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Chapter Title: The Emergence of Hyperinflation, 1982-85

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servicing was resumed. Bolivia finally declared a moratorium to the commercial banks in mid-1984.

Bolivia was able to get some debt alleviation more easily with two bilateral creditors: Brazil and Argentina. A total of U.S.$716 million of short-term debt and principal on medium-term debt was refinanced with those countries in 1983 on relatively easy terms: a fixed interest rate of 8 percent, maturities between 8 and 10 years, and grace periods of 3 years. This scheme of refinancing was found acceptable by the Bolivian public and did not provoke the kind of criticism that the rescheduling with the commercial banks had received. The international organizations, on the contrary, objected to the status of "preferred creditor" that Argentina received because it was able to use the natural gas exports of Bolivia as collateral.

5.7 Developments After 1985

In chapter 8 we provide a detailed analysis of Bolivia's debt renegotiations after 1985. The main point that can be mentioned here is that the government under President Paz took a very different approach to negotiations. Having inherited a unilateral suspension of payments on the bank debt from the Siles government, the Paz administration maintained the suspension and began negotiations with the banks addressed to a long-term solution to the crisis instead of another rescheduling. Some results were achieved in 1988 when Bolivia was able to retire approximately one-half of its commercial bank debt at a price of 11 cents per dollar. In 1989, more debt was retired and negotiations continued on the remaining debt that had not yet been repurchased.

6 The Emergence of Hyperinflation, 1982–85

The inflation in Bolivia in 1984 and 1985 was the most rapid in Latin American history up to that date and one of the highest in world history.[1] During the first half of 1985, the inflation surged to an annual rate of about 26,000 percent (approximately 60 percent per month), and it reached an annual rate of 60,000 percent during May–August 1985. As shown in table 6.1, the inflation was brought under control in the second half of 1985, and then after a sharp jump in prices in January 1986, inflation was kept at low

Table 6.1 **Monthly Inflation Rates, 1984–87**

	1984	1985	1986	1987
January	9.6	68.9	33.0	2.5
February	23.0	182.8	8.0	1.2
March	21.2	24.9	.1	.7
April	63.0	11.8	3.6	1.6
May	47.2	35.7	1.0	.4
June	4.1	78.5	4.3	−.2
July	5.2	66.3	1.8	.0
August	15.0	16.5	.7	1.0
September	37.4	56.5[a]	2.3	.6
October	59.3	−1.9	.6	2.1
November	31.6	3.2	−.1	−.3
December	61.1	16.8	.6	.8

Sources: 1/84–9/86, from national statistics; 10/86–12/87, from IMF, *International Financial Statistics*.

[a]Note that prices actually stop rising by September 9, though because of rapid inflation *in August* and the first week of September, September's average price level is 56.5 percent higher than in August.

double-digit rates for the next three years. Since the Bolivian inflation is one of the only cases since 1950 of a "true" hyperinflation (by Cagan's classic definition of monthly inflation exceeding 50 percent), it provides an important testing ground for alternative views of the dynamics of hyperinflation and of the design of anti-inflation programs.[2]

6.1 Origins of the Hyperinflation

The proximate cause of the hyperinflation is the government's loss of international creditworthiness in the early 1980s. We have noted that during the period 1975–81, various Bolivian governments relied heavily on foreign borrowing to finance government expenditures. The combination of a large buildup of international debt with domestic political instability, poor macroeconomic management, a weak tax system, and poor export prospects, precluded the Bolivian government from obtaining new international loans after 1981. When foreign capital inflows dried up in early 1982, the government did not raise taxes or cut expenditures, but rather substituted domestic credit expansion for capital inflows as the source of finance for the government. The rapid expansion of the money supply then set off the inflationary process. Thus the balance of payments played a critical role in the origin of the hyperinflation, but only insofar as it affected the rate of money creation. More evidence in support of this position is that after the beginning of stabilization, a massive deterioration of the Bolivian international terms of trade in 1986 did *not* reignite the hyperinflation since under the new policy rules, the terms-of-trade decline did not feed into the rate of domestic credit expansion to the public sector.

The substitution of domestic credit expansion for capital inflows and the jump in real seignorage collection took place in the first half of 1982, almost

nine months before the Siles government took office. But there is no evidence that the *intensification* of the inflation process involved a rise in seignorage collection after the beginning of 1982. (The simple correlation of inflation with the level of seignorage as a percentage of GDP is $r^2 = -0.001$ for the quarterly interval 1982:1 to 1985:3.)

The time path of seignorage relative to GDP is shown in figure 6.1. The figure records the quarterly seignorage collection, measured relative to annual GDP. Therefore, to obtain the annual seignorage collection relative to GDP it is necessary to add the quarterly rates for a year. Seignorage is measured for each month as $(M_t - M_{t-1})$, where M is base money, and is then divided by an estimate of nominal GDP for the month. This ratio is then added for the months of the quarter, with the results shown in the figure.

Surprisingly, it is difficult even many years later to uncover precisely the causes for the jump in money creation in early 1982, though the main culprit is almost surely a shift in the environment for foreign borrowing. The problem with nailing down a culprit lies with the disarray of Bolivian fiscal data during this period, a problem we have already encountered in chapters 4 and 5. We noted three kinds of problems inhibiting a clear assessment of the fiscal situation. First, most of the available data cover only the central government (the TGN) and not the consolidated public sector, including state enterprises, regional corporations, local government, state development banks, etc. This limited coverage is especially problematic for the

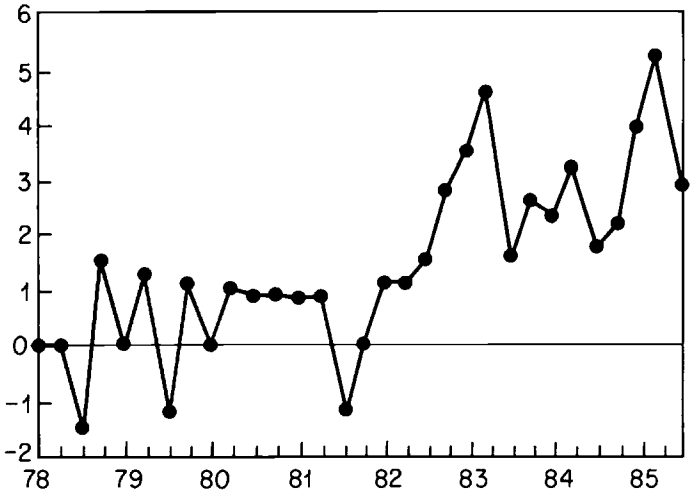

Fig. 6.1 Seignorage (per quarter, as percentage of annual GDP)
Note: Annual seignorage earnings are the *sum* of quarterly earnings.
Source: IMF, *International Financial Statistics*.

hyperinflation period, since there were large ad hoc transfers among the various parts of the government at that time. Second, there is great difficulty in interpreting on an ex post basis the accounting of arrears on debt repayments during this period. Third, there were (and remain) significant disagreements among the various parts of the government about the responsibility for portions of the foreign debt. At some points, for example, the Central Bank repaid foreign debts on behalf of the TGN, which the TGN refused to recognize.

With these limitations in mind, it is still possible to piece together a rough interpretation of the rise in seignorage in 1982. Key fiscal data for the central administration for 1981–84 are shown in table 6.2. Notice the important fact that the TGN deficit rises from an estimated 5.7 percent of GNP in 1981 to an estimated 22.3 percent of GNP in 1982. This increase just barely exceeds in magnitude the rise in expenditures on "internal and external debt." Most or all of the "internal debt" category in this period reflects Central Bank repayments of foreign debt on behalf of the TGN, so that the jump in debt repayments is almost exclusively related to foreign debt. At the same time that debt servicing jumps up, inflation starts to accelerate, with the result that real tax collections fall sharply, from approximately 9.4 percent of GNP in 1981 to 4.6 percent of GNP in 1982. This revenue shortfall is partially balanced by a simultaneous cut in the current and capital expenditures of the TGN. Notice that the combined expenditures on personnel, other services, materials, and fixed assets fall by 3.0 percent of GNP between 1981 and 1982.

The importance of enlarged net debt-service payments for the burgeoning deficit in 1982 is also evident from the balance-of-payments data, which

Table 6.2 **The Evolution of Revenues and Expenditures, 1981–84 (as percentage of GNP)**

	1981	1982	1983	1984
Revenues	9.4	4.6	2.6	2.6
Internal taxes	3.0	1.8	1.4	.7
Taxes on petroleum	2.1	.9	.4	.6
Other	2.6	.8	.3	1.1
Expenditures	15.1	26.9	20.1	33.2
Personnel	7.2	5.6	5.2	8.0
Other services	.7	.4	.3	.5
Materials	1.5	1.0	.7	.8
Fixed assets	1.0	.4	.4	.5
Internal debt	1.8	10.4	.3	.4
External debt	1.3	7.7	10.8	2.2
Others	1.6	1.4	2.4	20.8[a]
Deficit	5.7	22.3	17.5	30.6

Source: Ministry of Planning, Bolivia.

[a]Mainly central government transfers to state enterprises.

unfortunately cannot be matched exactly with the budget data. We saw in table 5.5 for 1980 and 1981 that net resource transfers to Bolivia were positive, meaning that net new borrowing by the public sector exceeded the level of interest payments on the public debt. In 1982, *net new* lending plummeted, so that the resource transfer to Bolivia (new loans minus interest payments) turned negative. As a percentage of GNP, net resource transfers toward Bolivia shifted from 6.2 percent in 1980 to 2.9 percent in 1981, −2.0 percent in 1982, and −4.6 percent in 1983. Were we to include the data on short-term debt, which is not collected by the World Bank in the case of Bolivia, the shift in net transfers would be even more dramatic, since an inflow of short-term credits in 1980 and 1981 dried up in 1982.

As it turns out, real seignorage collection from 1982 to mid-1985 remains roughly constant, averaging about 12 percent of GNP each year. This does not reflect a stable path of government spending, taxes, and monetary emission during this period. Instead, the roughly constant seignorage collections hide a process of adjustment in which tax revenue collections all but collapse, while government spending is cut back sharply over time in the vain attempt to compensate for the falling tax collections. Once again, data problems at this point preclude a comprehensive account of this process. As we have mentioned, while there are reasonably acceptable accounts for the central government, data on the consolidated public sector is sparse.

Nonetheless, relying on the central administration accounts, we can see much of the process at work. The government depended on three main forms of taxes during the period: internal taxes (mainly sales and income taxes), taxes on petroleum, and taxes on trade. Each of these taxes fell sharply in real terms during the period. Figure 6.2 records the collections from taxes during 1981–84 as a percentage of GNP (the category "other" includes trade taxes). Overall, revenues of the central administration fell from more than 9 percent of GNP in 1979 and 1980 to just 1.3 percent of GNP in the first nine months of 1985, before the new stabilization program went into effect (the preprogram period in 1985 is indicated by 85.1 in the figure). Upon institution of the stabilization program, tax revenues of the central administration jumped almost immediately to more than 10 percent of GNP (shown as period 85.2 in the figure), mainly through an increase in tax payments by the state oil company, YPFB. In view of the sharp decline in tax revenues, an increasing proportion of the central administration deficit was financed through fiscal credits from the Central Bank. The proportion of TGN expenditures covered by TGN revenues fell from 65.6 percent in 1979 to just 6.9 percent in the first nine months of 1985:

1979	66%	1983	13%
1980	60%	1984	8%
1981	62%	1985.1	7%
1982	17%	1985.2	134%

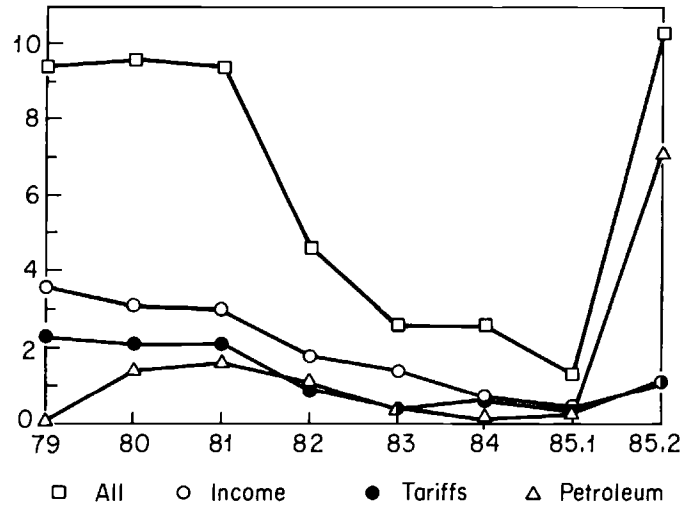

Fig. 6.2 Tax revenues as a percentage of GNP (by category of tax)

Note that the steep drop in revenues relative to expenditures in 1982 reflects the *rise* in expenditures on debt servicing in that year as well as the falling revenue collection.

The reasons differ for the declines in the various kinds of taxes, and these reasons are worth stressing, since they help to explain the nature of the stabilization policies finally undertaken in August 1985. The drop in internal taxes (mostly income and sales taxes) is most readily explained. Indexation of the income tax system was not even attempted until an administrative change in March 1985, so that lags in collection combined with high inflation reduced the real value of tax collections substantially, in the way familiar from Tanzi (1977) and others. Many sales taxes were set at specific, rather than ad valorem rates, and the specific rates were adjusted with very long lags, if at all, and certainly not fast enough to keep up with accelerating prices under a hyperinflation. The decline in tariff revenues introduces some less conventional effects. Throughout the entire hyperinflation period, the official exchange rate was pegged by the Central Bank and was adjusted in steps with long lags to the underlying inflation. As the government resorted increasingly to fiscal credit creation by the Central Bank in order to fund expenditures, there was a constant pressure on foreign exchange reserves at the official exchange rate. Rather than maintaining a steadily depreciating but unified price of foreign exchange, the government maintained the official parity for long intervals and rationed foreign exchange. The persistent excess demand for foreign exchange at the official exchange rate of course resulted in an enormous premium for foreign exchange in an unofficial, illegal, but semi-tolerated black market. Table 6.3 shows the average premium on the

Table 6.3 **Percentage Gap Between Official and Black-Market Exchange Rate, 1980–86. III (quarterly average)**

1980: I	.0	1984: I	327.4
II	.0	II	69.8
III	.0	III	309.7
IV	.0	IV	302.7
1981: I	.0	1985: I	330.9
II	.0	II	321.0
III	45.5	III	798.1
IV	68.3	IV	8.0
1982: I	57.0	1986: I	5.8
II	3.5	II	2.1
III	4.8	III	.5
IV	22.0		
1983: I	116.3		
II	105.1		
III	241.8		
IV	225.4		

Source: Ministry of Planning, Bolivia.

black market relative to the official rate on a quarterly basis for 1980:1 through 1986:3. In the month before the stabilization program, the premium was on the order of 1,400 percent! Since the stabilization program began, the exchange rate has been unified, with a small and declining deviation (which remains because of minor legal and administrative factors) between the official rate and the now-legal parallel market rate.

With foreign exchange rationing at the Central Bank, progressively fewer import transactions went through legal channels and more imports came into the country via smuggling, outside of tariff control altogether. Under Bolivian law, all exporters are required to sell the foreign exchange from export earnings to the Central Bank at the official exchange rate. In sectors where smuggling was possible, the sharp divergence between the official effective rate for exporters and the black-market exchange rate made smuggling a highly attractive option (the smuggler converts the foreign exchange earnings from exports in the black market, where the number of pesos per dollar is much greater than at the official effective rate). A trenchant illustration is provided by the example of Peru, which, despite the absence of tin mines, became a tin exporter in 1983–85 on the basis of Bolivia's smuggled tin. As dollar export earnings sold to the Central Bank at the official rate shrank markedly, the Central Bank had a diminished supply of dollars to sell to importers, who progressively turned to the black market in order to pay for their imports. The overall result was that a very high and apparently growing proportion of imports in the economy went unrecorded, and therefore largely untaxed, during the hyperinflation period.

The story of YPFB tax collections is related. Just as the official price of foreign exchange lagged the domestic price inflation, so too the government altered the domestic price of petroleum products with a significant lag.

Indeed, petroleum prices were typically changed at the same time that the official exchange rate was devalued. As an example, consider the domestic price of a liter of gasoline, converted to U.S. dollars using the black-market exchange rate (the rate earned, incidentally, by smugglers who carried cheap petroleum from Bolivia to Peru across Lake Titicaca). During this period, the world market price was between $0.25 and $0.28 per liter, but the domestic price was as shown in table 6.4.

Thus, on the eve of the stabilization program (which raised the internal petroleum prices to world levels), the internal price of petroleum was about one-sixth to one-seventh of the world market price. YPFB was obligated throughout the hyperinflation period to pay taxes to the central government on a percentage of its revenues from internal sales and external sales. With internal prices so depressed, the taxes on internal sales were also severely depressed. Moreover, because its profits on internal sales were so limited by the price ceilings on its output, YPFB also refused to pay taxes on its external sales, arguing that the revenues were necessary to meet operating expenses.

It is much more difficult to offer a comprehensive account of expenditure behavior during the hyperinflation, for reasons to which we have already alluded. As a rough estimate, however, it seems that as government revenues diminished, real expenditures fell more or less in tandem to preserve a large but fairly constant deficit, since we know that the inflation tax, which was financing almost 100 percent of the cash-flow deficit, did not rise markedly above 12 percent of GDP from 1982 to mid-1985. It appears that the main casualties of the reduction in real spending were capital investment by the public sector and current central government expenditures on personnel and nonpersonnel services and materials. After mid-1984, interest payments on the foreign debt also diminished sharply as the government built up large interest arrears. Public investment spending fell, according to the IMF, in the manner shown in table 6.5.

Table 6.4 **Domestic Price of Gasoline ($/liter), March–December 1986**

March	$.09
April	.07
May	.06
June	.05
July	.03
August	.04
September	.28
October	.27
November	.23
December	.23

Source: UDAPE, Bolivian Ministry of Planning.

Note: The price is calculated by dividing the peso price per liter by the black-market exchange rate (pesos/$).

Table 6.5 **Public Investment (percentage of GNP), 1980–85**

	1980	1981	1982	1983	1984	1985
Central administration	2.9	3.1	1.9	1.8	1.5	1.8
State enterprises			4.6	3.0	2.6	1.4
Total			6.5	4.8	4.1	3.2

Source: Unpublished IMF memorandum on Bolivia, 1985.

Current spending by the TGN evolved in a similar way, with overall spending on services and materials falling from 9.4 percent of GNP in 1980 to 6.8 percent in the first part of 1985.

6.2 The Dynamics of the Hyperinflation

This section is devoted to a closer look at the dynamics of the hyperinflation. To organize the discussion, we begin with the simple and classic Cagan (1956) model. Real money balances (M_t/P_t) are written as an exponential function of expected inflation π^e, and inflation expectations adjust adaptively:

$$(1) \qquad m_t = M_t/P_t = A \exp[-b\pi^e(t)]$$
$$\dot{\pi}^e_t = \lambda(\pi_t - \pi^e_t)$$

The government's reliance on seignorage taxation is denoted by $s \equiv \dot{M}/P$, which may also be written as $\dot{m} + \pi m(\pi^e)$, with $m = M/P$, and $\pi = \dot{P}/P$. In the steady state, $s = \pi m(\pi)$, which as is well known can be satisfied by *two* inflation rates, a low inflation rate $\pi^{\min} = \pi^{\min}(s)$ and a high inflation rate $\pi^{\max} = \pi^{\max}(s)$ for all $s \leq s^{\max}$, the maximal seignorage rate. The maximal rate is achieved at the inflation rate $\pi = 1/b$, with $s^{\max} = m(1/b)/b$. Given the relations in (1) and that $\dot{M}/P = s \leq s^{\max}$, an economy starting at $t = 0$ will converge to $\pi^{\min}(s)$ assuming that $\pi^e(0) \leq \pi^{\max}(s)$ and that $1 > b\lambda$.

In the important case in which $s > s^{\max}$ and in which the stability condition $1 > b\lambda$ is satisfied, then starting from a finite expected inflation rate, actual inflation will rise steadily without bound. At any given moment, the actual seignorage s can be financed through a surprise inflation, in which actual inflation exceeds the expected inflation rate. But this continuing gap between actual and expected inflation continues to drive up the expected inflation rate, which in turn increases the actual inflation rate necessary to achieve the given level of seignorage. Inflation proceeds to increase explosively and without bound.

One key property of the Cagan model should be stressed: starting from a steady state with $\pi_0 = \pi^{\min}(s_0)$, a permanent rise from s_0 to s_1 will lead to a jump in π on impact, and then to a steadily rising inflation rate. If s_1 is less

than s^{max}, then a new higher steady state, $\pi^{min}(s_1)$, is reached. If instead s_1 is greater than s^{max}, then inflation jumps up on impact and continues to rise without bound. In either case, a period in which inflation is rising need not signify a *rising* financing need (i.e., a continuing rise in s), but rather a lagged adjustment of the inflation rate to an earlier once-and-for-all increase in s.

This essential aspect of the model characterizes the Bolivian experience, as we have already seen in figure 6.1. Aside from seasonal spikes in seignorage in the fourth quarter of most of the years (for budgetary reasons associated with a Christmas wage bonus), there is basically one permanent step increase in the seignorage collection in 1982, which persists until the third quarter of 1985.

This model can easily be extended to the open economy by postulating a law-of-one-price (or purchasing-power-parity) relation between domestic prices, foreign prices, and the exchange rate. Specifically, we can assume $P_t = P_t^* \cdot E_t$, where P^* is foreign (dollar) prices and E is the exchange rate in units of pesos per dollar. Given the path of foreign prices and seignorage demands, we can solve for domestic prices and the nominal exchange rate.

This simple extension model of monetary and price dynamics introduced earlier must be modified in one important respect in the case of Bolivia. We have seen that throughout the hyperinflation period, foreign exchange was rationed at the official exchange rate, so that a large black-market premium was present throughout the period. In order to understand the dynamics of prices with a black-market exchange rate, it is necessary to alter the purchasing-power-parity relation to reflect the fact that the black-market exchange rate, rather than the official rate, best reflects the marginal cost of foreign exchanges for most imports during the period. For a limited subset of "necessary" imports, official foreign exchange was available from the Central Bank without rationing. The official exchange rate applied, for most of the period, to newsprint and pharmaceutical imports, for example. For all other goods, limited amounts of imports were purchased at the official exchange rate, but on the margin the cost of foreign exchange was dictated by the black-market price rather than by the official price. As a result, we should expect that the price level would be a weighted average of the official exchange rate (E) and the black market exchange rate ($\tilde{E}$) price of foreign exchange, so that

$$P_t = E_t^{\gamma} \tilde{E}_t^{(1-\gamma)} P_t^* \tag{2}$$

As before, monetary equilibrium requires $M/P = m(\pi^e)$. Using the convenient Cagan form for money demand used earlier, assuming adaptive expectations for inflation in a discrete-time setting, $\pi_t^e = \pi_{t-1}^e + (1)$ and $\lambda(\pi_t - \pi_{t-1}^e)$, and taking the logs of (2), we can write:

$$(3) \qquad \mu_t - \gamma e_t - (1 - \gamma)\tilde{e}_t = \lambda a - b\lambda\pi_t + (1 - \lambda)(\mu_{t-1} - p_{t-1}),$$

where $a = \log A$, $\mu = \log M$, $e = \log E$, $p = \log P$, and $\log P^* = 0$. By rearranging, we get an estimable equation for the black-market premium $(\tilde{e} - e)$ as an increasing function of $(\mu - e)$, as well as a rising function of inflation and a negative function of (log) real balances lagged one period:

$$(4) \qquad (\tilde{e}_t - e_t) = -\lambda a/(1 - \gamma) + [1/(1 - \gamma)](\mu_t - e_t) + [b\lambda/(1 - \gamma)]\pi_t - [(1 - \lambda)/(1 - \gamma)](\mu_{t-1} - p_{t-1})$$

An estimate of equation (4) using monthly data for January 1982 to September 1985 is strongly supportive of this monetary interpretation of the black-market premium. The estimated equation is:[3]

$$(5) \qquad (\tilde{e}_t - e_t) = \underset{(0.24)}{3.03} + \underset{(0.08)}{1.10}(\mu - e) + \underset{(0.17)}{0.57}\,\pi_t - \underset{(0.10)}{0.58}(\mu_{-1} - p_{-1})$$

$$R^2 = 0.84; \text{ D.W.} = 1.26; \text{ s.e.} = 0.27.$$

The point estimate on $(\mu - e)$ of 1.10 suggests that the black-market exchange rate gets a weight γ of 0.9 in determining the price level. This high weight is broadly consistent with direct estimates for prices, to which we now turn.

6.2.1 Price and Exchange Rate Dynamics

The microdynamics of wages, prices, and exchange rates changed markedly over the course of the inflation. During the early 1980s, nominal wages were changed only a few times a year, and the presence of staggered nominal wage settlements gave inertia to the wage-price process. As inflation accelerated, wage contracts were renegotiated on a more frequent basis until, by the end of the hyperinflation, nominal wages were being reset on a weekly or biweekly schedule. As for prices, an increasing proportion of transactions became dollar linked in the sense that traders quoted prices in dollars, converting into pesos (at the parallel exchange rate) at the time of the transactions. It was illegal during this period to use dollars for transactions or even to quote items in dollars, so that in most parts of the country (with the important exception of the Santa Cruz region), dollarization stopped short of actual transactions in U.S. dollars.

A precise specification of price–exchange rate linkages would open up a number of econometric and conceptual issues better left to another study.

Here, the process of encroaching "dollarization" is shown more simply in an equation linking monthly inflation to a one-month lag of inflation, the change in the black-market exchange rate, and the change in the official exchange rate. The equation to be estimated is:

$$(6) \qquad (p_t - p_{t-1}) = a_0 + a_1(p_{t-1} - p_{t-2}) + a_2(\tilde{e}_t - \tilde{e}_{t-1}) + a_3(e_t - e_{t-1})$$

All variables are expressed as monthly averages, where the monthly average exchange rates for month t are proxied by the geometric weighted averages of end-of-month rates for months $t-1$ and t.

There are two maintained hypotheses: (1) as inflation accelerates, the weight of the exchange rates in the price equations increases relative to the weight of the previous month's inflation; and (2) as inflation accelerates and as the black-market premium increases (see table 6.3), the black-market exchange rate increases in importance relative to the official exchange rate. Thus, we expect that $a_1/(a_1+a_2+a_3)$ and $a_2/(a_2+a_3)$ will both fall as the hyperinflation intensifies.

Estimates of (6) are shown in table 6.6, first under an unrestricted estimation of the parameters, and then under the restriction $a_1+a_2+a_3 = 1$. The hypotheses are supported in each case. The average monthly inflation rates for the three intervals are: 1983, 13.2; 1984, 31.4; 1985, 66.9. We see clearly that as we move from 1983 to 1985 the weight of lagged inflation (even at a one-month lag!) disappears, while the weight of the black-market exchange rate grows in importance. In the final eight months of the hyperinflation, price change is basically equiproportional to change of the black-market exchange rate.

The combination of equations (5) and (6) illustrates the utter futility of the government's policy of maintaining an overvalued official exchange rate under conditions of rapid money creation. The government's resistance to devaluation was ostensibly owing to the fear of provoking even higher inflation, but it is clear that money creation fed into prices even in the absence of devaluation, through the mechanism of depreciation of the black-market exchange rate. The maintenance of an overvalued official exchange rate did nothing to stop inflation. On the contrary, it not only created large distortions in the economy (particularly by acting as a tax on legal exports), but almost surely *raised* inflation by increasing the government deficit via its negative effects on tariff collections and other revenues.

6.3 Failed Attempts to End the Hyperinflation

As with many other hyperinflations, the end did not come on the first try, but only after several attempts at stabilization had failed. Stabilization programs were launched in November 1982, November 1983, April 1984,

Table 6.6 Price Inflation Equations

$$(p_t - p_{t-1}) = a_0 + a_1(p_{t-1} - p_{t-2}) + a_2(e_t - e_{t-1}) + a_3(\tilde{e}_t - \tilde{e}_{t-1})$$

	a_1	a_2	a_3	$a_1/(a_1+a_2+a_3)$	$a_2/(a_2+a_3)$
1. Unconstrained estimation (monthly)					
1983:1–1983:12	.33	.18	.20	.46	.47
	(.27)	(.11)	(.15)		
	$\bar{R}^2 = .42$	D.W. = 1.76			
1984:1–1984:12	.13	.32	.52	.13	.38
	(.52)	(.11)	(.19)		
	$\bar{R}^2 = .58$	D.W. = 2.80			
1985:1–1985:9	−.18	.17	1.04	−.17	.14
	(.17)	(.13)	(.16)		
	$\bar{R}^2 = .87$	D.W. = 2.20			
2. Constrained Estimation					
1983:1–1983:12	.57	.16	.27	.57	.37
		(.11)	(.13)		
	$\bar{R}^2 = .42$	D.W. = 1.97			
1984:1–1984:12	.16	.31	.53	.16	.37
		(.10)	(.11)		
	$\bar{R}^2 = .71$	D.W. = 2.83			
1985:1–1985:8	−.20	.17	1.03	−.20	.14
		(.11)	(.10)		
	$\bar{R}^2 = .94$	D.W. = 2.18			

August 1984, November 1984, and February 1985. The most ambitious programs were those of November 1982 and April 1984. Notably, the April 1984 package represented a fairly orthodox approach to stabilization that included some of the measures that later proved successful in August 1985. The package included a very large devaluation of the official exchange rate, an announcement of tax reform, and a major increase in public sector debt. In the event, the trade unions exploded in furious opposition to the program, and a month later, the government acceded to demands for a large wage increase to compensate for the devaluation. At the same time, the government reversed its debt policy under the pressure of the trade unions and entered into a unilateral moratorium on further servicing of the external commercial banks debt. The Siles government gave up further attempts to negotiate a package of debt rescheduling.

The complete breakdown of the April 1984 package eliminated any remaining hopes of the public that the Siles government would prove able to stabilize the economy. It should be recalled that in November 1984,

President Siles was compelled to announce elections for July 1985, one year ahead of schedule. A final attempt at stabilization came in February 1985, with a program that prompted a domestic march to La Paz and a month-long sit-in by 10,000 miners. Again the government capitulated to popular demands, after which it gave up even the pretense of attempting to stabilize before the arrival of a new government in August.

7 Ending the Hyperinflation, 1985–88

The end of the hyperinflation came swiftly, just three weeks after the new government of Victor Paz Estenssoro took office. A comprehensive stabilization program, labelled the New Economic Policy, was unveiled on 29 August 1985, and within days, the hyperinflation ended. Later in 1985, after several weeks of low inflation, there was another sharp run-up in prices associated with a large emission of money at the end of the year, but this blip in inflation was quickly brought under control in mid-January 1986.

7.1 The New Economic Policy

The main features of the New Economic Policy are shown in table 7.1. Note the program embraced widespread liberalization of trade and finance, as well as fiscal austerity. In principle, the stabilization measures are "short-term" measures, while the liberalization measures are oriented toward "long-run" growth. In fact, as we discuss later, the Bolivian government believes, with considerable reason, that the liberalization measures played a key role in permitting the stabilization policies to take hold.

The key stabilization measures (putting aside, for the moment, the question of liberalization policies) had four basic elements, two of which were to be implemented immediately and two of which were slated for implementation in the months following the beginning of the program. First, the government committed itself to a policy of a unified exchange rate, without capital controls or exchange controls. The exchange rate was initially floated, though with a maximum value of the peso beyond which peso appreciation would not be permitted, and then was managed in a dirty float during the following year. Second, the fiscal deficit was immediately reduced through a combination of (a) public sector price increases, especially for petroleum products; (b) a public sector wage freeze; (c) further