
The Realities of Modern Hyperinflation

Despite falling inflation rates worldwide, hyperinflation could happen again

Carmen M. Reinhart and Miguel A. Savastano



AFTER World War I, a handful of European economies succumbed to hyperinflation. Austria, Germany, Hungary, Poland, and Russia all racked up enormous price increases, with Germany recording an astronomical 3.25 million percent in a single month in 1923. But, since the 1950s, hyperinflation has been confined to the developing world and the transition economies. The milder problem of chronic high inflation ceased to be a problem in the advanced economies in the 1980s and in the developing countries in the 1990s (Chart 1). In Latin America and the Caribbean, the average rate of inflation dropped from 233 percent a year in 1990–94 to 7 percent in 2000–02. In the transition economies, the decline over the same period was even greater, from 363 percent to 16 percent. And, in developing Asia, always a low-inflation region by developing country standards, inflation has recently stabilized at about 5 percent a year.

The benign inflation environment of recent years may lead some to believe that chronic high inflation and hyperinflation have been eradicated for good. History suggests that such a conclusion is not warranted. Mainly to keep this important issue at the forefront of policy debate, this article reviews the broad patterns in key macroeconomic policies and outcomes in all episodes of hyperinflation that have occurred in market economies since the mid-1950s. Following Philip Cagan's classic definition of hyperinflation, published in 1956, we define a hyperinflation episode as beginning in the month that the rise in prices exceeds 50 percent and as ending the month before the monthly rise in prices drops below that rate and stays below it for at least a year. Since the late 1950s, all episodes of this kind not associated with armed conflicts (domestic or foreign) have occurred in countries that already had a history of chronically high inflation: Argentina, Bolivia, Brazil, and Peru. For comparison, our analysis also includes Ukraine, which, of the former Soviet republics, suffered the longest-lasting high inflation.

Beginning and end

Modern episodes of hyperinflation are different from those that followed World War I. The hyperinflations of the 1920s sprang up swiftly and were rapidly brought to an end,

without much cost to employment and output, after governments implemented drastic fiscal and monetary reforms that restored currency convertibility and gave central banks independence to conduct monetary policy.

In contrast, modern hyperinflations have not been short and swift. In most cases, they have been preceded by years of chronic high inflation. In Argentina, Brazil, and Peru, for example, year-over-year inflation remained consistently above 40 percent for 12–15 years before the peak of the hyperinflation (Table 1). Chronic high inflation does not necessarily degenerate into hyperinflation. But, in the five countries reviewed here, hyperinflation did ensue, triggered by an uncontrolled expansion in the money supply that was fueled by endemic fiscal imbalances.

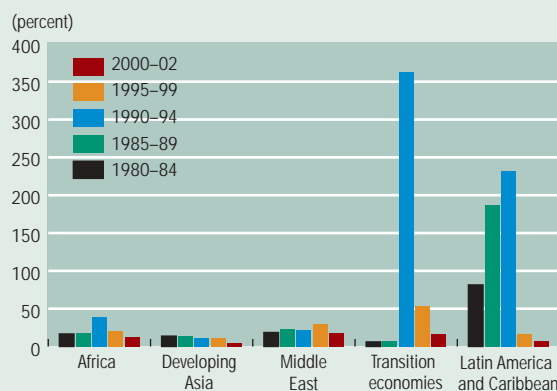
Nor has price stability been restored overnight in modern hyperinflations. It took 14 months in Bolivia and more than 3 years in Peru for inflation rates to fall below 40 percent. It took even longer to reach single-digit inflation rates—three and a half years in Argentina and about seven and a half years in Bolivia. In Brazil, failure to put in place the needed fiscal and monetary reforms in 1989–90 caused the country to experience a second, borderline hyperinflation in 1994.

Another difference is that full currency convertibility and

Chart 1

Vanishing inflation?

Average annual inflation rates are declining in most regions.



Source: IMF, *World Economic Outlook* (various years).

strict institutional constraints on monetary policy have not characterized the end of all modern hyperinflations. Except for Argentina, which adopted a currency board in early 1991, countries have relied on hybrid monetary and exchange regimes to bring high inflation under control. Bolivia and Peru relied on money targets and heavy foreign exchange intervention (“dirty floats”); Brazil and Ukraine retained de jure dual exchange rates for most of the 1990s.

Table 1

Modern hyperinflation

A short history of episodes in five countries

Episode	Peak 12-month inflation rate (percent)	Length of time annual inflation exceeded 40 percent		Main nominal anchor	Exchange rate regime
		Before the peak	After the peak		
Argentina May 1989–March 1990	20,266 (March 1990)	15 years, 2 months	1 year, 10 months	Exchange rate	Currency board, April 1991–December 1, 2001.
Bolivia April 1984–September 1985	23,447 (August 1985)	3 years, 5 months	1 year, 2 months	Money supply	Dirty float, August 1985–October 1987. De facto crawling peg thereafter.
Brazil December 1989–March 1990	6,821 (April 1990)	14 years, 3 months	5 years, 1 month	Exchange rate	Short-lived disinflation (Collor plan). Inflation rose steadily from July 1991 to June 1994, when the Real Plan, based on a preannounced narrow crawling band, was adopted. The band collapsed in January 1999 and was replaced by a managed float.
Peru July 1990–August 1990	12,378 (August 1990)	12 years, 5 months	3 years, 3 months	Money supply	Exchange markets were unified in August 1990, and the exchange rate floated until October 1993. De facto crawling band thereafter.
Ukraine April 1991–November 1994	10,155 (December 1993)	11 months	2 years, 10 months	Hybrid	Dual exchange markets with periodic attempts to peg official rate. Exchange markets unified in September 1998. De facto crawling peg thereafter.

Sources: IMF, *International Financial Statistics*; Fischer, Sahay, and Végh (2002); Reinhart and Rogoff (2002); Reinhart and Savastano (2002).

Table 2

Fiscal roots

Reducing fiscal deficits is essential to getting inflation rates down.

	Annual inflation rate (percent, average)						
	t-3	t-2	t-1	t	t+1	t+2	t+3
Argentina (1989-90)	90.1	131.3	343.0	2,697.0	171.7	24.9	10.6
Bolivia (1984-85)	32.1	123.5	275.6	6,515.5	276.3	14.6	16.0
Brazil (1989-90)	147.1	228.3	629.1	2,189.2	477.4	1,022.5	1,927.4
Peru (1990)	86.3	667.3	3,398.5	7,485.8	409.5	73.5	48.6
Ukraine (1991-94)	n.a.	2.1	4.2	1,613.7	376.4	80.2	15.9

	Fiscal deficit/GDP ¹ (percent)						
	t-3	t-2	t-1	t	t+1	t+2	t+3
Argentina (1989-90)	4.2	6.7	8.6	4.9	1.7	-0.4	0.2
Bolivia (1984-85)	7.8	14.7	19.1	16.7	2.5	7.4	5.7
Brazil (1989-90)	11.3	32.3	53.0	56.3	27.2	44.2	58.1
Operational deficit	3.6	5.7	4.8	2.8	0.0	-2.2	0.3
Peru (1990)	9.0	6.4	7.2	7.4	1.4	2.6	2.7
Ukraine (1991-94)	n.a.	n.a.	n.a.	14.1	8.7	4.9	3.2

Sources: IMF, *International Financial Statistics* (various years); Reinhart and Savastano (2002).

Note: t refers to the hyperinflation years (in parentheses). n.a. denotes not available.

¹Nonfinancial public sector or general government. Excludes quasi-fiscal losses.**Lingering effects**

Major fiscal adjustments have been needed to end all modern hyperinflations (Table 2). In fact, except for Brazil, countries that stopped hyperinflations reduced their fiscal deficits by more than 10 percent of GDP, on average, over a three-year period.

Although these countries successfully arrested the collapse of economic activity in the wake of an inflation explosion, output growth has been modest in nearly all of them. This suggests that there are reasons to be cautious about what to

expect from macroeconomic policies after hyperinflations end (Chart 2).

One reason the successful disinflations were not immediately followed by an economic rebound was the anemic state of the banking sector in the affected countries. Hyperinflation reduces the size of the financial sector and gradually erodes the efficiency of the price system and the usefulness of domestic money as a store of value, unit of account, and medium of exchange—taking the economy, in the extreme, to a near state of barter. In Bolivia, bank deposits fell to a low of 2 percent of GDP the year after hyperinflation began. Although deposits and monetary aggregates do recover after hyperinflation ends, intermedia-

tion remains extremely low by international standards. For instance, the ratio of bank deposits to GDP in the four Latin American countries ranged from 9 percent to 20 percent three years after the hyperinflation, which is between one-third and one-half the comparable ratio for middle-income countries with no history of high inflation (Chart 3).

Owing to the collapse of financial intermediation, banking crises have been a feature of all modern hyperinflations. The large-scale deposit withdrawals and sharp increases in nonperforming loans that accompanied economic contraction made these banking crises extremely costly. Modern hyperinflations have also occurred when the affected countries had no access to international capital markets. Four of the countries reviewed had already defaulted on their foreign currency bank debt when hyperinflation began, and hyperinflation triggered new defaults.

The run-up to hyperinflation has been characterized by a broad array of economic distortions, including capital controls, many forms of financial repression, segmented foreign exchange markets, and outright corruption. Although many of these distortions are hard to measure, the parallel exchange rate market premium has been found to be a useful proxy. As shown in Table 3, the parallel market premium during the hyperinflation or the run-up to the hyperinflation has consistently remained above 50 percent, and premiums in the hundreds and even thousands have not been uncommon. Easing or lifting capital controls and unifying exchange markets have been critical to reducing some of these distortions during stabilization. These measures—together with strict fiscal policies—have usually led to dramatic declines in parallel market premiums.

While robust growth has eluded most countries in the years immediately following a bout of hyperinflation, there is modestly encouraging evidence that, although it may take some time for countries to regain formal access to international capital markets, an acute financing shortage may be somewhat mitigated by the repatriation of flight capital. Table 3 shows

Table 3

Signs of recovery

Parallel market premiums fall and capital flight abates when hyperinflation ends.

	Average parallel market premium ¹ (percent)		
	t-3	t	t+3
Argentina (1989-90)	66.7	67.7	10.9
Bolivia (1984-85)	54.0	119.1	7.3
Brazil (1989-90)	111.5	102.3	18.1
Peru (1990)	278.8	32.7	6.4
Ukraine (1991-94)	n.a.	n.a.	11.1

	Cumulative capital flight ² (million dollars)		
	From t-3 to t	During t	From t to t+3
Argentina (1989-90)	8,662	7,938	-27,434
Bolivia (1984-85)	73	190	-70
Brazil (1989-90)	38,757	-8,932	-30,476
Peru (1990)	2,310	-669	-11,318

Sources: World Currency Yearbook (various issues); Reinhart and Savastano (2002).

Note: t refers to the hyperinflation years (in parentheses). n.a. denotes not available.

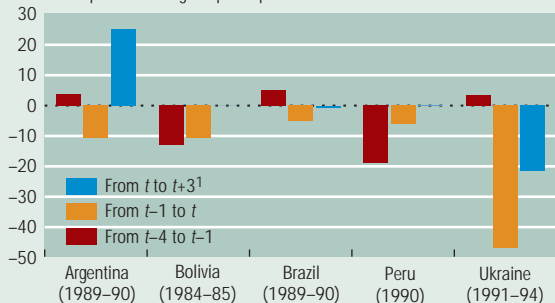
¹The parallel market premium is defined as $100 \cdot (ep - e) / e$, where ep is the parallel market exchange rate, and e is the official exchange rate. For Argentina, Brazil, and Peru, the estimates of capital flight end in 1992 (that is, t+2). n.a. denotes not available.²A positive entry indicates capital flight (an outflow); a negative, capital repatriation (an inflow).

Chart 2

How large is the rebound?

Stabilization policies can only do so much to redress economic collapse.

Cumulative percent change in per capita real GDP



Sources: IMF, *International Financial Statistics* (various years) and *World Economic Outlook* (various years).

Note: t refers to the hyperinflation years (in parentheses).

¹From t to $t+3$, there was no change in per capita real GDP in Bolivia. In Brazil, the change was -0.6 percent; in Peru, it was -0.1 percent.

that capital flight is sizable before and during hyperinflations. Yet once confidence is restored through stabilization, at least some of the wealth previously kept outside the country returns to the domestic financial system, although not enough to jump-start growth. Although the return of flight capital facilitates financial reintermediation, it rarely increases demand for domestic money or domestic financial assets. Dollarization and other forms of financial indexation are a lasting legacy of hyperinflation—a legacy that has been extremely difficult to reverse (Chart 3, bottom panel). Argentina, Bolivia, and Peru, for example, were far more dollarized three years after hyperinflation than they were before.

Seven lessons to remember

Policymakers would do well to bear in mind the seven lessons that emerge from this overview of modern hyperinflations.

1. Hyperinflations seldom materialize overnight and are usually preceded by a protracted period of high and variable inflation.

2. Stabilization may take years if fiscal policies are not adjusted appropriately. Even when fiscal adjustment is implemented, it takes time to achieve low inflation, especially when money is used as the nominal anchor.

3. Sharp reductions in fiscal deficits are always a critical element of a stabilization program, regardless of the choice of monetary anchor.

4. Unifying exchange markets and establishing currency convertibility are often essential ingredients of stabilization, irrespective of the choice of main nominal anchor.

5. Output collapses during, and sometimes in the run-up to, hyperinflation. Although stabilization measures cap the implosion in economic activity, there is little evidence to suggest that they kindle a robust rebound in economic activity.

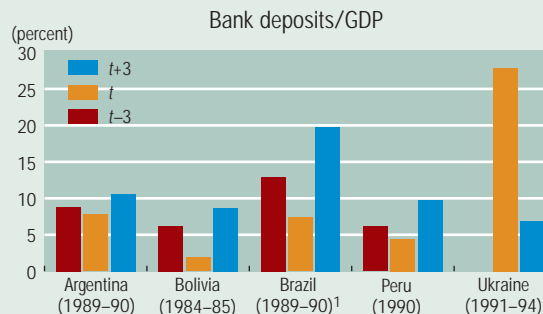
6. Hyperinflations are accompanied by an abrupt reduction in financial intermediation.

7. Stopping a hyperinflation does not restore demand for domestic money and domestic currency assets to the levels that prevailed before the hyperinflation began. Capital

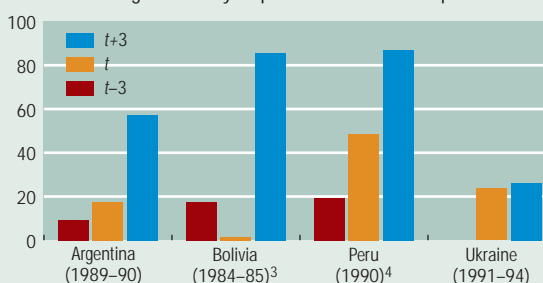
Chart 3

Collateral damage

Hyperinflations cripple the banking sector and increase the demand for dollar assets.



Foreign currency deposits/Total bank deposits²



Source: Reinhart and Savastano (2002).

Note: t refers to the hyperinflation years (in parentheses). Data were not available for Ukraine, $t-3$.

¹Excludes government securities held in banks.

²Brazil did not allow banks to offer foreign currency deposits.

³U.S. dollar deposits were forcibly converted into local currency in 1982.

Foreign currency deposits were allowed again in 1985.

⁴U.S. dollar deposits were forcibly converted into local currency in 1985.

Foreign currency deposits were allowed again in 1988.

returns to the country when high inflation stops, but dollarization and other forms of indexation dominate financial intermediation for many years. ■

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