economic Development and Cultural Change* 36 (April 1988), 550.

As long as dollarization occurs, recorded or unrecorded, its cost to the local economy is substantial. Dollars that could be used to import real goods are instead used as a medium of exchange. Just as gold is considered too valuable to serve as a medium of exchange in industrialized countries, the use of scarce dollars in Latin America is an inefficient use of resources. In addition, if local residents shift their wealth out of the country, credit available to local investors falls, and real growth suffers. Finally, the government's ability to

collect seigniorage from domestic money creation falls with dollarization because it no longer acts as the primary source of money in the economy. Indeed, by one estimate, the Argentine government supplied less than half the value of currency in the local economy in 1988 because Argentines used dollars so widely. The government's response to this loss of seigniorage is typically not a decrease in money creation but a frantic attempt to keep up real government spending by printing even more money.

The extent of dollarization depends on its context. The impacts of the terms of trade shock that reduced export tax revenues in the early 1980s in Mexico and Bolivia were quantitatively different. It is also true that the effects of dollarization are different depending on whether the inflation rate has previously been high or low. In countries with low inflation rates like Mexico, the share of the money base in output is large relative to other countries long used to inflation. In traditionally high inflation countries that have already been partially demonetized, the base on which the government can collect seigniorage is small. In those countries, a terms of trade shock that reduces tax revenues, combined with a flight from domestic currency, can easily lead to a hyperinflation, as it did in Bolivia.

What set off the stampede to dollars in Bolivia? The case of Bolivia shows how closely linked monetary policy and external imbalances can be in causing inflation. Between 1971 and 1978, Bolivia experienced relative stability under the regime of General Hugo Banzer. Some economic prosperity was achieved as a result of favorable terms of trade and heavy borrowing from international banks. At the end of this period, however, high international interest rates, falling commodity prices, and tight credit put an end to easy economic growth. By late 1980, access to international capital markets had dried up, and both the World Bank and the IMF had stopped lending. Shortly thereafter, the price of tin plummeted.

By 1982, inflation was running at almost 300 percent per year. Hernan Siles-Suazo took power that year as head of a leftist coalition. The government wanted to satisfy social demands and also had to meet larger debt service because of the increase in international interest rates in the early 1980s. However, it lacked the base to raise tax revenues, and international lending had dried up. Moreover, revenues from export taxes dwindled with the falling price of tin.

Thus, the deficit was met through an increase in money creation. While the country should have been adjusting to lower standards of living as borrowing became impossible and export earnings fell, strikes and lockouts put pressure on the government to make promises it could not keep. Hyperinflation followed.

Prices rose by a factor of fourteen in 1984 and kept soaring throughout 1985. Distortions in the economy became manifold. Tin miners smuggled ore out of the country to exchange it for dollars in Peru. Workers left their jobs early—if they came in at all—to join in the speculative hoarding of dollars and basic goods. Companies shifted their attention from production to financial scams. One firm borrowed dollars from the government with the stated intent of importing tractors, arranged to have empty crates shipped through customs, and sold the dollars on the black market. A mine owner who had subsidized heavy losses in mining with lucrative financial deals said, “Bolivians are learning that only a chump tries to make a profit producing something.”<sup>10</sup> The exception was cocaine: more Bolivians turned to drug production to earn dollars.

The Bolivian hyperinflation hit the country during a period of intense political instability. The large deficits, which could not be financed by borrowing abroad after 1980, caused the government to print money and led to increasing inflation. Inflation itself increased the deficit because real tax revenues fell due to lags in tax collection. Total central government revenues fell from around 9 percent of GNP in 1981 to about 1.3 percent of GNP in the first half of 1985. Cuts in spending were made in public investment and then in international debt servicing. They came too late. At the peak of hyperinflation, the external debt was no longer being honored, but by then the tax system had collapsed. Revenues fell from 10 percent of GDP in 1978 to 2 percent in 1984.

The inflation stopped abruptly in October 1985 when President Victor Paz Estenssoro, who had just been elected, announced a stabilization program. The program reduced the fiscal deficit through a sharp increase in public sector prices, a reduction in subsidies to the mining industry, a public sector wage freeze, and a moratorium on debt service. Expenditures fell below taxes, and the exchange rate policy played an important role in the stabilization. By stabilizing the exchange rate, inflation could be made to revert to the US inflation rate. Nonetheless, GDP growth was negative in 1985 and

1986, as it had been since 1982, and economic recovery in the late 1980s was much slower than expected. The stabilization process was not without costs, an issue discussed in the following chapter.

### Capacity Constraints and Supply Shocks

Inflationary pressure is not solely the result of money creation and crises in the external sector. Heavy fiscal spending can force an economy to its limits. Thus, wars have inflationary consequences not only because governments often finance them by printing money but also because they put a strain on the real capacity of the economy. In most Latin American countries, an expansion of demand is likely to wind up increasing the demand for imported goods. As a result, inflation will frequently be linked to balance of payments problems, even if an external shock is not a major root of the problem.

Government policy can also influence aggregate demand and prices through its role in determining wages. Populist regimes in Argentina, Peru, and Chile have often been blamed for inflation because they have given workers greater bargaining power by refusing to crush strikes. The real increase in wages raises consumption and often raises output too. But firms can pass on the higher wage costs because protectionism does not force them to remain internationally competitive, and inflation rises. The problem becomes more acute when populist regimes fail to recognize the capacity of the economy to respond to increasing demand. Continued increases in real wages, combined with expanded social programs, create a struggle over loaves of bread that refuse to multiply despite the proclamations of a charismatic leader. The inflation that occurred under President Salvador Allende is a good example of a crisis that developed as a result of several factors, including rapid stimulation of demand beyond the capacity constraint. (We discuss this problem in detail in chapter 8.)

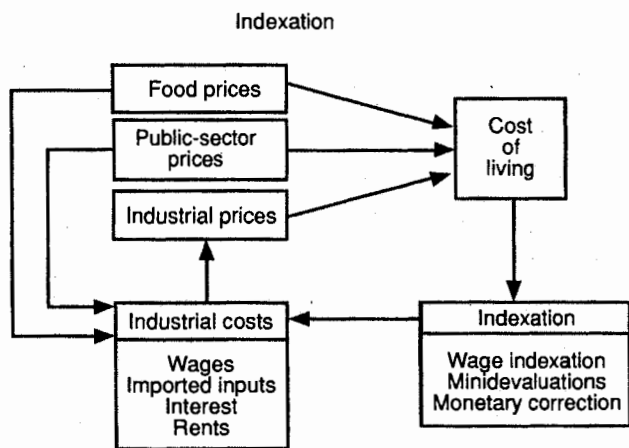
If inflation is defined as too much money chasing too few goods, any shock that increases aggregate demand above full employment output, or decreases supply, contributes to inflationary pressure. Bad harvests, earthquakes, shifts in the political power of workers, and devaluations can fuel inflation. In Mexico and Brazil in the early 1980s, prices took off faster than the money supply, lending some

credence to the argument that it is not the money supply per se that causes inflation but real shocks that drive up prices.

### Indexation and Adjustment Intervals

Throughout Latin America but especially in the high inflation countries of the Southern Cone, contracts are written to include an adjustment for inflation. Minimum wage legislation assures workers that their wages will be periodically increased by the rate of inflation. This indexation is generally backward looking; that is, wages or contracts are adjusted for past inflation. Figure 6.8 illustrates an indexation system like the one that existed in Brazil between 1968 and 1986. In this case, legislation corrected wages for past inflation; the exchange rate was readjusted in short intervals by minidevaluations; interest rates, bonds, and rents were corrected for price increases through a system of indexation called monetary correction.

This indexation process makes inflation a self-perpetuating phenomenon. Current supply shocks are automatically transmitted to future periods. An oil price increase, a real depreciation, increases in indirect taxes, elimination of public sector subsidies, or increases



**Figure 6.8**  
Indexation

in the real price of agricultural goods raise the current rate of inflation and are transmitted by indexation into increased inflation in subsequent periods.

Figure 6.8 shows how current inflation depends on past inflation through indexation of wages, the exchange rate, and public sector prices. Overspending (the level of aggregate demand in the economy) and supply shocks can set the inflationary process in motion. Indexation will keep it going. We can describe the inflation process as

Inflation today = Inflation yesterday + effects of the level of demand  
+ effects of supply shocks.

In the vicious circle created by indexation, inflationary shocks, such as a devaluation or an increase in the public sector prices, are perpetuated. Inflation today repeats inflation yesterday. Adverse shocks push up prices today, and tomorrow prices will increase again simply because they are higher today. Indexation protects the real economy from the effects of inflation caused by rapid expansion of the money supply, but it makes adjustment to real shocks, such as an increase in the price of imported oil, more difficult. A devaluation aimed at raising the relative price of imported oil is quickly eroded in real terms under indexation.

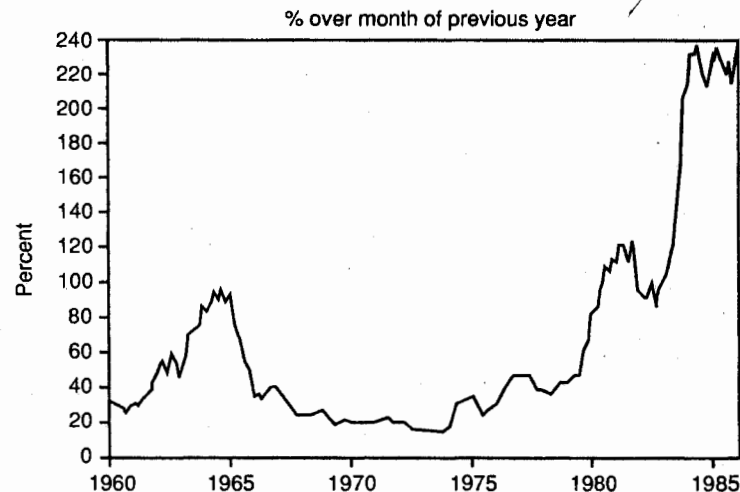
In fact, to raise real prices or cut real wages in the presence of full indexation, the frequency of adjustment of prices and exchange rates has to be higher than the frequency of wage adjustments. Only then is it possible to beat the indexation, cutting the average real wage during the adjustment period by stepping up the rate of inflation. Indexation of the financial system, the tax structure, and the public debt implies that changes in the inflation rate are automatically and fully accommodated.

A slowdown in the growth rate of nominal spending cannot eliminate inflation from one day to the next. The lagged effects of past inflation will continue to raise prices. Even if an indexation system is not in place, high current rates of inflation create expectations of inflation for the future. The concept of inertial inflation refers to the difficulty of stopping inflation once it is in motion.

The most striking examples of inflation inertia are found in countries with formal indexation mechanisms—for instance, Brazil.

Figure 6.9 shows the history of the Brazilian inflation. In the five years between 1959 and 1964, increasingly populist administrations carried inflation from 10 to 100 percent. Sharp wage repression after the military coup brought inflation down to 20 percent by 1968, where it stayed until the first oil shock, when inflation jumped to 40 percent. There it remained until 1979. In the five years between 1980 and 1985, the government's failure to absorb the debt and oil shocks in a noninflationary manner pushed inflation from 50 to 220 percent.

Brazilian money growth lagged inflation from 1980 to the end of 1984. Inflation seemed to enjoy a life of its own. A committed monetarist might argue that inflation accelerated due to the expectation of faster money growth in the future, although current money growth was slow relative to the inflation rate. These expectations might have been fueled by the rapid accumulation of the debt and the prospect of increasing interest payments, but the facts seem more consistent with the view that inflation carries some inertia. Furthermore, a whole host of other factors contributed to the acceleration of inflation, including two large devaluations in 1979

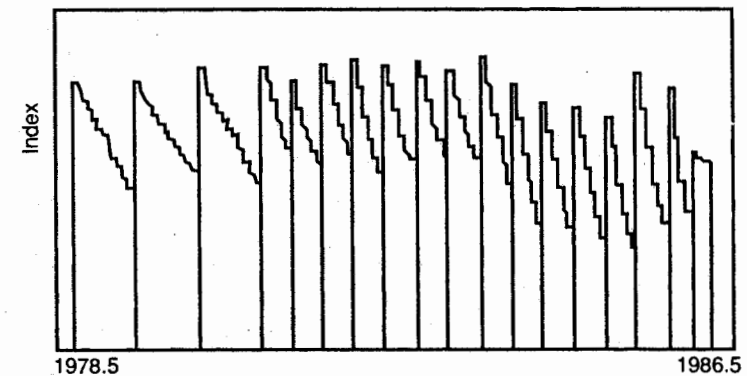


**Figure 6.9**  
Inflation rate, Brazil, 1960–1985.  
Source: Fundação Getúlio Vargas, *Conjuntura Economica*, various issues.  
Rio de Janeiro: Fundação Getúlio Vargas.

and 1983, increases in the prices and interest rates administered by the government, and cuts in subsidies to oil and wheat consumption. All of these inflationary pressures were aggravated by a crop failure in 1983. Add to that the indexation of wages, bonds, and the exchange rate, and it is not surprising how easily the inflationary shocks spread, leading to inflation rates of 200 percent.

A related factor in the acceleration of inflation is the shortening of the interval for adjustment of wages, public sector prices, and the exchange rate. In high inflation economies, institutional arrangements provide for a periodic resetting of real wages to a peak. The peak real wage occurs at the date of the contract immediately after the nominal wage increase. Subsequently, the real wage is eroded by inflation until the next adjustment occurs. Figure 6.10 shows the actual real minimum wage in Brazil between 1976 and 1986. At fixed intervals the real wage increases to a peak and then is eroded over the interval between adjustments, reaching a trough just prior to the next adjustment, a year or six months later.

Escalation of inflation to three or four digits invariably involves a shortening of adjustment periods for wage and price setting. This shortening of the adjustment interval increases inflation; in a context of overlapping contracts, it means that a larger number of contracts are revised on the same date, pushing up costs and, hence,



**Figure 6.10**  
Real minimum wage, Brazil, 1976–1986.  
Source: Fundação Getúlio Vargas, *Conjuntura Economica*, various issues.  
Rio de Janeiro: Fundação Getúlio Vargas.



inflation. In 1979, the annual adjustment of wages in Brazil was accelerated to a biannual basis. This translated into a cost shock for firms and led to a doubling of the inflation process. Higher inflation in turn further shortened intervals, pushing inflation up once more. By the end of 1985, firms and workers were beginning to move into three-month revision cycles. The government was keenly aware that the transition to even shorter periods must have hyperinflationary consequences and hence tried to avoid the shortening of intervals, an effort that culminated with the wage-price freeze of the Cruzado Plan (discussed in the next chapter).

## CONCLUSION

High inflation in Latin America poses a threat to the region's infant democracies. It erodes the purchasing power of wages, creates intense feelings of insecurity, and undermines popular support for constitutional governments. Even if indexation is widespread, covering wages, prices, interest rates, and taxes, inflation hits hardest the lower classes, whose subsistence is not protected. Escalations of conflict in Brazil and Peru suggest that the mixture of inflation and bad income distribution does not make for a stable combination. Furthermore, inflation tends to result in overvaluation: investors fear the exchange rate risk as well as economic instability. Balance of payments problems are not far behind.

Much has been written about the high costs of stabilization policies; however, the cost of rapid inflation, in terms of lost growth and lower real wages, is not any smaller. Results of a poll in Peru in October 1988 showed that 75 percent of respondents favored adoption of an agreement with the IMF, indicating that inflation is more unpopular than austerity, particularly when the chaos associated with inflation has brought the country to the brink of a coup.<sup>11</sup>

A variety of factors contribute to inflation. Inflation rarely takes off without growth in the money supply. Yet there is no record of pure inflation in which the money supply started to grow at the whim of the monetary authorities. There is always some economic reason that forces governments to turn to inflationary policies. Clearly there are situations where external shocks, pressure to meet popular demands for higher standards of living, and inertia play a relatively larger role than money creation in explaining inflation.

What are the appropriate solutions? The prescriptions for containing inflation vary with the diagnosis. In the following chapter, we discuss orthodox stabilization policies derived from monetarist interpretations, as well as recent heterodox programs derived from theories of inertia and structuralists' recommendations.

## FURTHER READING

Dornbusch, R., F. Sturzenegger, and H. Wolf. *Extreme Inflation: Dynamics and Stabilization*. Brookings Papers on Economic Activity 2. Washington, D.C.: Brookings Institution, 1990.

Williamson, J., ed., *Inflation and Indexation*. Washington, D.C.: Institute for International Economics, 1985.

*World Development*. Special Issue: The Resurgence of Inflation in Latin America. August 1987.