Foreign Direct Investment to Africa: The Role of Price Stability and Currency Instability

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Africa lags behind other regions in attracting foreign direct investment. In some circumstances, there are obvious explanations for the absence of foreign direct investment, such as a high incidence of war. Reinhart and Rogoff examine the role that monetary and exchange rate policy may have played in explaining this outcome. Specifically, they document the incidence of inflationary episodes and currency crashes to compare countries within the region as well as to make comparisons with other regions. Furthermore, because monetary policy can range from very transparent to very opaque, the authors assess Africa's track record with dual and parallel markets. Reinhart and Rogoff use the parallel market premia as an indicator of the degree of distortion and extent of transparency. Their findings suggest that this is a promising line of inquiry because Africa does stand apart from other regions in this measure of transparency. The authors also discuss some of the fiscal underpinnings of Africa's bouts with high inflation.

Introduction

Strong, stable macroeconomic policies are not sufficient conditions for investment and growth. Among many other important factors are the transparency of macroeconomic policies, robust institutions, low levels of corruption, absence of wars, openness to trade, and a favorable external environment. But macroeconomic policy stability—especially price stability—is almost certainly an essential ingredient. Without it, the risks to doing business rise drastically, internal trade is significantly hampered, and external trade is impeded to an even greater extent. High and unpre-

dictable inflation, especially, cripples business planning and checks the development of financial intermediation within the private sector. Because this is well known many countries throughout the world have strived to achieve notable success in bringing down inflation since the 1980s in the industrial countries and especially over the 1990s, in emerging markets and developing countries. The key to achieving that success is well known and well proven: a strong, independent central bank that places a high value on maintaining low inflation.Whether this low inflation is attained by appointing skilled, highly competent central bankers who are known to be committed to price stability—the most common approach—or through a more complex institutionalized system of checks and balances, or through a combination of both is second-order compared with maintaining meaningful central bank independence.

Some people have argued that this prescription cannot be transferred to Sub-Saharan Africa because many countries in the region are in too early phases of political development. Those countries, according to that argument, lack the necessary institutional structure to establish a meaningfully independent central bank. If the judiciary and the parliament are unduly influenced by the chief executive or the rule of law is in some other ways indistinct, the central bank has nowhere to hide. In such circumstances, when the chief executive phones the head of the central bank and asks for funds, the central bank can hardly refuse. Because of these internal pressures, many African countries have sought to import price stability by joining a regional currency or a regional currency block anchored to a reserve currency, such as the euro or the dollar.

Aside from currency arrangements, many developing countries must put a high premium on attracting foreign direct investment (FDI). Yet, as figure 1 illustrates, FDI to Africa does not depend on whether the large economies, such as the United States, are in recession. Furthermore, Africa did not benefit much from the surge in FDI to emerging markets during the 1990s. How can African nations achieve the climate of price stability needed to promote investment?

This is a difficult question that we will attempt to address by examining some essential features of Africa's historical experience with inflation and exchange rate arrangements, drawing on the extensive chronologies developed in Reinhart and Rogoff (2002) that encompass all economies of the world. This historical perspective yields some useful insights. First, the typical inflation and exchange rate experience in postcolonial, non-CFA (Communauté Financière Africaine) franc Africa is weak compared with that of Europe and Asia. But even excluding the more stable CFA franc zone countries, it is not notably worse than the experiences of many countries in Latin America, in the Middle East, or in post-1980s transition economies. This assessment may seem like faint praise because so many countries in those other regions have such a checkered inflation history. But it is relevant if one wants to argue that Africa needs a completely different set of arrangements than do economies elsewhere. Second, we find that the incidence of extremely high parallel exchange market premia (50 percent or more—exceeding 500 percent in some cases) is remarkably high in Africa, and therein lies the real differences. Averaging across all countries between 1979 and 1998, the parallel premia in non-CFA Sub-Saharan Africa exceed-

FIGURE 1.
U.S. Monetary Policy and Capital Flows to Emerging Market Economies:
Net Real Private Direct Investment
(billions of 1970 U S dollars)
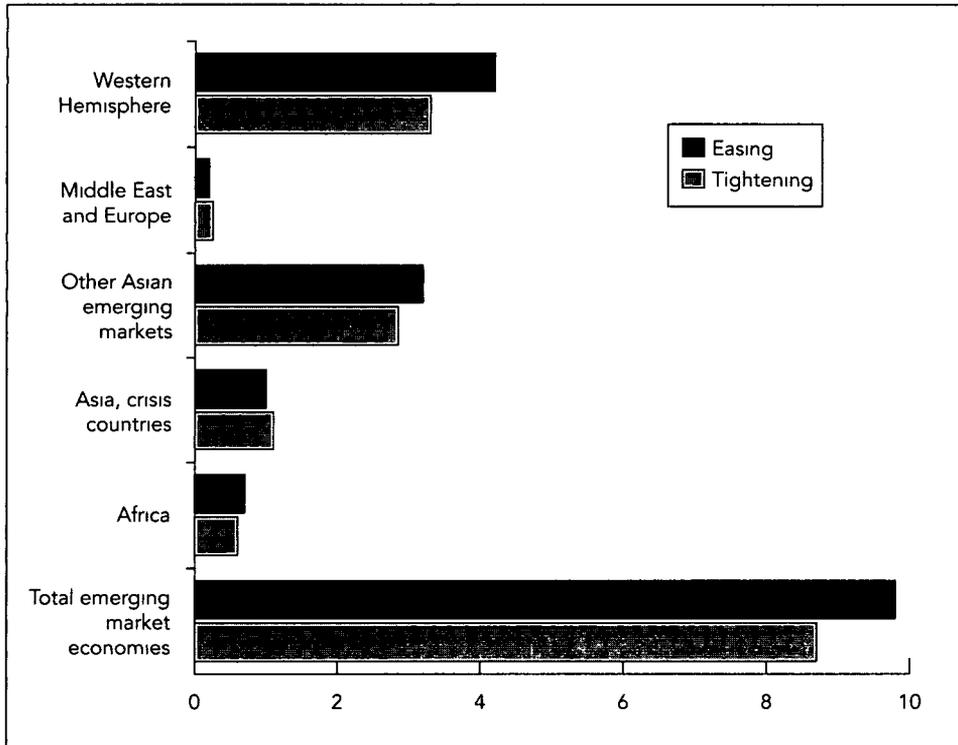
Source Reinhart and Reinhart 2001

ed 50 percent more than one-third of the time! We argue that parallel premia at that level are highly problematic in that they breed significant corruption and governance problems. As such, they are often an excellent barometer of broader and deeper problems in macroeconomic stabilization and governance. The case for advocating unified exchange rate regimes rests as much on improving governance and reducing corruption as on any macroeconomic benefit. A third conclusion we reach is that adopting the currency of an industrial country has its own set of problems, not the least astonishing of which is the incidence of frequent deflation.

This article is divided into six parts including this introduction. The second section briefly puts the postcolonial African exchange rate experience in perspective relative to Europe. The third section looks at the incidence of high inflation and the frequency of currency crashes in Africa compared with other regions. In that discussion our emphasis is in assessing the extent to which price and currency instability are behind the low observed levels of FDI. In our analysis of behavior of the parallel market premia in the fourth section, we find that the high probability of extremely large premia makes the African experience markedly different from that

of the rest of the world. We argue that the high parallel premia may be symptomatic of more general governance problems in many cases, including corruption and obstacles to trade—with deleterious consequences for FDI. The fifth section of the paper offers some insights on the root cause of inflation from a broad theoretical perspective. The perspective suggests that the funding needs of the fiscal authority—that is, fiscal dominance—is likely to be a significant problem for many of the highly indebted African countries. The concluding section speculates on options for Africa in the light of its experience.

The African Experience in Perspective

Modern central banking is a relatively recent development. Only a couple hundred years ago few countries in the world had the governmental checks and balances needed to maintain an independent central bank. As a case in point, the central bank of Spain began in 1782 as the Bank of St. Charles, founded originally as a quasiprivate bank by King Charles III of Spain. The unabashed purpose was to help absorb government debt. The name of the bank itself speaks volumes about how (not) independent it was from the chief executive. When King Ferdinand came to the throne, the Bank of St. Charles became the Bank of St. Ferdinand. Only much later did it become the Bank of Spain, which today stands as a funding member of the nascent Euro system. In the United States, efforts to sustain a national central bank foundered twice during the 19th century. During that country's civil war of 1861–65, the Confederate states abandoned the Yankee dollar and printed their own currency. Civil wars are not an unusual feature of a relatively young state, nor are their monetary consequences. The modern U.S. Federal Reserve System was founded in 1913. During the first half of the 20th century, the internal governance structures that helped to sustain its independence were less firmly established than they are today. In 1934, for example, the U.S. government invalidated gold contracts, and a few years later President Franklin D. Roosevelt seriously entertained expanding the U.S. Supreme Court from 9 members to 18 or 20 to stack the court with justices who would support his programs. Eventually he abandoned this proposal, but the point is that even in relatively modern-day experience, governance structures have continued to evolve. Similar examples can be given across the industrial world. In that regard, the problems of Africa in establishing independent central banks are not unique to young nations, but the benefits can be great and as modern central banking techniques continue to improve, there is a strong case to be made that improved monetary policy has been one factor in the greater stability of output and employment observed in many industrial countries since the 1980s. This point is illustrated dramatically in figure 2, which gives year-to-year changes in growth rates for the Group of Seven (G7) (Japan is an exception) and the world. As is evident from the figure and can be confirmed by closer statistical analysis, output volatility has been dropping dramatically since the mid-1980s. Thus, although high inflation is often a symptom rather than a cause of growth problems, it can also be a problem in its own right.

FIGURE 2.
GDP Growth: World and G7 Countries, 1970–2002
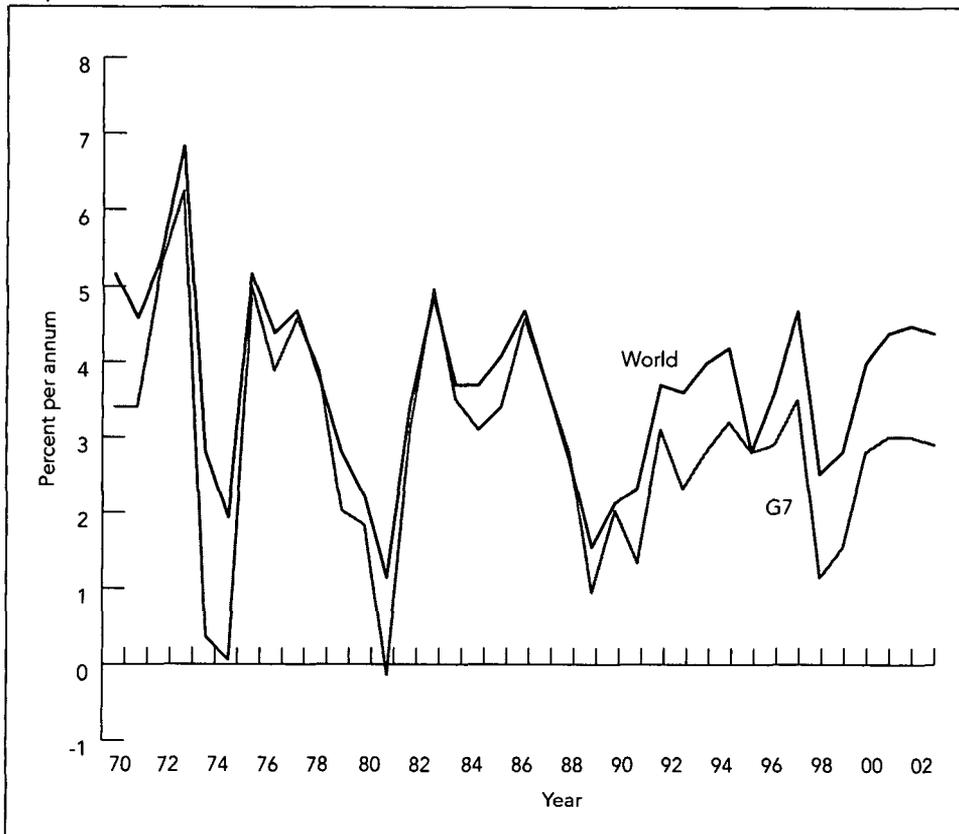
Source· IMF 2002

High Inflation, Currency Crashes, and FDI: Is Africa Different?

This section of the article is descriptive, as we neither offer nor test a formal model of the determinants of FDI to Africa nor to any other region.[1] We begin by looking at some of the possible "pull" factors that may influence FDI. As to "push" factors, Reinhart and Reinhart (2001) have shown that FDI to developing countries has an important cyclical component, more so than other types of capital flows. As a general rule, FDI flows more heavily to emerging market economies when the United States economy is expanding than when it is in recession. This cyclical pattern has important consequences for the volume of FDI that developing countries in Asia and the Western Hemisphere receive, as illustrated in figure 1. But the cycle is not relevant for African economies, which generally receive very little FDI at any stage of the U.S. cycle. Indeed, looking at panel data on total capital flows to Africa, Calvo and Reinhart (1998) concluded that, in contrast to other regions, the only external factor that systematically influences capital flows to Africa is world commodity prices.

Flows increase during booms in commodity prices and, other things being equal, decline during busts. In what follows, we document what in principle could be expected to be deterrents to investing in Africa.

Basics for Attracting FDI

An obvious and powerful deterrent to FDI is political instability. Edwards (1990) found that the political instability is always statistically significant, irrespective of what other variables were included as regressors in his cross-country regressions. Of course, wars are an extreme form of political instability—and Africa has had more than its share. Using the dates of wars provided in Collier and Hoeffler (2001, 2002), we constructed the probability of war for three regions—Africa, Asia, and the Western Hemisphere (excluding Canada and the United States)—from 1960 to 2001. This probability is simply the number of months during which there was a war over the total number of months for a particular country. We then averaged across countries to obtain the regional number. As shown in table 1, the probability for Africa, at 12.6 percent, is almost twice as large as that of the developing Western Hemisphere but slightly below the probability for Asia. Column 3 of that figure, however, paints a strikingly different picture—40 percent of the countries in Africa have had at least one war during 1960–2001, and 28 percent of the countries have had two or more. That is more than three times the incidence of war in the Western Hemisphere and almost twice that of Asia. In the case of the latter, the higher probability shown in column 2 results from a smaller number of countries having had longer wars.

Whereas wars, per se, are a likely deterrent to FDI, wars also are often a source of another deterrent to FDI, inflation.

Incidence of High Inflation and Currency Crashes

As a rule of thumb, we can take a 40 percent inflation rate over a 12-month period as the threshold over which price instability becomes seriously dysfunctional. In Africa, there are five countries where the average annual inflation rate over the

TABLE 1.
Incidence of War: January 1960–December 2001

Region (1)	Probability of war: percentage of months during which there is conflict (2)	Percentage of countries in the region with at least one war during the sample (3)	Regional susceptibility to war index: average percentage of columns 2 and 3 (4)
Africa	12 6	40 0	26 3
Asia ·	13 9	23 9	19.4
Western Hemisphere (excluding Canada and the United States)	6 4	13 3	9 9

Sources Collier and Hoeffler 2001, 2002, and authors' calculations

TABLE 2.
African Countries for Which the Average Inflation Rate during 1970–2001
Is above 40 Percent

Country	Average annual inflation, 1970–2001 (percent)	Percentage of months during which there is conflict
Congo, Dem Rep of	1,112 9	30 3
Angola	345 4	96 3
Uganda	67 2	18 5
Ethiopia	43 0	65 2
Zambia	41 1	0
Regional average excluding Congo	12 4	9 1

Sources Collier and Hoeffler 2001, 2002, IMF 2002, and authors' calculations

1970–2001 period exceeded 40 percent. These are shown in table 2, alongside the probability of war as measured by the percent of months during which there was conflict. For four of the five high-inflation cases, the probability of war was notably higher than for the rest of Africa.[2] Furthermore, for those four cases, not only is inflation well above the average for the rest of the region; the probability of war is also well above the average for the remainder of the countries in the region.

Hence, it is an understatement to suggest that conflict, as well as the economic instability that it brings, can be expected to have deleterious consequences for the investment climate. For Africa, the cross-country correlation between the average inflation rate and the probability of war over the same period is 0.36 and is statistically significant. Apart from wars, however, inflation may also arise in peacetime when there is a problem of fiscal dominance—an issue that we take up later in greater detail.

Over and beyond these more extreme cases, tables 3 to 6 document other countries' experiences with high inflation (that is, above 40 percent). The tables provide information on the dates of high inflation episodes and their average duration in years and months.[3] The main results that emerge from the more detailed country-by-country analysis are summarized in table 7, which gives the regional averages for the probability that the 12-month inflation rate is above 40 percent, as well as the average duration of the inflation spells. Table 7 also provides information on currency crashes, which we will discuss next. For North and CFA Africa, inflation is clearly not the critical issue, as these countries score well relative to other regions. (For the CFA franc zone countries, which are pegged to the French franc, the more considerable problem has been deflation, as Reinhart and Rogoff (2002) have documented.) The contrast that emerges from comparing non-CFA Africa to other regions is that Africa's inflation track record is far worse than Asia's track record. However, Africa's inflation performance is not that different from the average for developing Europe and the Middle East. Most notably, Africa has a better historical record than that of the inflation-prone Western Hemisphere. This is an important finding as we already alluded to in the introduction. Africa's inflation record may not be strong, but it is not as exceptional as many have maintained. Therefore the extent to which special solutions are required should not be exaggerated.

TABLE 3.
High Inflation Spells: North Africa and Sub-Saharan CFA Franc Zone Countries, 1965–2001

Country	Episodes of inflation above 40 percent	Total number of years and months with inflation above 40 percent
North Africa		
Algeria	1994 1–1995 1	1 yr., 1 mo
Morocco	—	—
Tunisia	—	—
Average for the region	—	4 mos
Sub-Saharan Africa, CFA		
Benin	1994 1–1994 12	1 yr
Burkina Faso	—	—
Cameroon	1994 1–1994·12	1 yr
Central African Republic	1994 1–1995 1	1 yr, 1 mo
Chad	1994 1–1995 1	1 yr, 1 mo
Congo, Rep of	1994 1–1995 1	1 yr, 1 mo
Côte d'Ivoire	—	—
Equatorial Guinea	1994 1–1994.12	1 yr
Gabon	1994 1–1994 12	1 yr
Guinea-Bissau	—	—
Mali	—	—
Niger	1994.1–1994 12	1 yr
Senegal	1994 1–1994 11	11 mos
Togo	1994 1–1994·12	1 yr
Average for the region	—	9 mos

— Not applicable

Sources Collier and Hoeffler 2002, Fischer, Sahay, and Végh 2001, IMF, International Financial Statistics (various issues), Mitchell 1982, and Reinhart and Rogoff 2002

Of course, it is worth noting that FDI to high-inflation regions of the Western Hemisphere was also only a trickle during the 1980s, and that FDI only surged following the various efforts within many countries in the region to bring inflation under control. What these recent trends imply is that, going forward, Africa should focus on maintaining a climate of price stability.

Another manifestation of uncertainty that can be expected to affect the investment climate is the incidence of currency crashes—which is, of course, intimately related to the inflation performance. Because the CFA franc zone has had a long history of a stable exchange rate versus the French franc first and now versus the euro, we now turn out attention to documenting currency crashes mostly for the non-CFA countries.[4]

As we discuss in the following section, it has been a common practice in many African countries to peg the official exchange rate to some anchor currency (often the U.S. dollar). Sometimes this was done in the context of dual markets and sometimes in the context of an inflation stabilization plan. Some currency crashes, however, did not take place against the backdrop of a pegged official exchange rate but against the backdrop of a loss of monetary control.

To compare Africa's performance in this dimension with that of other regions, we constructed two measures of currency crashes that are very similar to those intro-

TABLE 4.
High Inflation Spells: Sub-Saharan Africa non-CFA Franc Zone Countries, 1965–2001

Country	Episodes of inflation above 40 percent	Total number of years and months with inflation above 40 percent
Angola	1991.3–2001 12	10 yrs , 9 mos
Burundi	1978 1–1979.7	2 yrs , 6 mos
	1996 5–1997 5	
Congo, Dem. Rep of	1967 1–1968 9	21 yrs , 6 mos
	1975 1–1984 8	
	1987 2–1997.11	
Ethiopia	1990 6–1991 7	1 yr, 1 mo
Gambia, The	1985 1–1987.2	2 yrs , 1 mo
Ghana	1973 10–1984 5	15 yrs , 11 mos
	1986 4–1987 9	
	1989 8–1990 9	
	1994 3–1996 8	
	1999 11–2001 4	
Guinea	1986 1–1986 12	1 yr
Kenya	1992 9–1994 3	2 yrs , 1 mo
Madagascar	1947·1–1948 12	2 yrs , 7 mos
	1994 1–1995 8	
Malawi	1993 11–1996 6	2 yrs , 7 mos
Mozambique	1993 6–1995 7	2 yrs , 1 mo
Nigeria	1983 4–1984 9	9 yrs
	1987 2–1989·12	
	1991.6–1996 3	
Rwanda	—	—
Somalia	1978 11–1981 6	9 yrs , 5 mos
	1982 7–1986 8	
	1987 2–1989 11	
South Africa	—	—
Sudan	1978 11–1980 2	14 yrs , 6 mos
	1980·8–1981 8	
	1983 9–1985 6	
	1986 10–1997 4	
Swaziland	—	—
Tanzania	1983 4–1985.3	7 yrs , 8 mos
	1992.6–1995·3	
Uganda	1981 1–1982 5	8 yrs
	1983 8–1990.4	
Zambia	1985 1–1996 9	11 yrs , 8 mos
Zimbabwe	1991 5–1993 2	3 yrs , 10 mos
	1997 12–1999 12	
Non-CFA franc zone average	—	6 yrs., 7 mos

— Not applicable

Notes Hyperinflation begins in the month when the rise in prices exceeds 50 percent and ends in the month when the monthly rise in prices drops and stays below that amount See Fischer, Sahay, and Végh (2001) for a recent discussion of hyperinflations

Sources Collier and Hoeffler 2002, Fischer, Sahay, and Végh 2001, IMF, International Financial Statistics (various issues), Mitchell 1982, and Reinhart and Rogoff 2002

TABLE 5.
High Inflation Spells: Asia, Europe, and the Middle East, 1965–2001

Country	Episodes of inflation above 40 percent	Total number of years and months with inflation above 40 percent
Asia		
China, Hong Kong	—	—
China, mainland	—	—
India	—	—
Indonesia	1972 7–1974 6	2 yrs , 9 mos
	1997 7–1999.3	
Korea	—	—
Lao People's Dem Rep	1988 6–1990 4	3 yrs , 11 mos
	1997 4–2000 2	
Malaysia	—	—
Myanmar	1972.8–1976 2	9 yrs
	1988.4–1989 5	
	1990 5–1991 5	
	1993 1–1994 1	
	1996 8–1999 1	
Nepal	—	—
Pakistan	—	—
Philippines	1984 4–1985 2	10 mos
Singapore	—	—
Sri Lanka	—	—
Thailand	—	—
Average for the region	—	1 yr , 2 mos
Europe and Middle East		
Egypt, Arab Rep of	—	—
Iceland	1973·5–1976 1	9 yrs , 8 mos
	1977 5–1984 5	
Iran, Islamic Rep of	1994 2–1996 2	2 yrs
Iraq—	—	
Israel	1951 1–1951 12	14 yrs , 2 mos
	1973·10–1986 12	
Jordan	—	—
Lebanon	1984 3–1993 3	9 yrs
Libya, Arab Republic of	—	—
Poland	1988.1–1992 12	4 yrs , 11 mos
Romania	1990·10–2001 3	11 yrs., 5 mos.
Saudi Arabia	—	—
Turkey	1976 9–1981.3	22 yrs 2 mos
	1983.4–2001 12	
Average for the region	—	6 yrs , 1 mo

— Not applicable

Sources Collier and Hoeffler 2002, Fischer, Sahay, and Vegh 2001, IMF, International Financial Statistics (various issues), Mitchell 1982, and Reinhart and Rogoff 2002

TABLE 6.
High Inflation Spells: Western Hemisphere, 1965–2001

Country	Episodes of inflation above 40 percent	Total number of years and months with inflation above 40 percent
Argentina	1970 8–1992 2	21 yrs , 6 mos
Bolivia	1972 9–1974 12 1978 12–1986 12	10 yrs , 6 mos
Brazil	1980 1–1995 5	16 yrs , 4 mos
Chile	1971·5–1978 6	7 yrs , 1 mo
Costa Rica	1980 9–1983 6	2 yrs , 9 mos
Dominican Republic	1984.1–1985 11 1987 7–1989 6 1989 8–1991 8	5 yrs , 9 mos
Ecuador	1982 5–1984 4 1987 4–1993 8 1997 10–2001 4	9 yrs , 11 mos
Guatemala	1985 3–1986 6 1989·6–1991 4	3 yrs , 1 mo
Guyana	1988 1–1991 12	3 yrs , 11 mos
Haiti	1993 5–1995 1	1 yr , 8 mos
Jamaica	1977 7–1979 4 1990 7–1992 12	4 yrs , 2 mos
Mexico	1981 5–1988 12 1994 12–1996 1	8 yrs , 8mos
Nicaragua	1978 6–1980 5 1982 8–1992 2	11 yrs , 5 mos
Paraguay	1985 4–1986 4 1989 5–1991 1	2 yrs , 1 mo
Peru	1975 9–1993 11	18 yrs , 2 mos
Suriname	1986 5–1987 12 1991 5–1995 11	6 yrs , 1 mo
Uruguay	1962 12–1969 1 1972.1–1981.1 1982 2–1995 9	24 yrs , 6 mos
Venezuela, R B. de	1988 2–1997 7	9 yrs , 5 mos.
Average for the region	—	9 yrs , 6mos

— Not applicable

Notes Hyperinflation begins in the month when the rise in prices exceeds 50 percent and ends in the month when the monthly rise in prices drops and stays below that amount See Fischer, Sahay, and Végh (2001) for a recent discussion of hyperinflations

Sources Collier and Hoeffler 2002, Fischer, Sahay, and Végh 2001, IMF, International Financial Statistics (various issues), Mitchell 1982, and Reinhart and Rogoff 2002

duced by Frankel and Rose (1996). The first of these definitions of currency crashes measures a "severe" currency crash, which refers to a 25 percent or higher monthly depreciation that is, in turn, at least 10 percent higher than the previous month's depreciation. The "milder" version represents a 12.5 percent monthly depreciation that is at least 10 percent above the preceding month's depreciation. To put these magnitudes in perspective, monthly depreciations of this magnitude, when annualized, amount to 1,355 percent and 310 percent, respectively.

Columns 3 and 4 in table 7 present regional averages, and tables 13 through 16 (in the appendix) give the individual country particulars. Not surprisingly, the regional patterns that emerge are very similar to those of the high-inflation episodes. Africa (excluding CFA countries and North Africa) has a propensity to crash similar to that of the Western Hemisphere, and both regions compare poorly with Asia and the other regions. Currency instability, as measured by frequent currency crashes, is strongly linked to poor inflation performance, and ex ante it can be expected that neither is conducive to a favorable inflation climate. Indeed, Kamaly (2001), who covered a panel of 151 countries from 1990 to 1999, presented systematic evidence that such exchange rate volatility has a significant adverse impact on FDI flows.

However, this discussion has focused only on the inflation and exchange rate crisis outcomes of monetary policy. A dimension of monetary policy that would also be expected to influence investment decisions is the transparency (or lack thereof) of the policy arrangement—an issue examined in the next section.

Distortions and Lack of Transparency: The Role of Exchange Rate Arrangements

Dual markets and multiple exchange rates are by far the least transparent form of exchange rate arrangement. Usually, although not always, dual rates are accompanied by a variety of restrictions on capital movements. If there is (in principle) a dual market, but capital flows freely (as was the case in Belgium until 1990 and in the

TABLE 7.
Regional Vulnerability to High Inflation and Currency Crashes, 1965–2001

Region or group	Probability of having inflation greater than 40 percent (percentage) (1)	Average duration of spells where inflation is above 40 percent (2)	Probability of a severe currency crash in any 24-month period (percentage) (3)	Probability of any currency crash in any 24-month period (percentage) (4)
North Africa	1 0	4 mos.	5 4	7 2
Sub-Saharan Africa, CFA	2 1	9 mos	5 4	5.4
Sub-Saharan Africa, non-CFA	17 8	6 yrs., 7 mos	32 4	48 6
Asia	3 2	1 yr, 2 mos	12 4	23 8
Europe and the Middle East	16 4	6 yrs , 1 mo	20 5	36 8
Western Hemisphere	25 6	9 yrs , 6 mos	32 4	48.6

Sources Tables 1–4 and 13–18

CFA zone until 1993), the free market premium tends to be trivial. However, when there are tight capital account restrictions, dual markets can really have teeth and the free market premia can be astonishingly high. Under these conditions, and especially if there are multiple exchange rates, monetary policy is at its most opaque. It is typically also in this kind of arrangement that corruption can flourish with a vengeance.

Prevalence of Dual Exchange Rates

Reinhart and Rogoff's (2002) reclassification of historical exchange rate arrangements recognizes that the official exchange rate can be meaningless in this setting and that dual or multiple exchange rate practices need to be treated as a separate category. To do so, we constructed detailed chronologies, such as the sample shown in table 8 for Ghana. The episodes labeled "freely falling" are the instances when the 12-month inflation rate was above 40 percent—what we have called here "high-inflation" episodes.[5] The chronology also notes when dual or multiple exchange rate practices were in place.

The downside of this opaque type of arrangement has not been trivial for Africa. Easterly (2001) has stressed the negative contribution to growth of high parallel market premia. Reinhart and Rogoff (2002) also presented evidence that growth is lower and inflation higher for dual or multiple exchange rate arrangements. But in Africa dual or multiple exchange rate arrangements account for about 32 percent of all observations (by country, by month) in the 1970–2001 period.

Parallel Premia, Distortions, and Corruption

Tables 17, 18, and 19 (in the appendix to this chapter) document the likelihood that the monthly parallel market premia exceed three high thresholds. Whereas a 50 percent premium would be considered already high, we also document the incidence of the probability (by country and region) that the premium exceeds 100 percent and 500 percent. Figures 5 and 6 provide a cross-regional comparison. The main point that emerges from this exercise is that to the extent that the premium is a catch-all for distortions, lack of transparency, and corruption, non-CFA Africa stands out from other regions in its the extremely elevated incidence of very high premia. Even relative to the chronic inflation crisis-prone Western Hemisphere, the comparison is striking. The likelihood of premia above 50 percent is 35 percent and 23 percent for Africa and the Western Hemisphere, respectively. Premia above the 100 percent threshold prevailed in 25 percent of the months during 1970–98 in Africa—more than twice that for the Western Hemisphere, and premia over 500 percent were present in 10 percent of those months.

An interesting exercise involves looking jointly at (a) the probability that the premium is above 50 percent over the period 1970–98 for each of the countries in our sample, and (b) the corruption index published by Transparency International for 2000, which assigns a value of 0 to the most corrupt countries and a value of 10 to the most transparent. The simple pairwise correlation between the two is 0.55, which

TABLE 8.
Ghana: A Sample Chronology

| Date	Classification (primary/secondary/tertiary)	Comments
1916–July 14, 1958	Currency board/peg to pound sterling	West African pound is introduced by the West Africa currency board
July 14, 1958–July 19, 1965	Peg to pound sterling/parallel market	Ghana pound replaces the West African pound
July 19, 1965–Nov 4, 1971	Peg to pound sterling/parallel market	The cedi replaced the Ghana pound. The new cedi was introduced in 1967
Nov 4, 1971–Sept 1973	Managed floating/parallel market	The cedi is officially pegged to U S dollar
Oct 1973–June 19, 1978	Freely falling/managed floating/parallel market	The cedi is officially pegged to U.S dollar There are multiple exchange rates
June 19, 1978–May 1984	Freely falling/managed floating/parallel market	The official peg to the U S dollar is abandoned There are multiple exchange rates
June 1984–April 1986	Freely floating/parallel market	There are multiple exchange rates
May 1986–Sept 19, 1986	Freely falling/freely floating/parallel market	There are multiple exchange rates
Sept 19, 1986–Sept 1987	Freely falling/freely floating/dual market	There are multiple exchange rates
Oct 1987–July 1989	Freely floating/dual market	There are multiple exchange rates
August 1989–April 27, 1990	Freely falling/managed floating/dual market	There are multiple exchange rates
April 27, 1990–Sept 1990	Freely falling/managed floating	There are multiple exchange rates
Oct 1990–February 1994	Managed floating	There are multiple exchange rates Since early 1993 the parallel market premium has been in single digits
March 1994–July 1996	Freely falling/managed floating	
August 1996–Oct 1999	Managed floating	
Nov. 1999–March 2001	Freely falling/managed floating	
April 2001–December 2001	Managed floating	

Notes Ghana was known formerly as Gold Coast Reference currencies are the U S dollar, the pound sterling, and the South African rand

is statistically significant at standard confidence levels. Indeed, this simple exercise may suggest that the ranking of countries by their transparency exhibits considerable inertia.[6]

What Does It All Mean for FDI?

We have suggested that the investment climate is adversely influenced by actual wars—or the odds of a war. Wars, in turn, apart from the destruction of life and infrastructure, seem to bring additional deterrents to investment, such as frequent currency crashes and high inflation. Even when not accompanied by war, the

FIGURE 5.
Percentage of Months in Which the Parallel Market Premia Were Above 50 Percent, 1979–98
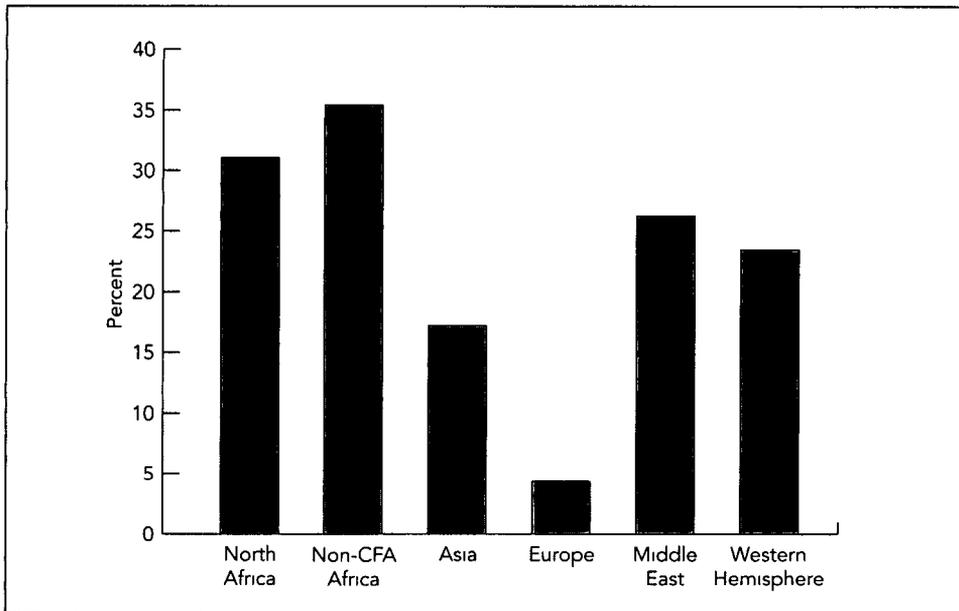
Source IMF (various, annual), IMF, International Financial Statistics (various issues), *World Currency Yearbook* (various issues), authors' calculations

FIGURE 6.
Percentage of Months in Which the Parallel Market Premia Were Above 500 Percent, 1979–98
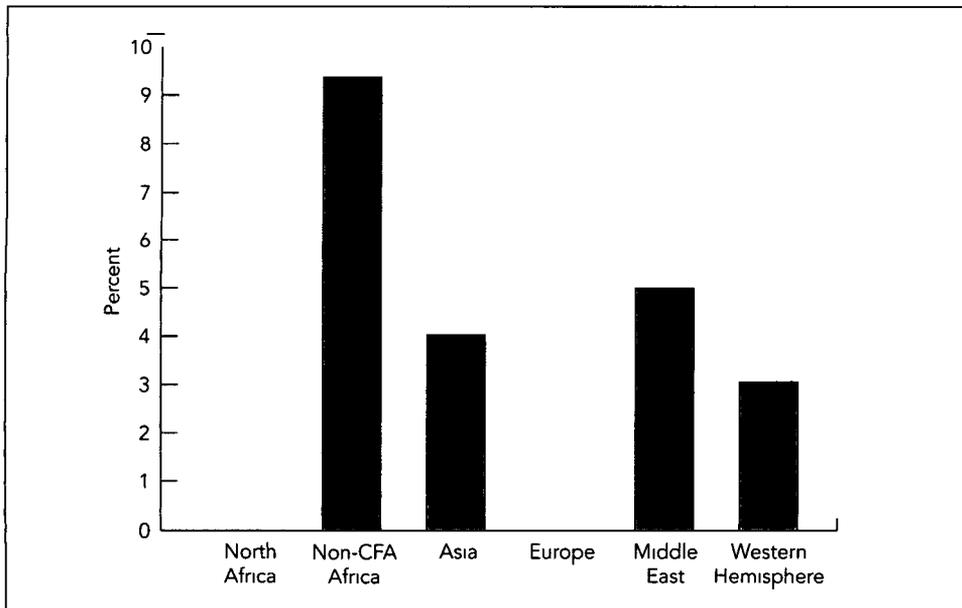
Source IMF (various, annual), IMF, International Financial Statistics (various issues), *World Currency Yearbook* (various issues), authors' calculations

prospects of price and currency instability during peacetime are not conducive to FDI. Furthermore, high parallel market premia—which is a proxy for distortions, inconsistent policies, and corruption—affect investment adversely. Table 9 presents a family of simple pairwise correlations to summarize these points, and tables 10 and 11 present a synopsis of the literature on the empirical determinants of FDI. At first glance, our findings seem to depart strikingly from those of Gastanaga and others (1998), who found no evidence that the parallel market premium influences FDI. Of course, one interpretation of our contrasting results that merits further scrutiny is that they have a separate variable controlling for corruption. As shown in table 9, the premium is correlated with this type of index, which suggests that the results are not necessarily inconsistent—all the more so if, as we contend, lack of transparency breeds corruption.

Our emphasis, thus far, has been on the different ways monetary policy contributes to spur or deter investment. We have discussed one of the causes of inflation in Africa—namely, wars and civil conflict—but there are other causes for high and chronic inflation in the region that merit discussion. The next section focuses on the issue of fiscal dominance, which seems to be a promising explanation of why inflation has been difficult to tame in many of the countries in the region.

Fiscal Dominance and Inflation

In most of the world, and throughout most of history, episodes of very high inflation have almost invariably arisen out of situations of broader macroeconomic and political instability. Governments desperate to finance large fiscal deficits will turn to the printing presses to finance expenditures. Large and uncontrolled fiscal deficits occur for many reasons but political instability of some form is surely the leading cause. Inflation taxation is nothing new; even in Roman times it was a standard technique to shave precious metal coins and recycle them in smaller form. Governments would also debase the currency by diluting the precious metal content of coins and by changing their metal content altogether. The advent of the modern printing press, for better or for worse, only served to vastly improve the technology for generating inflation.

TABLE 9.
FDI to Africa: Selected Correlations

FDI and conflict	–0.31*
FDI and inflation: CFA countries	–0 23*
FDI and inflation: non-CFA countries	–0 17**
FDI and the probability that the parallel market premia are above 50 percent	–0 36*
Memorandum item·	
Parallel market premia and corruption index	–0 54*

Notes An asterisk (*) denotes significance at the 5 percent level, a double asterisk (**) indicates significance at the 10 percent level

When the government is starved for resources and lacks sufficient taxation alternatives, it is obvious that the need to finance fiscal deficits leads to monetary expansion and inflation. An absolutely critical question, however, in assessing a monetary regime is under what conditions monetary expansion and inflation policy can be separated from fiscal policy? Again, it is useful to frame the debate in the context of modern monetary policy among industrial countries. In academic circles there is currently a significant debate over whether "fiscal dominance" may be the rule rather than the exception, even in low-inflation industrial countries. The subtle difference from the canonical case of a poor high-inflation country, however, is that inflation is leveraged on a much higher base of nominal debt, including not only currency but nominal government debt. Sargent and Wallace (1981), in their classic article, "Some Unpleasant Monetarist Arithmetic," first stressed how, even in countries with apparently strong monetary institutions, rising and uncontrolled government budget deficits can arguably feed quickly into inflation if agents expect that monetary independence someday will snap under the burden of rising government debt. In theory, expectations of future money growth can be so large as to lead to high inflation immediately, overwhelming the efforts of the central bank to attain monetary tightness.

Recently, the Sargent-Wallace argument has been sharpened into the "fiscal theory of the price level" (Leeper 1991; Sims 1994; and Woodford 1995). The basic argument is that one can always write the government's intertemporal budget constraint as

(1)   (Nominal government debt)/Price level =
       Present value of real government taxes (including the inflation tax) −
       Present value of real government expenditures

Equation (1) simply states that the present value of the government's future surpluses, including the inflation tax, must equal the real value of its debt (nominal debt over the price level.) For simplicity, we have looked at a certainty equivalent formulation. In reality, of course, the right-hand side of equation (1) would correspond to a function of the expected value of future government surpluses, which are uncertain. Equation (1) has to hold if the government is solvent. If the real value of expected future surpluses were less than the real value of the debt, the market value of the debt would have to drop immediately, which could be effected by an increase in the price level. (Things are a bit trickier in a sticky-price world where bonds would temporarily sell at discount, but in the long run prices would adjust and the story is the same.) If people expected that the government would never run surpluses, they would never voluntarily hold government debt except for money needed to finance transactions. Of course, in many developing countries domestic banks are sometimes forced to hold government debt, but in terms of equation (1), forced holding of such debt should be thought of as a way of expanding the taxes that enter on the left-hand side.

Equation (1), of course, is nothing new—it is simply a budget constraint that has long been well understood. However, in the traditional literature on industrial countries, it was typically assumed that the path of the price level could be determined by monetary policy, via a traditional relationship where

TABLE 10.
Determinants of FDI: A Review of the Literature

Study	Sample	Endogenous variable	Variables Explanatory variable	Main results
Schneider and Frey (1985)	54 developing countries for three different years (1976, 1979, and 1980)	FDI	Economic determinants real per capita GNP, GNP growth, inflation, balance of payments deficit, secondary education enrollment, and bilateral aid from Western countries Political determinants political instability and a dummy for left-wing regime.	Two models were estimated One included both economic and political determinants of FDI and the other included only economic determinants The former model gave better results and the best forecasting errors
Edwards (1991)	58 developing countries covering the period 1971–81; annual data	Average ratio of OECD FDI flows to country i to total OECD FDI flows to LDCs and FDI to GDP	Real per capita income, size of government, openness, real exchange rate, real GDP, domestic investment ratio, structure of the economy, regional dummies, and political variables (stability and polarization)	Variables were averages for the period covered All variables were significant and with the expected sign except per capita income, which was insignificant Both economic and political variables were important in determining the magnitude and the distribution of FDI, but political variables were not as crucial as the economic ones
Singh and Jun (1995)	31 developing countries for the period 1970–93; annual data	FDI	Sociopolitical instability, business operating conditions, international trade variables, and other control variable	Not all the control variables were found to be significant Sociopolitical instability, business operating conditions, and international trade variables were found to be important factors in driving flows, especially to high FDI countries
Gastanaga, Nugent and Pashamova (1998)	49 developing countries for the period 1970–95, annual data	Gross FDI flows to GDP	Lagged and future real GDP growth, BMP, degree of openness to capital flows and FDI, lagged dependent variable, and other variables capturing country reforms and the degree of corruption	BMP was found to have little effect on FDI. Economic growth had significant effect on FDI Corruption and corporate tax had negative and significant effect on FDI The effect of tariff varied with the model specification
Fernández-Arias and Haumann (2000)	All countries where data were available for the period 1996–98, simple average was used	Total commercial flows to GDP, FDI to commercial flows, and FDI to GDP	Variables capturing institutional infrastructure, political stability, and economic policies together with three control variables— income, size, and openness	In general, capital flows were drawn to countries with sound financial markets, capable institutions, and a stable political environment The high share of FDI as a percentage of capital flows was not necessary for and indicative of "good health." Higher share of FDI was associated with riskier and financially underdeveloped countries with weaker institutional structures

| Wei (2001) | 59 to 93 borrowing countries, depending on the endogenous variable for the period 1994–96, simple average was used | Bilateral FDI compiled by OECD, bank lending, log ratio of loans to FDI, log ratio of portfolio investment to FDI, and FDI to total inflows | For FDI regressions corruption, tax rate, FDI incentives, FDI restrictions, log GDP, log per capita GDP, log distance, linguistic tie, and exchange rate volatility For regressions involving portfolio investment and loans same variables but substituting a variable capturing the case in investing in securities and bond market instead of FDI restrictions and incentives variables and dropping the tax variable | Mainly two exercises the first tested the effect of corruption on FDI and the second tested the effect of corruption on the composition of capital flows Fixed-effects and random-effects specifications were used In case of the first exercise, the majority of variables were statistically significant and with the expected signs Corruption had a very significant negative effect on FDI The second exercise revealed that the higher the corruption, the more the composition of capital flows tilted toward bank loans and portfolio flows and less toward FDI Results were found to be robust to the change in the sample period to 1997–98 |
| Wheeler and Mody (1992) | U S investment abroad by country | Actual and planned expenditure abroad by U S companies | Foreign investment is regressed against labor cost, corporate taxation and agglomeration benefit indexes, such as infrastructure quality, the level of FDI, and degree of industrialization, various measures of risk and openness were also used | The classical variables (labor cost and market size) were statistically significant as were the three agglomeration indexes The results for the other indexes were much more sensitive to the specification chosen |

BMP black market exchange rate premium, GNP gross national product, LDC developing country, OECD Organisation for Economic Co-operation and Development

Sources Excerpts from Kamaly 2001 and the authors

TABLE 11.
Determinants of FDI: Regional Studies

Study	Sample	Endogenous variable	Variables Explanatory variable	Main results
Schneider and Frey (1985)	54 developing countries for three different years (1976, 1979, and 1980)	FDI	Economic determinants real per capita GNP, GNP growth, inflation, balance of payments deficit, secondary education enrollment, and bilateral aid from Western countries Political determinants political instability and a dummy for left-wing regime	Two models were estimated One included both economic and political determinants of FDI and the other included only economic determinants The former model gave better results and the best forecasting errors
Torrisi (1985)	Colombia for the period 1958–80; annual data	FDI and total U S FDI	Real GDP, growth rate of GDP, lag trade balance, and a dummy capturing the establishment of a trade bloc	GDP coefficient was found to be significant together with trade balance but the latter took a negative sign.
Bathattachrya, Montiel, and Sharma (1997)	15 Sub-Saharan African countries for the period 1980–95, annual data	Private flows, FDI, and private loans--all as a percentage of GDP	Lag growth rate of GDP, lag gross fixed capital formation to GDP, lag exports plus imports to GDP, lag total external debt to GDP, coefficient of variation of monthly real effective exchange rate index, lagged endogenous variable, and U S three-year government bond yield	Panel analysis was used For private flows all variables were significant with expected signs except real exchange rate variability For FDI, key variables were GDP growth, openness, and variability of exchange rate For private loans, key factors were domestic investment and external debt ratios U S interest was found not to be significant in any of the regressions
Claessens, Djankov, and Klingebiel (2000)	21 countries belong to Central and Eastern Europe and the former Soviet Union for the period 1992–96, annual data	Total flows, official flows, all private flows, FDI, commercial debt flows, portfolio flows, and short-term flows	Six-month LIBOR and economic growth in OECD, GDP growth, inflation, fiscal balance, private savings, lag change in reserves, dummy for countries likely to become EU members, nominal interest rate minus rate of change of nominal exchange rate, and domestic credit growth	Panel analysis was used (fixed effects and common intercept) Generally, movements in flows were influenced more by fundamentals than by GF EU dummy was found to be significant in driving total flows and FDI The interest rate variable was not significant in any of the seven definitions of flows Reforms appeared to be the most important force in driving flows

EU European Union, LIBOR London interbank offered rate.

Source Excerpts from Kamaly 2001

(2) Supply of real balances = Nominal money/Price level=
    Demand for real money balances

Given the price level and the future path of monetary policy (implied by the monetary authorities' prospective as well as current policies), the price level in equation (1) is given. Because today's value of nominal government debt is given by history, the implication is that to ensure that equation (1) holds, fiscal policy must adjust, if not today then in the future. Thus, the implicit assumption is that the monetary authorities never have to capitulate to the fiscal authorities, so that monetary policy is "dominant" in the determination of the price level.

The fiscal theory of the price level challenges this assumption that monetary policy is dominant. Instead, advocates of the fiscal theory of the price level argue that, even in industrial countries, fiscal policy is dominant and it is monetary policy that must adjust. More precisely, monetary policy can adopt an interest rate policy, and the path of prices will adjust. In a flexible price world, the initial price level must therefore adjust to ensure that intertemporal budget balance is attained in a manner consistent with the path of primary surpluses (which is exogenous) and the path of interest rates (which is exogenous).

There is considerable debate in the academic literature over whether the fiscal theory of the price level really applies, or whether the traditional view that monetary policy is dominant in setting the price level is the correct one. Very recent work has started to focus on whether there is some threshold level debt and fiscal position that will tilt the balance from monetary to fiscal dominance. For the low-inflation industrial

FIGURE 7.
Inflation and High Parallel Market Premia, Africa, 1979–1998
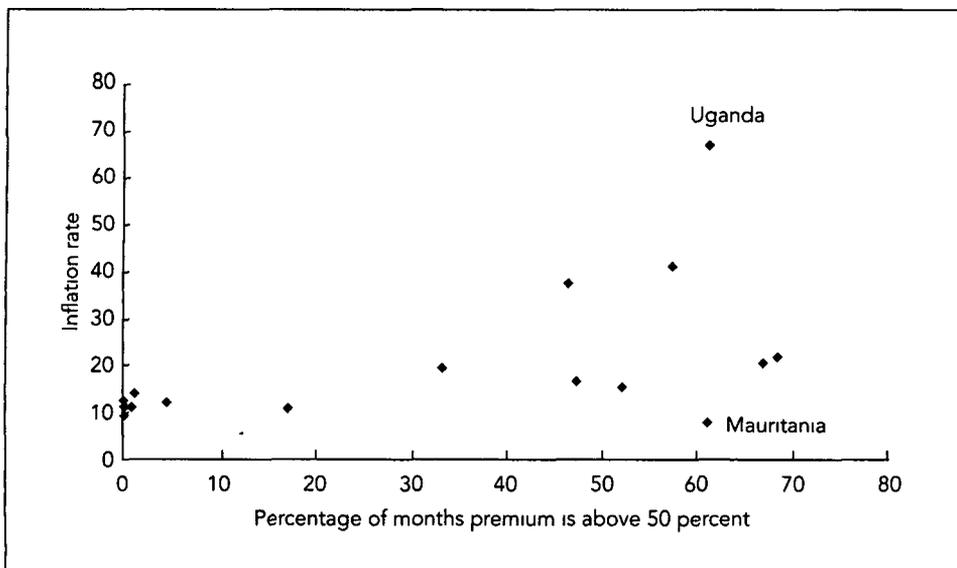
countries, the evidence appears to suggest that the traditional monetary dominance paradigm is still the correct one. Canzoneri, Cumby, and Diba (2001), for example, showed empirically that a rise in (that is, an innovation in) the government surplus typically causes a rise in future surpluses and a fall in future government liabilities. The traditional monetary dominant regime offers a simple explanation—namely, that shocks that lead to surpluses tend to be positively correlated over time. Thus, a rise in the path of surpluses allows the government to pay down part of the government debt leading to a fall in future liabilities. The fiscal theory of the price level can explain these results also, but the explanation is rather contorted. The rise in surplus today must eventually become negatively correlated with future surpluses, and this negative correlation must be great enough to make the present value of the future surpluses fall (rather than rise), thus leading to a fall in the value of liabilities. (Part of what makes the fiscal theory of the price level so popular among young researchers is precisely the fact that it gives such counterintuitive results.) For industrial countries there also are other reasons to be skeptical about the fiscal theory of the price level. For example, it can be shown that as long as the path of government real deficits has some self-correcting mechanism, so that deficits decline as debt grows, monetary policy dominance must prevail. For example, the budget and deficit conditions of the Maastricht Treaty turn out to be sufficient to ensure monetary dominance—indeed, they are much stronger than is necessary. Also, it turns out that in, say, a two-country world, it is not logically possible to have the fiscal theory of the price level hold in both countries, provided they have open trade and capital markets (Loyo 1997).

Although the fiscal theory of the price level may not be empirically relevant for industrial countries outside extreme circumstances, it may be more relevant for emerging-market and developing countries. In particular, the conditions on self-correcting budget deficits needed to ensure monetary dominance may not always hold, so fiscal nomination of the price level becomes theoretically feasible. This is almost certainly the case in very high inflation countries where monetary institutions have little meaningful independence from the central government. Unfortunately, we do not have firm evidence yet on the factors that determine when fiscal dominance occurs, although the factors almost surely include high debt levels. For example, government debt/gross domestic product (GDP) levels above 200 percent are almost never observed (except in cases of concessional lending), presumably because fiscal dominance comes into play and the real debt level is restrained by inflation and by inflation expectations. Debt levels below 50 percent of GDP, however, may still be a problem in countries that have very weak tax systems. In table 12 we present some suggestive evidence on the possible link between debt levels and inflation for African countries during various periods. The simple correlations between overall government debt-to-GDP or debt-to-exports mostly go in the right direction. For the CFA franc zone group, these are strikingly high and always statistically significant, irrespective of what sample period or what measure of indebtedness is used. For the non-CFA franc African countries, the results are somewhat more sensitive to the sample and debt measure that is used. There is a strongly significant correlation between debt-to-exports and inflation in the earlier part of the sample that breaks down in the 1990s—at the same time that the

correlation between debt-to-GDP and inflation is increasing and becoming significant in the more recent period. Figures 8 and 9 show the scatter plots of the underlying data for CFA and non-CFA countries, respectively.

Concluding Remarks

We have presented evidence that major events such as wars and civil unrest occur more frequently in Africa than in other regions. We think that the probability of such adverse outcomes has a critical influence on the investment climate. Such disastrous events often bring other evils with them, including high inflation and a higher level of other distortions, such as capital controls, that help parallel and illegal currency markets thrive. Although bouts of high inflation and all-too-frequent currency crashes are not unique to Africa (witness the Western Hemisphere's track record in this regard), the level of opaqueness and distortions, as revealed by the persistent prevalence of extremely high parallel market premia, is a more unique (non-CFA) African phenomenon. In this regard we believe there are tremendous benefits to be reaped by adopting unified exchange rate regimes broadly throughout the region.

These challenges indeed are difficult to overcome, but not insurmountable. Not many years ago, Uganda suffered from all of the ills discussed in this paper: war, high inflation, frequent collapses in its currency, and dual markets with a parallel market

TABLE 12.
Inflation and Debt: Is There a Link? 1970–2001

Period	Correlation of annual inflation and debt/GDP ratio		
	North Africa and Sub-Saharan Africa	CFA franc zone countries	Non-CFA franc zone countries
1970–2001	0 308*	0 950*	0 186
1990–2001	0 196*	0 898*	0 209*
1970–79, 1980–89, 1990–2001	0.182*	0 669*	0 202*
1980–89, 1990–2001	0 192*	0 803*	0 216*
	Correlation of annual inflation and debt/exports ratio		
1970–2001	0 548*	0 961*	0 518*
1980–89	0 414*	0 964*	0.311*
1990–2001	0 091	0.969*	0 096
1970–79, 1980–89, 1990–2001 averages	0 115	0 860*	0.137
1980–89, 1990–2001 averages	0 100	0.931*	0 115

Note An asterisk (*) denotes significance at the 5 percent level
Source IMF 2002

FIGURE 8.
Ratio of Debt to GDP and Rate of Inflation, CFA Franc Zone, 1970–2001
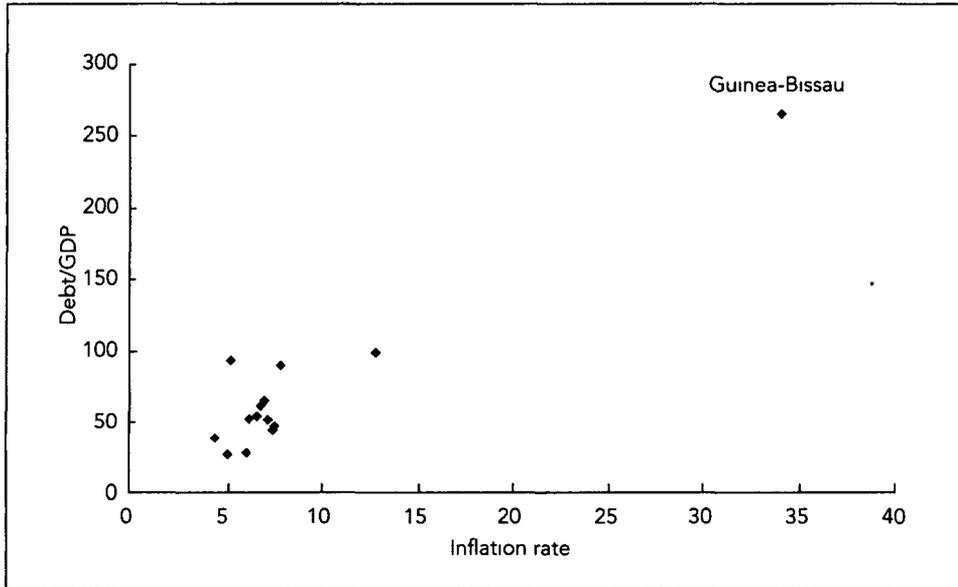
Source IMF 2002

FIGURE 8.
Ratio of Debt to GDP and Rate of Inflation, Sub-Saharan Africa, 1970–2001
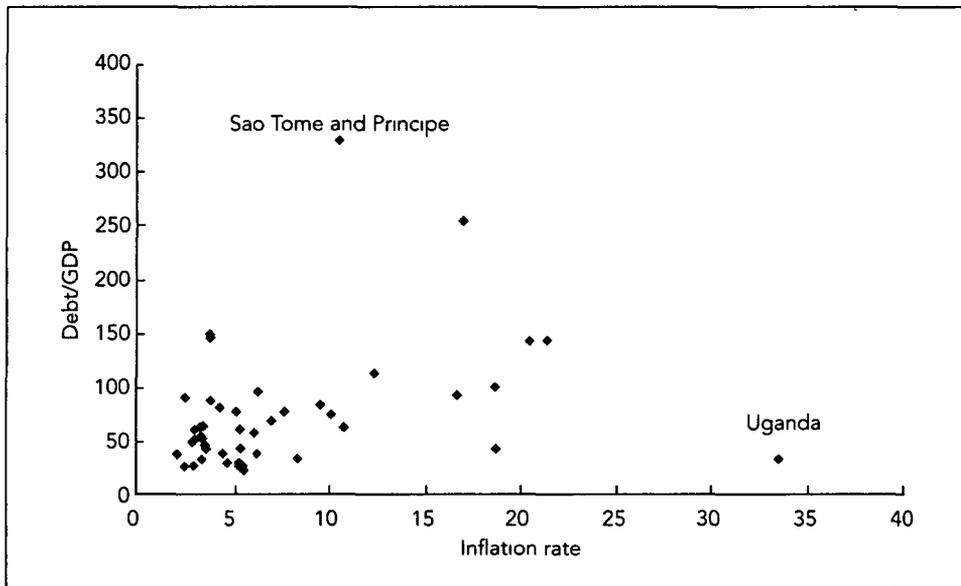
Note Scatter plot excludes the Democratic Republic of Congo
Source IMF 2002

premium that hit 567 percent in 1988. The end of the war was, of course, the most critical change. But macroeconomic stabilization has brought inflation down to less than 5 percent, growth has sharply rebounded, and FDI has risen from zero to more than 4 percent of GDP. With stabilization came the end of dual markets and increasing transparency—at the time of this writing the Ugandan shilling is one of the more convertible currencies in Sub-Saharan Africa. Nor is the strong performance by Uganda unique in the region. As discussed in the most recent World Economic Outlook, countries like Benin, Botswana, Burkina Faso, Cameroon, Mali, Mauritius, Mozambique, Senegal, and Tanzania have been consistently strong performers in recent years, both in terms of their macroeconomic policies and their growth performance. Although some of those countries have experienced an increase in FDI in recent years, unfortunately not all of them have—which highlights how much persistence and consistency it takes to build an attractive investment climate. Nevertheless, a unified exchange rate regime (or at least a very low parallel premium) is a key element in a transparent macroeconomic framework and would help produce many beneficial side effects in terms of improving governance and reducing corruption.

Appendix: The Costs of Inflation

Is inflation by itself such a problem? The answer is almost surely yes, but economists' theoretical and empirical evidence on the question is remarkably thin. Because high inflation so seldom occurs in isolation from other macroeconomic problems, time-series or cross-country regressions that show a cost of inflation on growth or output are not always convincing because it is difficult to hold everything else constant. For inflation rates over 40 percent per annum there does seem to be evidence that growth is retarded (see Easterly 2001 and Reinhart and Rogoff 2002). For lower inflation rates (below 40 percent) the evidence is more limited. This is not to say that a country that has an inflation rate of 10 percent is not clearly better off than a country with an inflation rate of 20 percent, and that a country with an inflation rate of 2 percent is not better off than one with 10 percent. The general reduction in inflation rates that has taken place in much of the world over the last 10 to 20 years has almost surely been a factor in raising global growth and increasing macroeconomic stability. Recall again figure 2 of the text, which gives annual growth rates both for the world (using purchasing power parity weights) and for the G7 countries. Visually, the decease in volatility of output growth since the mid-1980s is striking. Not all countries have enjoyed the same improvement in macroeconomic stability over this period. The United States has enjoyed a particularly large drop in output volatility since the mid-1980s (see Stock and Watson 2002), whereas output volatility for the Federal Republic of Germany appears to have remained roughly constant (reflecting no doubt German unification in 1989) and output volatility for Japan has actually increased (an outgrowth of the bursting of the asset price bubble in the early 1990s and a reduction in trend productivity growth). But for most countries increasing monetary stability has been accompanied by increased output stability. The causal

TABLE 13.
Currency Crashes: North Africa and CFA Franc Zone Countries, 1965–2001

Country	Dates of severe currency crashes	Number of severe crashes	Total number of crashes, including severe crashes
North Africa			
Algeria	1991 1, 1991 9, 1994 4	3	4
Morocco	—	0	0
Tunisia	—	0	0
Average for the region	—	1	1 33
Sub-Saharan Africa CFA			
Benin	1994 1	1	1
Burkina Faso	1994 1	1	1
Cameroon	1994 1	1	1
Central African Republic	1994.1	1	1
Chad	1994 1	1	1
Congo, Rep of	1994 1	1	1
Côte d'Ivoire	1994 1	1	1
Equatorial Guinea	—	—	—
Gabon	—	—	—
Guinea-Bissau	1994 1	1	1
Mali	1994 1	1	1
Niger	1994 1	1	1
Senegal	1994 1	1	1
Togo	1994 1	1	1
Average for the region	—	1	1

— Not applicable

Notes Two definitions of currency crashes are used A severe currency crash refers to a 25 percent or higher monthly depreciation that is at least 10 percent higher than the previous month's depreciation The "milder" version represents a 12 5 percent monthly depreciation that is at least 10 percent above the preceding month's depreciation To put this in perspective, the monthly depreciations annualized are 1, 355 percent and 310 percent, respectively

evidence presented in figure 2 may or may not stand up to careful statistical testing (that is not our purpose here). But it is evidence of a broad trend that has helped persuade many people that increasing monetary stability does pay off, even at lower levels of inflation.

At a theoretical level, it has taken even longer to assess why inflation matters, especially if it is stable and anticipated. Fischer and Modigliani's (1978) work was an early attempt to catalog all of the various theoretical costs of inflation. Their basic conclusion was that the main costs of stable and perfectly anticipated inflation are the "shoe-leather costs," that is, the costs to people of having to economize on their holdings of (real) currency balances in order to minimize their share of the inflation tax. The costs of unanticipated inflation are much greater, particularly in a world of imperfect information and imperfect indexing. Keynes (1936), of course, argued that in the real world, indexing of wages and prices to inflation is very limited (at low to moderate levels of inflation), so that monetary volatility translates directly into variability in output and employment. Though economists have made little progress in

understanding exactly why nominal rigidities are so important, Keynes' basic insight is very much alive today. There is a broader question of why, even in today's hyper-sophisticated (indeed hyperactive) financial markets, there is not greater capacity to index to inflation. Absent such indexation, and given long-term nominal contracts, then uncertain inflation is quite harmful to economic activity, making investment planning difficult and making it difficult to continuously maintain full employment (or whatever the modern search-theory equivalent of full employment is). The government is possibly the greatest source of nominal rigidities in the economy. Tax systems, especially, have important non-neutralities. Some are well known; for example, if tax rates are increasing in income, then inflation will raise average tax levels. If it takes significant amounts of time to collect taxes, then rises in the rate of inflation can lower effective real tax rates if agents are able to pay the government with a lag in depreciated currency. Many governments tax nominal rather than real interest receipts.

All of these are fairly primitive failures of indexation. Feldstein (1998) has emphasized that the effective rate of capital taxation—which is enormously complicated to calculate in practice—can be very sensitive to inflation rates even at low levels. For example, even starting from an inflation rate as low as 2 percent, a 1 percent reduction in inflation might raise the capital stock as much as 3 percent, according to Feldstein's calculations. In principle this problem could be solved via adequate indexation of the corporate income tax. In practice the accounting issues are so complicated that it is much easier to deal with the problem by simply having a lower rate of inflation. That last example is particularly interesting because it highlights how, in the complex modern world, the distinction between high inflation and variable inflation is not as sharp as one might think. When one looks at corporate accounting and taxation, one sees that inflation can lead to problems, even if when it changes only very slowly, because it is so costly to adapt capital taxation and depreciation rules adequately to compensate.

The more important distinction, for our purposes here, is between the effects of inflation in isolation from other forms of macroeconomic instability (for example, if a modern industrial-country central bank mistakenly and temporarily adapts an inefficient control technique) and the costs of inflation instability in a country where the government has a short time horizon and where inflation is accompanied by numerous other macroeconomic problems. The latter is almost surely the typical case in most countries where inflation is over 40 percent.

TABLE 14.
Currency Crashes: Sub-Saharan Africa and Non-CFA Franc Zone Countries, 1965–2001

Country	Dates of severe currency crashes	Number of severe crashes	Total number of crashes, including severe crashes
Angola	1991·3, 1991.11, 1991 12, 1992·4, 1993 1, 1993 3, 1993 10, 1994 2, 1994 6, 1994.10, 1995.4, 1995·5, 1995 8, 1995 9, 1996 2, 1996 3, 1996 5, 1997:7, 1999 5, 1999 7, 1999 9, 2000 5	22	25
Botswana	—	0	4
Burundi	1983·11	1	7
Congo, Dem Rep of	1967 6, 1976 3, 1978·11, 1979.1, 1979 7, 1980.2, 1981 6, 1983 9, 1990 11, 1991 2, 1991 7, 1991 8, 1991 10, 1991 11, 1992 1, 1992 3, 1992 5, 1992 6, 1992 9, 1992 10, 1993 1, 1993 6, 1993 8, 1993 11, 1993 12, 1994 2, 1994 7, 1995 8, 1995 9, 1995 11, 1996 1, 1997 5, 1998 10, 1999 4, 2000 1, 2000 6, 2000 10	37	44
Ethiopia	1992.10	1	1
Gambia, The	1986·1	1	4
Ghana	1967·7, 1971.12, 1972 2, 1978 8, 1983 10, 1984 11, 1986 1, 1987 2	8	10
Guinea	1986 1, 1986 12, 1987 1	3	4
Kenya	—	0	5
Lesotho	1985 8	1	6
Liberia	1998 1	1	2
Madagascar	1987 6, 1994 5	2	5
Malawi	1987 2, 1994 2, 1994 10, 1998 8	4	13
Mauritania	1992 10	1	2
Mauritius	1979 10	1	3
Mozambique	1981 1, 1987·7, 1988 7, 1991 4	4	6
Nigeria	1986·10, 1989 1, 1992 3, 1999.1	4	7

Rwanda	1966 4, 1990 11, 1994 3, 1994 8, 1995 3	5	7
Somalia	1982:7, 1984 9, 1985 1, 1986 1, 1987 6, 1987 9, 1988 6, 1989 5, 1989 12	9	11
South Africa	1985 8 ·	1	6
Sudan	1979 9, 1981 11, 1982.11 1985 2, 1987 10, 1991 10, 1992 2, 1993 11, 1994 7, 1995 9, 1995 12, 1996.1	12	13
Swaziland	—	0	6
Tanzania	1983.6, 1984 6, 1986.6	3	6
Uganda	1981 6, 1985 11, 1987 5, 1988.7, 1989 10	5	12
Zambia	1976 7, 1983 1, 1985 10, 1986 10, 1987 2, 1987 4, 1989 7, 1992 2, 1992 12, 1993 11, 1994 1, 1994 3, 1994 10, 1994 11	14	22
Zimbabwe	1991 9, 1997 12, 2000 8	3	6
Average for the region	—	6	9
Average for the region, excluding hyperinflation countries (that is, Angola and Congo, Dem Rep of)		4	7

— Not applicable

Notes Two definitions of currency crashes are used A severe currency crash refers to a 25 percent or higher monthly depreciation that is at least 10 percent higher than the previous month's depreciation The "milder" version represents a 12 5 percent monthly depreciation that is at least 10 percent above the preceding month's depreciation To put this in perspective, the monthly depreciations annualized are 1, 355 percent and 310 percent, respectively

TABLE 15.
Currency Crashes: Asia, Europe, and the Middle East, 1965–2001

Economy	Dates of severe currency crashes	Number of severe crashes	Total number of crashes, including severe crashes
Asia			
China, Hong Kong		0	0
China, mainland	1989 12, 1994 1	2	3
India	1966 6	1	3
Indonesia	1967 11, 1978.11, 1983 4, 1986 9, 1997 12, 1998 1, 1998 5, 1998 10	8	12
Korea	1998 12	1	5
Lao People's Dem Rep	1972.4, 1975 3, 1976 6, 1978 5, 1979.12, 1981 6, 1985 10, 1987 9, 1997·12, 1998 6, 1999 9	11	15
Malaysia	—	0	0
Myanmar	1975 1	1	2
Nepal	1967 12	1	5
Pakistan	1972 5	1	2
Philippines	1970 2, 1983 10, 1984 6	3	5
Singapore	—	0	0
Sri Lanka	1977 11, 1998 5, 1998 7	3	6
Thailand	—	0	3
Average for the region	—	2 3	4 4
Europe and Middle East			
Egypt, Arab Rep of	1979:1, 1989 8, 1990 7, 1991 3	4	4
Iceland	1967 11, 1968 11, 1975 2, 1983·5	4	13
Iran, Islamic Rep of	1993 3, 2000 12	2	2
Iraq	—	0	0
Israel	1974 11, 1977 11, 1983 10	3	5
Jordan	—	0	1
Lebanon	1985 1, 1986·1, 1986 5, 1986 11, 1987.3, 1987 7, 1987 8, 1987 10, 1990.8, 1990`8, 1990 10, 1991 1, 1992 7	13	19
Poland	1980 12, 1981·12, 1989 8, 1989 9, 1989 11, 1989 12	6	15
Romania	1984 11, 1990 2,1990 11, 1991 4, 1991 11, 1992 6, 1997 1	7	13
Saudi Arabia		0	0
Syrian Arab Rep	1988 1	1	1
Turkey	1970·8, 1978 3, 1979 6, 1980·1, 1994 4, 2001 2	6	9
Average for the region		3 8	6 8

— Not applicable

Notes Two definitions of currency crashes are used A severe currency crash refers to a 25 percent or higher monthly depreciation that is at least 10 percent higher than the previous month's depreciation The "milder" version represents a 12 5 percent monthly depreciation that is at least 10 percent above the preceding month's depreciation To put this in perspective, the monthly depreciations annualized are 1, 355 percent and 310 percent, respectively

TABLE 16.
Currency Crashes: Western Hemisphere, 1965–2001

Country	Dates of severe currency crashes	Number of severe crashes	Total number of crashes, including severe crashes
Argentina	1967 3, 1975·3, 1975 6 1975 11, 1976 3, 1976 11, 1981.4, 1981 6, 1982 1, 1982 7, 1987 10, 1989 4, 1989 7 1989 12, 1990 2, 1991.1	16	23
Brazil	1979 12, 1983 2, 1987 5, 1989 6, 1989·7, 1989 12, 1990 2, 1991 10, 1999·1	9	15
Bolivia	1972 10, 1982 2, 1982 11, 1983 11, 1984 4, 1984 8, 1984 11, 1985 2, 1985 5, 1985 9, 1985 11	11	12
Chile	1967 1, 1971 7, 1972 9, 1973·5, 1973 7, 1973 10, 1974 12, 1975 3, 1985 7	9	12
Colombia	1965 9	1	1
Costa Rica	1974.4, 1981 1, 1981 10	3	4
Dominican Republic	1985 1, 1990.8	2	4
Ecuador	1970 8, 1982 5, 1983 3, 1985 12, 1986 8, 1988 8, 1999 2, 1999 10	8	12
El Salvador	1986 1, 1990 5	2	2
Guatemala	1986 6, 1990 8	2	3
Guyana	1987 1, 1989 4, 1990 6, 1991 2,1999 3	5	9
Haiti	1991 9, 2000 9	2	3
Honduras	1990 3, 1990 4	2	2
Jamaica	1978 5, 1983 11, 1991 9	3	10
Mexico	1976 9, 1982 2, 1982 12, 1987 12, 1994 12	5	7
Nicaragua	1979 4, 1985 2, 1986·1, 1988 2, 1988 6, 1988 8, 1988 10, 1988.11, 1989 1, 1989 6, 1990 4, 1990 5, 1990 8, 1990 12,1991 3	15	16
Panama	—	0	0
Paraguay	1984 3, 1984 6, 1985.3, 1986.12, 1989 3	5	5
Peru	1967 9, 1976 6, 1977.10, 1987 10, 1987 12, 1988 9, 1988 11, 1989 1, 1990 3, 1990 8	10	15
Suriname	1994 7, 1994 10, 1999 1, 2000 10	4	6
Uruguay	1965 3, 1965 10, 1967 11, 1968 4, 1972 3, 1982·11, 1982 12	7	9
Venezuela	1984 2, 1986 12, 1989.3, 1994 5, 1995 12, 1996 4	6	6
Average for the region	—	6	9
Average for the region, excluding hyperinflation countries (that is, Argentina, Brazil, and Nicaragua)	—	5	7

— Not applicable

Notes Two definitions of currency crashes are used A severe currency crash refers to a 25 percent or higher monthly depreciation that is at least 10 percent higher than the previous month's depreciation The "milder" version represents a 12 5 percent monthly depreciation that is at least 10 percent above the preceding month's depreciation To put this in perspective, the monthly depreciations annualized are 1, 355 percent and 310 percent, respectively

TABLE 17.
Incidence of High Parallel Market Premia: North Africa, CFA Countries, and Non-CFA Countries, 1970–98

	Probability that the parallel market premia exceeds		
Country/Group	50 percent	100 percent	500 percent
North Africa			
Algeria	92 2	73 8	0
Morocco	0	0	0
Tunisia	0	0	0
Average for the region	31.0	24 6	0
Sub-Saharan Africa CFA	*0*	*0*	*0*
Sub-Saharan Africa Non-CFA			
Botswana	0	0	0
Burundi	17 3	0	0
Congo, Dem Rep of	—	—	—
Gambia, The	0	0	0
Ghana	46 6	36 1	17 0
Guinea	52 2	41 9	11 4
Kenya	4 6	1 2	0
Lesotho	0	0	0
Liberia	89 1	89 1	29 7
Madagascar	1 2	0	0
Malawi	33 5	5	0
Mauritania	61 2	45 2	0
Mauritius	0	0	0
Nigeria	68 3	34 3	0
South Africa	0 9	0	0
Swaziland	0	0	0
Tanzania	66 9	46 3	1 2
Uganda	61 3	50 4	23 5
Zambia	57 5	28 4	4 7
Zimbabwe	28 8	17 0	3 2
Average for the region	35 4	24 8	9.5

Sources Reinhart and Rogoff 2002 and original sources cited therein

TABLE 18.
Incidence of High Parallel Market Premia: Asia, Europe, and the Middle East, 1970–98

Economy	Probability that the parallel market premia exceeds		
	50 percent	100 percent	500 percent
China, Hong Kong	0	0	0
China, mainland	21 9	11.2	0
India	8 6	0	0
Indonesia	0	0	0
Korea	0	0	0
Lao People's Dem. Rep.	42.1	35 2	15.9
Malaysia	0	0	0
Myanmar	100	100	36 5
Nepal	14 4	0	0
Pakistan	8 9	8 1	0
Philippines	0 9	0	0
Singapore	0	0	0
Sri Lanka	27 1	12 7	0
Thailand	0	0	0
Average for the region	17 2	12 9	4 0
Europe and Middle East			
Belgium	0	0	0
Iceland	8 6	0 9	0
Israel	4.9	0	0
Turkey	3 7	0	0
Average for the region	8 2	0 2	0
Middle East			
Egypt, Arab Rep of	59 4	31 7	0
Iran, Islamic Rep of	65 1	59.4	29 7
Jordan	0	0	0
Lebanon	0.9	0 3	0
Saudi Arabia	0	0	0
Syrian Arab Rep	58 1	50 7	5 3
Average for the region	26 2	20 3	5.0

Sources Reinhart and Rogoff 2002 and original sources cited therein

TABLE 19.
Incidence of High Parallel Market Premium, Western Hemisphere 1970–1998

Country	Probability that the parallel market premia exceeds		
	50 percent	100 percent	500 percent
Argentina	32 3	15 6	0
Brazil	16 7	4.3	0
Bolivia	20 5	10 7	2 0
Chile	18 2	14 4	5 8
Colombia	0 3	0 3	0
Costa Rica	8 9	0 3	0
Dominican Republic	13 3	4 0	0
Ecuador	17 0	3 7	0
El Salvador	36 3	16 1	0
Guatemala	13 8	9 6	0
Guyana	43 7	36 5	12 6
Haiti	74 9	37 7	0
Honduras	29 3	2.4	0
Jamaica	16 7	5 4	0
Mexico	3 5	0 3	0
Nicaragua	39 8	31 4	18 2
Panama	0	0	0
Paraguay	23 6	15 6	0
Peru	32 9	7 8	1 2
Suriname	44 7	39 4	27 4
Uruguay	6 9	2 3	0
Venezuela	22 2	15 3	0
Average for the region	23 4	12 4	3 0

Sources Reinhart and Rogoff 2002 and original sources cited therein

Notes

1. See Kamaly (2001) for an interesting new study and for a comprehensive survey of the empirical literature on the determinants of FDI.

2. Indeed, as can be documented from the worldwide historical exchange rate chronologies in Reinhart and Rogoff (2002), the Democratic Republic of the Congo has experienced two hyperinflations since World War II. To date, no other country has had more than one.

3. For an excellent review of the experiences with high inflation, see Végh (1992) and Fischer, Sahay, and Végh (2001).

4. The one-time 100 percent devaluation for the franc zone countries on January 1994 is a well-known rare event that merits relatively little discussion in the context of exchange rate uncertainty. For the CFA franc zone, again, the high incidence of deflation we referred to earlier has been much more of an issue.

5. See Reinhart and Rogoff (2002) for a detailed description of the classification strategy.

6. The transparency index was not published prior to 2000 and our data on the parallel market rate end in 1998.

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