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1. Introduction[1]

The return of foreign private capital to East Asian and Latin American countries in the 1990s has attracted the attention of scholars and policymakers alike. Indeed, this phenomenon has been the subject of a substantial literature in recent years.[2] The Mexican peso crisis of 1994–95 and the recent Asian crises notwithstanding, capital inflows are seen as a way in which developing countries can finance higher levels of consumption, investment, and growth. Yet, during much of this period there have been few signs that countries in Sub-Saharan Africa (SSA) were at all affected by the renewed interest that international investors were showing in emerging market economies.

Throughout most of the 1980s and 1990s, capital flows to these countries were dominated by official transfers, as foreign private capital shied away.[3] Net financial flows to this region still remain modest, at about U.S. $12 billion during 1996, and not appreciably higher than they were in 1991 (Table 1). By contrast, financial flows to Asia and Latin America more than doubled during this period to U.S. $101 billion and U.S. $66 billion, respectively. Furthermore, with the exception of South Africa, portfolio flows, which is one of the fastest growing sources of capital for emerging market economies in the 1990s, to SSA have been negligible. Indeed, there are less than a dozen global funds that specialize in non-South Africa "Pan Africa" economies.[4]

Table 1. Net Financial Flows by Region: 1990–1996
(in billions of U.S. dollars)

Region:	1990	1991	1992	1993	1994	1995	1996
All developing	60.2	156.9	143.1	165.1	138.3	182.1	196.5
Africa	7.3	11.4	14.2	10.9	18.2	17.6	15.4
Africa: Sub Sahara	8.4	12.5	9.2	10.4	13.7	14.8	13.0
Asia	35.7	46.1	41.1	73.4	75.9	100.3	111.7
Asia: excluding China and India	26.4	32.7	34.3	44.5	39.0	59.2	66.2
Middle East and Europe	0.4	74.3	41.5	27.9	7.9	11.3	13.6
Western Hemisphere	18.6	28.2	53.5	62.8	43.2	58.4	66.0

Source: International Monetary Fund, *World Economic Outlook*.

[1] This paper was prepared for a Study on *Changes in International Trade and Finance: Consequences for Development Policies in Sub-Saharan Africa*. The authors would like to thank Stephany Griffith-Jones and participants in the EGDI meeting on October 9, 1997 for useful comments and suggestions and Todd Johnston for excellent research assistance.

[2] See Calve, Leiderman, and Reinhart (1995) and Montiel and Reinhart (1997) for a discussion of this literature.

[3] See World Bank (1997).

[4] See Griffith-Jones, Bhinda, and Martin (1997).

However, by 1992 there were signs that a few African countries, notably Kenya and Uganda, had begun to attract private capital inflows and, following the 1994 elections, South Africa joined the ranks of capital importers. More recently, in 1996, Nigeria and Zimbabwe began to attract the attention of foreign investors; as shown in Griffith-Jones, Bhinda, and Martin (1997), Nigeria accounts for about half of the foreign direct investment (FDI) to the SSA region. As these inflows persisted, many of the less desirable side-effects of capital inflows also became manifest. Nominal and real exchange rate pressures emerged, and countries such as Kenya, Uganda and South Africa experienced a pronounced appreciation in the real exchange rate.[5] As the monetary authorities attempted to stem the appreciation by intervening in the market for foreign exchange, reserve accumulation accelerated and monetary control became more difficult. Attempts to sterilize the foreign exchange transaction through either open market operations or increases in reserve requirements often drove domestic nominal and real interest rates higher, acting as a further stimulus to inflows and increasing debt-servicing costs for the government and the central bank.[6]

Some of the questions that emerge from the African experiences echo those of capital-importing countries in other regions: To what extent are the capital inflows driven by external fundamentals? Or conversely, what role have domestic macroeconomic policies and structural reforms played in attracting (or repelling) the flows? What is the appropriate policy response? Are the high domestic real interest rates a byproduct of financial liberalization or of monetary policy? Is there evidence of regional "contagion effects"? Do capital inflows make the recipient economies more vulnerable to financial crises, such as those in Mexico in 1994–95 and in Asia in 1997–98?

Other questions are more specific to the African experience: Why has SSA not attracted more flows, despite a substantive improvement in economic performance?[7] What are the prerequisites for attracting portfolio flows? Are the policy instruments limited by the relatively undeveloped nature of the financial sector? Is an undeveloped financial sector an asset or a liability when it comes to avoiding Asian-style crises?

The purpose of this paper is to answer some of these questions at both the conceptual level as well as in the African context. The paper presents a framework to analyze the macrocconomic effects of and the policy responses to a surge in capital inflows. We examine the monetary consequences, the implications for the exchange rate and domestic inflation, and the issue of the

[5] See Asea and Reinhart (1996) for a multi country study, Kahn (1996) for South Africa, Kibei, Mjema and Tarimo (1997) for Tanzania, Kasekende and Kitabire (1997) for Uganda, and Matale, Mwanawina, Matale, and Mweetwa (1997) for Zambia.

[6] These effects of the sterilization policies are not limited to the African countries, as several Asian, Eastern European, and Latin American countries had similar experiences (see Reinhart and Dunaway, 1995, and Montiel and Reinhart, 1997).

[7] See The Economist (June 14th–20th, 1997).

current account and its sustainability. The analysis places much emphasis on the role played by the financial sector and the stock market. At the empirical level, we investigate the possible links between the structure and depth of existing capital markets and the volume and composition of the capital flows a country attracts. The aim is to assess to what extent policies designed to deepen the capital market may be successful in paving the way for increased portfolio inflows. We also assess the possibility of regional contagion effects and gauge the responsiveness of capital flows to SSA to international interest rates. The issue of contagion has received increasing attention, in the light of crises that have engulfed several Asian economics. In the case of Africa, we ask to what extent capital market developments in the "large" neighbors, such as Kenya, Nigeria, and South Africa, impact (for better or worse) the whole region. Along the way, we compare the experiences of the countries that experienced a surge in capital inflows to those of countries facing similar circumstances in SSA.

Sections 2–5 present a basic conceptual framework to analyze the effects of international capital movements and discuss some of the key policy lessons. In particular, Section 3 analyzes the monetary consequences of capital inflows and the role of banks, while Section 4 examines exchange rate management issues. The subject of current account sustainability is taken up in Section 5. Section 6 presents an empirical analysis of the links between equity market structure and capital flows, while the following section examines issues related to financial liberalization, capital flows, and banking and currency crises. This section also provides evidence on regional contagion effects in SSA. The main findings and areas for further research are discussed in the final section.

2. Basic concepts and effects

We will start defining some concepts that will play a central role in the paper. In the first place we define the *current account deficit (of the balance of payments)*, CAD, as follows:

$$\text{CAD} = \text{Imports} - \text{Exports} - \text{Net Factor Transfers from Rest of the World} \quad (1)$$

These variables are usually presented in U.S. dollars and divided by GNP, a convention that we will follow here. Net Factor Transfers include workers' remittances (with a positive sign) and interest on external debt (with a negative sign if the stock of debt is positive, as is normally the case in African countries). The CAD measures the rate at which the country is becoming indebted to the rest of the world. Thus, if measured without error, it represents the growth of the country's overall (i.e., including private and public sectors) net international indebtedness. Several emerging markets have exhibited high CAD relative to their GNPs, often exceeding 8–10 percent. Large CADs are always a motive for concern, but several East Asian countries have run large deficits for many years while they exhibited sustained growth-of course, the recent currency crisis in Malaysia and Thailand suggests that large CADs may also be "unsustainable" in East Asia as well. Yet, it is worth noting that the currency crises in Indonesia and Korea were not preceded by large current account deficits.

International Reserves, R, are defined as official holdings of international short-term liquid assets issued by foreign governments (e.g., US Treasury Bills). Normally, international reserves are held in the form of obligations incurred by hard-currency governments, e.g., U.S. dollars, Deutschemarks, etc, and are held at the domestic central bank.

Capital Inflows, KI, are defined as follows:

$$\text{KI} = \text{CAD} + \Delta\text{R}, \quad (2)$$

where ΔR denotes accumulation of international reserves. Notice that KI – ΔR = growth of net international indebtedness. Thus, capital inflows is a *gross* concept because it does not net out the accumulation of international reserves.[8]

Capital Inflow episodes are defined as situations in which there is a sudden

[8] In practice, the different concepts in equation (2) are measured by independent methods that do not add up as required by (2). Hence, actual data includes errors *and omissions*. The latter could be quite substantial. Some studies have used it as a proxy for *Capital Flight*, i.e., illegal international financial transactions-these are quite important for a number of African countries.

and persistent increase in KI. For example, in Uganda capital outflows amounted to about 4 percent of GDP in 1990-by 1995 (the peak inflow year) KI was registering a surplus of nearly 7 percent of GDR A stylized fact is that at the start of a capital inflow episode both international reserves and the current account deficit exhibit a sharp rise. Eventually, however, reserve accumulation slows down and an increasing share of capital inflows takes the form of a widening CAD.

The expression "capital inflows" gives the impression that when KI rises more capital gets accumulated. However, nothing could be farther from truth. To illustrate this, we recall that the following is an identity in national accounting:

$$\text{CAD} = \text{Total Consumption} + \text{Total Investment} - \text{GNP}, \qquad (3)$$

where "Total" stands for "government + private sector." Therefore, by equation (2) and (3),

$$\text{KI} = \text{Total Consumption} + \text{Total Investment} - \text{GNP} + \text{R}. \qquad (4)$$

Consequently, given GNP and R, an increase in capital inflows must be reflected in a consumption and/or an investment boom. For instance, in the case of Uganda capital inflows financed higher levels of both consumption and investment; in the case of Kenya investment remained largely unaffected; as shown in Kimei, Mjema, Tarimo, and Msutze (1997), in Tanzania the inflows financed higher consumption and a surge in imports.

2.1. Total expenditure and fiscal implications

Typically, a capital inflows episode is associated with a rise in total expenditure (i.e., Total Consumption + Total Investment). Thus, since some taxes rise with total expenditure (e.g., VAT, sales taxes, import tariffs), capital inflows tend to increase fiscal revenue and lower the fiscal deficit. This effect has been shown to be important in several Latin American countries (see Talvi 1996) as well as in a number of African countries during commodity price booms (see Cuddington,1989). This is undoubtedly "good news" for policymakers but the phenomenon, if not well understood, could be taken as a sign that fiscal problems are beginning to be solved. Actually, there is plenty of evidence of countries that, having misunderstood the nature of the phenomenon, proceeded to increase public expenditure–the Nigerian example during the oil price boom of the late 1970s–early 1980s is one of many African examples.[9] Since the phenomenon is symmetric, fiscal revenue falls as capital inflows subside.

[9] See Cooper (1993) and Cuddington (1989).

Policy lesson, one: Countries that increased public expenditure in the expectation that the capital inflow is a permanent phenomenon, suffer a rude wake-up call as capital inflows come to an end and their temporarily high revenues erode. In the context of SSA, *treat all commodity price booms as if they were temporary–treat all commodity price declines as permanent*.

2.2. Gross and net capital flows: The stock market

Leaving aside the accumulation of international reserves, KI nets out all capital account transactions. Therefore, for example, if the government privatizes the telephone company and uses the proceeds to pay back external debt, the combined operation will not show up in an increase or decrease in capital inflows as measured by KI. The same is true if foreigners invest in the local stock market and the former domestic owners of the stock deposit the proceeds in a bank account outside the country. In many instances, these gross capital flows exceed in no small measure the net flows captured by KI. What is the advantage or disadvantage of these transactions? Obviously, they imply no net inflow or outflow, so the country will not benefit or be hurt by being able to spend more or less (recall equation (4)). The potential benefit, however, is more subtle although potentially very important.

Cross-border ownership has the advantage of allowing domestic and foreign residents to *diversify risk*. In the absence of cross-border ownership, domestic residents, for example, would be forced to invest all their wealth entirely in domestic assets. If, for political or natural reasons, the country's asset returns exhibit high volatility, then domestic residents will be subject to a welfare loss compared to the case where they are free to invest abroad. Moreover, to the extent that domestic residents have no opportunities outside the country, policymakers could more easily resort to highly distortionary but easy to collect taxes like the wealth tax.

Policy lesson, two: Allowing for capital mobility (i.e., cross-border ownership) acts as a disciplining device for policymakers, making it more difficult to resort to distortionary taxation.

A key stylized fact associated with capital inflows episodes is Stock Market booms. This stock market boom was a hallmark of the South African experience and, more recently the Nigerian and Zimbabwe cases, yet it hardly characterizes the experience of other African countries, an issue which we will take up later."[10] The booms may not last during the whole period, they may start after the initial surge of capital inflows and end before inflows com-

[10] The market value of portfolio equity investment of emerging market funds in South Africa amounted to barely U.S. $4 million in September 1993–by December 1995 the comparable figure was U.S. $532 million (see Rea, 1996).

pletely subsides.[11] However, the existence of a boom during some of the capital inflows episodes has been observed virtually everywhere among the more developed emerging markets. This is explained by the fact that capital inflow episodes are triggered by factors that increase the rate of return differentials between the receiving country and the rest of the world. These factors may be internal–e.g., end of a war, adoption of a sensible stabilization program–or external–e. g., fall in international interest rates.[12] Naturally, therefore, external capital comes in search of more attractive returns, and the easiest place to find it is at the Stock Market. Thus, the surge in the demand for stocks results in a sharp rise in price, i.e., a Stock Market boom.

The Stock Market boom benefits local stock owners and increases social welfare: stock prices rise and nobody is hurt by that. However, there are instances in which the initial well-grounded boom gives rise to unrealistic expectations on the part of investors, and the boom continues beyond what could be explained by realistic asset return differentials. More specifically, after the initial justified price rise, prices continue rising simply because individuals believe that prices will continue rising. Eventually, the bubble bursts and many investors see their hopes shattered. Not surprisingly, the recent crises in Asia also highlight that large capital outflows will be associated with an asset price collapse. In addition, and as will be seen below when we discuss the financial sector, these purely speculative bubbles could threaten the stability of the financial sector and eventually result in a fiscally onerous bank bailout.

Policy lesson three: Be aware of marked increases in stock or real estate prices fueled by capital inflows and rapid credit creation, as these could reflect asset price bubbles.

2.3. Debt maturity, bunching and international reserves

By definition, a capital inflows episode corresponds to a situation in which the government and/or the private sector are increasing the rate at which they fall into debt or lower their net wealth. Issuing debt and selling stocks to foreign residents are two forms of "borrowing." However, their contractual characteristics are very different.

When a foreign resident purchases stocks of a local firm, he is entitled to share in distributed profits and to vote in the company's shareholders meetings. The funds accruing to the investor, therefore, depends on the firm's ability to generate, and willingness to distribute, profits. Investors could actually lose the entire value of their investments if the firm goes bankrupt. Barring fraudulent action by managers, investors have no legal recourse that could

[11] See Karninsky and Reinhart (1996).

[12] The debate on "push" versus "pul" factors for the African experiences will be taken up in Section 7.4.

stop the loss. In contrast, bondholders are the first in line for repayment, which in most cases is independent of the firm's performance. In fact, when firms are unable to repay their debts because of a macroeconomic disturbance (e.g., devaluation, foreign exchange controls), foreign creditors are occasionally able to put enough pressure on the local government so as to persuade it to take up nonperforming private sector loans.

Moreover, debt maturity may also be an important factor. Under normal circumstances, a 10-year maturity obligation is not very different from a 1-year maturity obligation that is rolled over during the next 10 years. Actually, since short-term interest rates are usually lower than long-term ones, the 1-year bond plus automatic rollover could look more attractive to the debtor. However, their ranking for the debtor may change radically if there is no assurance that the debt rollover will take place. For example, in December 1994, Mexico found it impossible to rollover a sizable stock of maturing *Tesobono* (dollar-denominated public debt); Korea, Indonesia and Thailand faced similar problems in 1997–98. South Africa is particularly vulnerable in this regard.

Policy lesson four: A high volume of short-term debt relative to the stock of international reserves can be a major problem if the country entered into a balance-of-payments crisis. Short-term debt usually gives rise to the "bunching effect," where large chunks of debt mature in a short period of time.

3. Monetary consequences

As noted above, capital inflows have as a counterpart an increase in total expenditure or accumulation of international reserves. However, these *net* operations are usually accompanied by domestic intermediation. For example, an increase in international borrowing could be done directly by the final user of the funds (e.g., a firm implementing an investment project), or the operation may be intermediated in the domestic financial market. For instance, a domestic bank may borrow the international funds and, in turn, lend them to the domestic user of the funds. Direct loans require the firm or individual to have an international reputation. Thus, direct loans are usually limited to large firms or multinationals. In contrast, small- and medium-sized firms, SMFs, and consumers are constrained to borrow from domestic banks. Consequently, international funds geared to SMFs and consumers are typically intermediated by banks.

As a result, a capital inflows episode is usually accompanied by an increase in domestic banks' liabilities. The latter take several forms. Some of these forms are recorded in banks' balance sheets, e.g., banks' certificates of deposits, and different types of bank deposits. Other forms, however, are not recorded in normal bank balance sheets and are called off-balance-sheet items. An example is Bank Acceptances by which a bank guarantees repayment of borrowed funds, but the operation is otherwise equivalent to a direct loan to the final user. Off-balance-sheet items come to light when the firm or individual borrower are unable to make the contractual repayment. Thus, these items show very rapid growth in a crisis.

Another reason for the growth of bank liabilities during a capital inflows episode is that the latter is usually accompanied by an increase in total expenditure which, in turn, increases the demand for "money," e.g., currency, and demand/time deposits. Thus, even if no international funds are channeled through the banking system, the higher transactions level associated with capital inflows will lead firms and individuals to increase their bank deposits. This is, of course, a form of loan to banks, but the main motivation is not to lend but to increase the public's stock of liquidity. As opposed to a pure loan to banks, which is largely driven by interest rates, the increase in bank deposits that we are referring to here is largely driven by the level of domestic expenditure. This is an important observation, because it implies that as inflows slow down, transactions-linked bank deposits are bound to contract. We will elaborate on this type of cycle a little further, because we believe it plays a crucial role in determining the timing and depth of crises associated with capital inflows and outflows.

3.1. The banks factor

Consider the first phase of a capital inflows episode. Total expenditure rises and, with it, bank deposits. If reserve requirements are less than 100 percent,

banks will probably increase loans. Furthermore, since, as argued above, SMFs and consumers are rationed out of the international capital market, the new loans are likely to be funneled to SMFs and consumers. Typically, these are short-maturity loans but under normal circumstances, particularly when SMFs are involved, they are rolled over upon maturity. Therefore, after one or two years of a capital inflows episode, SMFs are likely to regard those short-maturity loans as largely permanent *credit lines*.

Trouble starts as capital inflows slow down. Suppose, for example, that capital inflows, KI, go from a positive number to zero. KI is a flow, it measures new borrowing. Thus, when KI goes to zero, it simply means that suddenly no new loans are flowing to the economy. But it does not mean the more dramatic capital flow *reversal* that would take place if KI became sharply negative. In a nonmonetary economy without banks, a capital inflows slowdown need not cause a major disruption. It may certainly stop some investment projects but it would be hard to imagine it triggering a deep financial crisis. After all, borrowers are not allowed to borrow more internationally, but by no means are they called upon to make unplanned repayments.

The situation is, however, much more complicated in a monetary economy with banks. According to equation (4), and taking the change in reserves, R, and GNP as given, a fall in capital inflows, KI, would induce a fall in total expenditure. Therefore, given the positive link between expenditure and deposits, the decline in expenditure would induce a fall in the demand for deposits. Thus, unless banks quickly find an alternatively source of funding, they are likely to stop rolling over some of their short-maturity loans. This is a loan reversal shock! Some SMFs and consumers who took advantage of the credit expansion associated with the first phase of the capital inflows episode would be called upon to pay up in full, no refinancing would be available. Notice that, contrary to the overall picture in which the economy as a whole is simply not receiving new loans, contraction of bank deposits implies that some segments of the economy would be forced to repay some of their loans. Hence, if the government refrains from intervening, this kind of development might lead to bankruptcies in the SMFs/consumer sectors and/or to bank failures.

Since the above type of developments are highly upsetting for policymakers, under those circumstances the government usually steps in. One option is to devalue, inducing a recovery in the demand for deposits through higher prices.

> **Policy lesson five:** Beware of rapid credit growth during the inflow phase of the cycle; when capital flows out, these loans may have to be repayed at short notice, leading to bankrupdes in the private nonfinancial sector and, possibly, bank failures.

3.2. The inflation factor: A fallacy? Monetary sterilization

The previous section showed how the presence of banks may help to channel some of the new credit to sectors that have no access to international capital

markets but may simultaneously contribute to the magnification of financial difficulties stemming from a slowdown of capital inflows.

Central banks' typical reaction to a bout of capital flows is, however, 'fear of inflation.' This would be fully justified by the logic of the previous section, by which a capital inflows episode could end up in higher inflation (or at least a sharp price peak). However, central banks worry because they see monetary aggregates sharply rising, especially when the exchange rate is not allowed to appreciate. The concern is that the rise in money supply will fuel inflation.

We will now argue that (1) even though 'fear of inflation' is not groundless, a rise in money supply during a capital inflows episode is a natural outcome and may not incread inflation, (2) some inflation may be inevitable if the exchange rate is not allowed to appreciate, and the phenomenon has little to do with the rise in money supply per se, and (3) inflation is likely if bank supervision is lax.

African examples of this fear of monetary expansion associated with the rise in capital inflows and increased purchases of foreign exchange were evident in the capital inflow episodes of Kenya in late 1993–1994 and South Africa, and Uganda in 1993–94.[13] These fears led monetary authorities to engage in large-scale sterilization policies through the open market sale of government securities, increases in reserve requirements, or both. We will deal with this issue next.

3.2.1. Inflation fear: A fallacy. Perils of sterilization

For the sake of argument, let us assume that the exchange rate is fixed. In this case, a surge of capital inflows that increases total expenditure will tend to increase the demand for money. This is a natural outcome that need not have any impact on inflation. For example, if price level are determined by the exchange rate, inflation will be equal to the international level, even though money supply exhibits a large increase. A good example which highlights the relevance of this case is Argentina after 1991. In March 1991 Argentina adopted a Convertibility Program by which the exchange rate was fixed to the dollar and the central bank made no effort to interfere with the generation of money supply. As a result, the stock of money (M1, for example) increased (cumulatively) by 150 percent from 1991 to 1996 but prices increased (cumulatively) by 55 percent; hence, the increase in money was three times the increase in prices. Moreover, the current rate of inflation (consumer prices) has been negative in the last few months.

[13] See Asea and Reinhart (1996) for the cases of Kenya and Uganda and Kahn (1996) for the South African experience.

Policy lesson six: It is a mistake to forget that under a fixed exchange rate regime, money is determined by its demand. Thus, if it goes up, it is because the public wants to *hold* more money. This is not inflationary and, under these conditions, sterilization is counterproductive.

The situation would be very different if the exchange rate were flexible. In the latter type of economics, an increase in money supply takes place because the monetary authority actively pumps in more liquidity. The increase in money is not necessarily wanted by the public. If it is not, people will try to get rid of the excess liquidity by buying goods, and raising prices, leading to inflation.

Fear of inflation often leads central banks to try to *sterilize* the increase in money supply through open market operations, i.e., through the absorption of domestic money in exchange for domestic public debt (e.g., Treasury Bills). Under these circumstances, money increases through the accumulation of international reserves in the central bank. Sterilization is therefore equivalent to the central bank acquiring international reserves in exchange for domestic public debt. The operation is, at best, neutral. If neutral, the public will attempt once again to raise money supply. This could go on forever unless the large reserve accumulation begins to be perceived as potentially dangerous. For example, a large stock of international reserves could tempt politicians to use it for large-scale public projects, creating either a financial hole in the public sector or, at best, a mismatch of maturities. To cover themselves from this possible bad scenario, investors may require an interest rate premium on domestic public debt. Therefore, the interest rate on domestic public debt will exceed that of international reserves, generating a larger fiscal deficit (since those deficits are usually borne by the central bank, they are called *quasi-fiscal* deficits). The interest rate differential led Colombia in 1991, Malaysia in 1994, and Kenya in 1994, among numerous examples, to momentarily stop sterilization.[14] On the whole, and for whatever the reason, central banks seldom fully sterilize the rise in money supply.[15]

Policy lesson seven: There are "perils in sterilized intervention," Persistent and widening domestic-foreign interest rate differentials (which act as a magnet to short-term capital inflows), large quasi fiscal costs, and the temptation for governments to spend some of the accumulated international reserves are among the chief perils.

[14] In the case of Kenya, the rising burden of servicing the public debt became evident, as in the 1993/94 budget domestic interest payments were 1.5 percent of GDP above the level that was programmed.

[15] For a discussion of many of these issues in the context of a formal model see Calvo (1991).

3.2.2 Sterilization: Selected African experiences

South Africa reacted to the surge in capital flows that began around June 1994 and persisted in large scale through December 1995 by substantial sterilization through open market operations–particularly during the early phase of the cycle. In the case of Kenya, large-scale sterilization efforts began around October of 1993 and persisted through most of the first half of 1994. For Uganda sterilization efforts were particularly intensive in 1993.

As in several Asian and Latin American countries, sterilization in Kenya took several forms. The Central Bank of Kenya increased its sales of treasury bills during late 1993 and early 1994. In addition, during the October 1993–March 1994 period the statutory cash ratio was raised in three steps from 12 percent to 20 percent. The increased sales of treasury bills and higher reserve requirements drove domestic interest rates higher.[16] Since the Kenya shilling was appreciating during this period the rise in dollar returns was even more dramatic. By mid-1994 the high level of interest rates was increasing debtservicing costs, generating quasi-fiscal losses and stimulating additional infloWS.[17] Indeed, domestic interest payments in the 1993/94 budget were 1.5 percent of GDP over program. At that time, it was decided that intervention efforts would be scaled down considerably and the shilling was[18] allowed to appreciate further.

The Central Bank of Tanzania, attempted to sterilize some of the monetary consequences of the capital inflows by substantial increases in the discount rate, from around 27 percent during 1987–1993 to 65.9 percent by end 1994. Increases in reserve requirements were also used to reduce liquidity during the capital inflow surge.

In the case of Uganda, sterilization took place primarily through the sales of treasury bills. During 1993 and early 1994 there was considerable intervention and sterilization efforts continued until April 1994. Domestic interest rates did not rise, as inflation was falling markedly during this period. However, given the appreciation in the Uganda shilling during this period, returns in dollars rose markedly. Due to the lack of a welldeveloped secondary market and an insufficient volume of new issues, it became increasingly difficult for the central bank to pursue sterilization policies for an extended period of time.[19] The marked decline in interest rates after May 1994 reflects, in part, the inability of the central bank to conduct open market operations.

[16] This pattern of response prevails in numerous sterilization episodes in Chile, Colombia, Indonesia, Malaysia, and the Philippines, among others (see Reinhart and Dunaway (1995).
[17] For a discussion of the quasi-fiscal effects of sterilization policies see Rodriguez (1991), and Kiguel and Leiderman (1994).
[18] See Kimei, Mjerna, Tarimo, and Msutze (1997).
[19] See Kasekende and Kitare (1997) for details.

3.2.3. Bank incentives and supervision

In Section 2.1 we showed that a capital inflows cycle may leave bankruptcies and financial disruption in its wake. We will now elaborate on the deeper economics behind such a phenomenon.

First, we will consider a case in which a capital inflows cycle would have no dire consequences. This would be so if the larger stock of deposits during the first phase of capital inflows cycle are fully invested by the bank into highly liquid international assets (e.g., US Treasury Bills). Thus, as capital inflows slowdown and bank deposits fall, banks simply sell their corresponding liquid assets and no domestic disruption takes place.

In practice however, the interest rate on liquid assets is extremely low compared with what a bank can charge for commercial loans. To the extent that the interest differential reflects the higher risk of a commercial loan, it would not necessarily induce banks to make commercial loans. However, if for some reason banks were shielded from some of the risk, the incentives to make commercial loans could be hard to resist.

Consider the following scenario. Banks are assured–implicitly or explicitly–by the central bank that they will be bailed out for any loss they suffer as a consequence of macroeconomic disequilibrium (i.e., systemic shocks or problems). This scenario is highly realistic in most regions, including SSA. As the Appendix makes plain, banking sector problems have been widespread in SSA–as have large-scale bailouts. In Benin, Cote d'Ivoire, Mauritania, Senegal, and Tanzania the cost of bailouts exceeded 10 percent of GDP.[20] This scenario is presently being played out in Mexico, and Thailand but, as noted above, there are many examples in SSA bearing it out. Banks' bailouts can take several forms. For example, the public sector could take up bad loans (Mexico 1995, Chile 1982), or bad debts could be liquidated (in real terms) by a large inflationary peak.

As a result, banks will end up engaging in excessively risky activities because the costs will be borne by everybody. Actually, in the face of massive capital inflows into the banking system, banks may be induced to relax their loans' monitoring. The reason being that if all banks were to engage in careless lending, the eventual nonperforming loans problem that is likely to arise will be systemic and, thus, will be partly covered by government.

> **Policy lesson eight:** The high incidence of banks taking on greater risks in periods when access to international capital is relatively favorable highlights the importance of bank supervision during a capital inflows episode. Where supervision is poor and hard to improve in the short run, it may be advisable to increase banks' minimum (remunerated) reserve requirements.[21]

[20] The issue of financial crises will be revisited in Section 7.

[21] This is the opposite of what has been happening with some of the SSA countries. For instance, Zambia reduced reserve requirements from 30 to 3 percent over a short period of time (see Matale, Mwanawina, Matale, Mweetwa, 1997).

> In this way, it can be ensured that banks' are sufficiently–liquid, that the incidence of nonperforming loans is reduced, and that deposit withdrawal as capital inflows slow down can be met without serious financial disruption.

A recent IMF (1995) study cites many of the problems in governance and legal, and supervisory areas for various countries in Africa and elsewhere. It notes that many of the banking systems in countries in SSA suffer from weak management, uneven accounting practices, poor auditing and reporting and that these problems are often particularly severe in state-run banks.[22] Hence, it would appear that the risks discussed in this subsection are particularly important for the region.

[22] See, for instance, Kasekende and Kitare (1997) for disclosure problems in the Ugandan case.

4. The role of the exchange rate

The previous discussion assumed that, on the whole, the exchange rate exhibits some rigidity. If the exchange rate is fixed, for example, capital inflows are likely to increase money supply. In contrast, if the exchange rate is floating and the monetary authority does not intervene in the foreign exchange market, then domestic currency is supply-determined. Domestic-currency denominated deposits may still rise but only through lowering the cash/deposit ratio or the banks' free reserves. Thus, the massive increase in bank deposits observed under fixed exchange rates is unlikely to materialize. Therefore, the question arises, would most of the monetary/banking problems go away if the exchange rate were perfectly flexible? This will be the central theme of this section.

4.1. The financial angle of flexible exchange rates

Once again, let us consider a capital inflows cycle where, first, capital flows in, and then those flows subside (reversion may take place but is not necessary for this discussion). To the extent that capital inflows result in a current account deficit and higher expenditure, the transactions demand for money will be bolstered independently of the foreign exchange regime. However, if for the sake of concreteness, the monetary base is fixed by the central bank and the money multiplier is constant, then bank deposits will be supply determined. Thus, a rise in expenditure will create excess demand for money/deposits. Hence, equilibrium can only be restored by an appreciation of the currency.

In the simple world where domestic prices equal the exchange rate, capital inflows will lead to a fall in the price level. To the extent that this shock has an unanticipated component, the fall the price level may make some old loans impossible to repay in full. This will particularly be the case if loans specify a fixed nominal interest rate which is not indexed to the price level. The fall in the price level automatically lowers the borrowers' cash inflow and, at the very least, may generate a massive need for refinancing. In the worst-case scenario, loans could become unpayable and bankruptcies follow.

On the other hand, if domestic prices are sticky and, hence, do not mirror the exchange rate, the relevant price level for the demand for money will have both a domestic and an international component. It follows that the same increase in expenditure will now call for a sharper appreciation rate. Under these circumstances, producers of nontradable goods are shielded from currency appreciation, but those in the tradables sector will be harder hit than before (due to the sharper currency appreciation).

Policy lesson nine: Financial trouble is not absent under flexible exchange rates and it can actually surface the early stages of a capital inflows cycle. Can the central bank do something to prevent floating rates during wreaking

financial havoc? The answer is "yes." The central bank could increase money supply at the beginning of the cycle. In this manner, the central bank could prevent the exchange rate from appreciating at the beginning of the cycle. At the end of the cycle, though, it should refrain from contracting money supply because, otherwise, the same financial problems highlighted in connection with fixed exchange rates will surface here. Thus, this type of monetary management is inflation-prone: money goes up but never goes down. Financial trouble can be avoided but a sequence of capital inflow cycles is likely to put the economy on an inflationary path. This need not occur, however, if the assistance to the potentailly affected financial institutions comes from the government finances rather than through a monetary expansion by the central bank.

4.2. Flexible exchange rates and credibility

In modern economies, an important component of money is government's liquid liabilities (e.g., bills and coins). Government determines its quantity or its price (the exchange rate). It cannot let both be determined by the market because the price level is likely to wander in any direction. Employing popular jargon, one would say that the monetary economy lacks a "nominal anchor." Thus, under floating exchange rates, government has to set money supply. For the latter not to lead to macroeconomic distortion, it is essential that the monetary target be well-known and *credible* (see Calvo, 1989). However, very few people are likely to be familiar with the concept of money supply, and even less with the different monetary aggregates, e.g., monetary base, M1, M2, etc. Thus, the conditions of being well-known and credible are unlikely to be met. These difficulties are magnified if, as in the previous section, the central bank engages in open market operations to stabilize the exchange rate or any other macro variable.

In contrast, the situation is different as regards to fixing the nominal exchange rate. In most economics, most people are familiar with the concept. Therefore, fixed exchange rates are easier for the public to understand and monitor. Credibility may still be a problem though, because the public has to believe that the present system will be kept in the future. To ensure credibility, governments may tie their hands by making it difficult to modify the exchange rate parity. This can be done either by domestic regulations (e.g., a law by which the exchange rate can only be modified by Congress), or by international agreements (e.g., joining a Currency Union like in Europe and the former Franc Zone). On the other hand, many fixed exchange rate regimes end in spectacular financial crises and graceful exits from a peg are few and far between.[23]

[23] See, for instance, Reinhart and Vegh (1996).

4.3. Currency substitution

We define currency substitution as a situation in which foreign money circulates as a means of payments. This situation is common in countries that are undergoing or have experienced high inflation. Inflation increases the cost of holding domestic money and leads individuals and firms to look for substitutes.

Let us denote the domestic component of the supply of money by M and the foreign exchange component by M^*. Then total money supply in terms of domestic currency is $M + EM^*$. Thus, a devaluation (appreciation) of the currency increases, de facto, the supply of domestic money. If, in addition, a simple Quantity Theory of Money applies, and domestic prices are proportional to the supply of money, then a devaluation (appreciation) increases (decreases) the price level. Consider the simple world with pure tradable goods in which the price level is just equal to the exchange rate, then the above logic implies that

$$M + EM^* = E, \tag{5}$$

where the factor of proportionality is assumed to be unity. Thus,

$$E = \frac{\mathrm{M}}{1 - \mathrm{M}^*}. \tag{6}$$

Policy lesson ten: Currency substitution signifies a major complication for the management of monetary policy under floating exchange rates. This is so because the supply of money is partly a function of the exchange rate. The domestic monetary authority controls the supply of domestic currency but foreign currency holdings are set by the private sector. With access to capital markets, foreign currency could actually be borrowed, significantly weakening the nominal anchor provided by the domestic component of **money** supply.

5. Current account deficit: Is it a problem?

Popular analysis suggests that large current account deficits are a sign of disequilibrium and should be brought under control. We agree, in principle, that large deficits are a cause for concern. However, we believe that the standard analysis–based on "sustainability" considerations–is incomplete and possibly misleading. In this section we will start discussing the sustainability approach to evaluating current account deficits, and then turn to other reasons for concern that we feel are more relevant.

5.1. Sustainability analysis

Sustainability literature is based on the budget-constraint equation. Net international debt accummulation is the difference between *CAD* and the growth in real GDP times the level of international debt (both as a share of GDP). Sustainability analysis focuses on steady states. Thus, if we assume no accummulation/decummulation of international debt in the steady state–sustainable–current account deficit satisfies

$$CAD_{\infty} = \textit{constant dollar GDP growth} \times b_{\infty}, \qquad (7)$$

where subscript denotes "steady state" and *b* is the net stock of international debt (as a share of GDP). This equation establishes a relationship between steady state debt and current account deficit. If no growth is possible, then the sustainable current account deficit is necessarily equal to zero. In contrast, with positive growth a sustainable current account deficit is possible.

This analysis cannot give us a definite answer on *CAD* until we pin down *b*. Recent experience shows that the capital market is reluctant to keep lending to LDCs exhibiting levels of indebtedness that exceed 80 percent of GDP (see Williamson (1993)). Hence, this additional piece of information allows us to write the sustainability condition (8) as follows:

$$CAD_{\infty} = \textit{constant dollar GDP growth} \times 0.80, \qquad (8)$$

Thus, a country that can be expected to grow at 4 percent per year, cannot *sustainably* run a current account deficit exceeding 3.2 percent. Since 4 percent was, if anything, an upper limit for Mexico, this analysis would conclude that its 8 to 9 percent current account deficits were grossly unsustainable.[24]

Presumably, the reason for capital markets unwillingness to extend credit to LDCs beyond 80 percent of GDP is that it may become tempting for

[24] It should be noted that the same analysis would not single out Argentina as a current account derelict, since its current account deficit was about 3.7 percent of GDP in 19,94, and growth exceeded 4 percent.

those countries to renege on their debt obligations. Temptation, in turn, is likely to be related to the sacrifice associated with servicing the debt. Gross sacrifice of servicing the debt can be measured by the associated trade balance surplus. The previous computation suggests that the capital market becomes nervous about a country's willingness to repay when debt service represents only about 5 percent of GDR Notice that the *net* sacrifice from servicing the debt could be much less once one takes into account international penalties for debt delinquency.

Thus, one criticism of current account sustainability computations is that they are highly sensitive to the definition of sustainable debt/GDP ratios. Besides, the above example shows that the implied critical sacrifice levels are low when compared to other capital market transactions. For example, mortgages in the U.S. are easy for a household to get if total mortgage payments are less than 25 percent of the household's income. Thus, if this ratio were also relevant for countries' debt then, using the above parameters, the critical steady state debt/GDP ratio would be 4.16. Therefore, a country growing at 4 percent per year could run a sustainable current account deficit of more than 16 percent of GDM

Another even more fundamental criticism of standard current account sustainability analysis is that it is limited to steady states. Why should these measures be of any relevance for a reforming economy? A formal analysis of the budget constraint relationship underlying the above steady state analysis–but applied to non-steady-state paths–would allow very large trade deficits if they were expected to be eventually followed by equally large trade surpluses (in present discounted terms). As a result, steady state sustainability computations may have little to say about the economy's *solvency*, which is, or should be, the fundamental issue addressed by this literature.

The last criticism is, in our view, the *coup de grace* for sustainability analysis, particularly when it is applied to countries in transition, which cannot be presumed to be near their steady states. Actually, the use of mechanical formulas to put an upper limit on sustainable current account deficits could contribute to panic and confusion. Few people would understand what sustainability really means. Thus, taking the word at face value could lead the public in countries where the current account deficit is deemed unsustainable to conclude that a crisis is in the offing, and stage a run against the currency and short-maturity domestic assets. This might take place even though there is no fundamental reason for a crisis to occur.

Policy lesson eleven: Beware of mechanical rules used to compute what is or is not a "sustainable" current account deficit. Such "steady state" rules are difficult to apply to countries undergoing transition, which includes most developing countries, to the extent that structural reforms are taking place.

5.2. Current account deficits and the risk of a slump

Large current account deficits could be problematic if, for some reason, there is a sudden and unexpected slowdown of capital inflows and the government cannot offset it by running down international reserves. A sudden cut in the CAD will lead to a reduction in domestic expenditure (or absorption). Thus, the relative price of nontradable goods is likely to fall. The combination of these features ("sudden" and "unexpected") may cause financial strain in the tradables good sector. At the new relative prices, outstanding loans may no longer be payable.

This type of financial crisis could actually have a self-fulfilling prophecy characteristic. Consider a situation in which no crisis is expected, capital is flowing in and, at the associated relative prices, the rest of the world is willing to lend to firms in the nontradable sector. Suppose, now, that a crisis occurs somewhere around the world, at a place that has no commercial contact with the country in question but which, in the mind of investors, bears some resemblance with it. Consequently, international investors stop new loans to the country in question until "the dust settles." The relative price of nontradables fall, as indicated above, and crisis erupts.

Notice that in the above scenario it is a condition that international borrowing is aimed at the nontradable sector. If, instead, loans went to finance investment in the tradables sector, then the wait-and-see operation would have no impact on the viability of that sector to the extent that its prices are determined in the international market. Moreover, if the slowdown leads these firms to suspend investment projects and the latter had a nontradable component, the price of nontradables will fall making the tradables sectors even more profitable.

> **Policy lesson twelve:** Large current account deficits may be problematic if, for some reason, there is a sudden and unexpected slowdown of capital inflows and the government cannot offset it by running down international reserves. A sudden cut in the CAD will lead to a reduction in domestic expenditure (or absorption).

So far, the emphasis has been on current account deficits. However, a perceptive reader might ask whether the same kind of problems might not also arise when current account is in balance or even in surplus–as a result of a sudden *reversal* of capital flows, e.g., if KI becomes sharply negative. From a formal point of view, the analysis would be the same. However, there is an important difference between a capital inflows slowdown–whereby positive KI goes to zero, for example, the case analyzed in this section–and a capital inflows reversal–where KI turns sharply negative. In the first case, lenders stop lending, something that they can do since, under normal circumstances, *borrowers cannot force lenders to lend*. In the second case–capital inflows revers al–lenders want their money back. But, under normal circumstances, *lenders cannot force bor-*

rowers to repay their loans under the terms of the original contract. Lenders can sue and try to attach the collateral, but this is costly and *time consuming*. Therefore, in practice capital inflow reversals trigger *automatic refinancing mechanisms*. Lenders may actually be more willing to refinance in a capitalreversal episode if they realize that calling for bankruptcy may get them very little. Consequently, the negative impact of a capital reversal (which could occur even though the current account is in balance) appear to be less damaging than that of capital inflows slowdown starting from a large current account deficit.[25]

5.3. Current account deficits and the size of the financial sector

As pointed out above, not all sectors in the economy have access to the international capital markets. Part of the task of the domestic banking system is to provide credit to SMFs and consumers for whom it may be hard, if not impossible, to borrow in the rest of the world.

A CAD usually reflects the existence of new loans from the rest of the world (except when the deficit is fully financed by running down international reserves, recall equation (2)). Therefore, a capital inflow slowdown–especially if sudden and unexpected–implies that sectors which, under normal circumstances have access to the international capital market, are suddenly rationed out of that market. These firms/individuals are typically prime borrowers and, hence, have a better credit rating than those that have no access to the international capital market. Consequently, they will be given first priority in the local bank credit market, lowering the supply of credit to SMFs and consumers. The impact on the credit-constrained sectors is a function of the size of the capital inflow cut *relative* to the stock of domestic bank credit.

We feel that this consideration helps to explain why Argentina was so badly hit by the Tequila crisis compared to Mexico, even though Mexico was forced to cut the current account deficit by about 8 percent of GDP, while Argentina's cut did not exceed 2.5 percent of GDR These adjustments were accompanied by a fall of GDP in 1995 of about 6.4 percent in Mexico and 4.4 percent in Argentina. Thus, the cost of the adjustment per unit of current account deficit reduction was more than double in Argentina than in Mexico (i.e., 4.4/2.5 in Argentina against 6.4/8 in Mexico).

[25] These observations are akin to the following remarkby Keynes: "[i]t is to be noticed that the position of a country which is preponderantly a creditor in the international short-loan market is quite different from that of a country which is preponderantly a debtor. In the former case, which is that of Great Britain, it is a question of reducing the amount lent; in the latter case it is a question of increasing the amount borrowed. A machinery which is adapted for action of the first kind may be ill suited for action of the second." Keynes (1924, p. 18).

6. Equity market depth and portfolio flows: Why is SSA out of the loop?

The preceding four sections have discussed various analytical aspects of the policy dilemmas that arise when a country is faced with a surge in capital inflows. In what follows, we turn to an empirical analysis of some of these issues for SSA countries.

As noted earlier, portfolio capital flows, which have played such an important role during the capital flow surge of 1990s in Asia, Eastern Europe, and Latin America have been negligible to SSA (South Africa being the exception).[26] While as discussed in Section 11.2, surges in portfolio equity flows are not without risks (in terms of fueling asset price bubbles) we also discussed the benefits these inflows bring. In this section we extend the recent work of Montiel and Reinhart (1997) to examine the possible links between capital market structure and the volume of portfolio flows a country receives. In particular, we aim to shed light on why SSA has escaped the portfolio investment boom of recent years and ask whether there is some minimum infrastructure in bond and equity markets required to promote portfolio flows. In other words, to invest in bonds and stocks you need to have a stock and bond market in the first place. A series of policy actions may be required to bring about the establishment of such markets.

To analyze this issue, we have constructed a sample of 18 such "emerging" markets in Asia (Indonesia, Malaysia, the Philippines, Sri Lanka, and Thailand), Latin America (Argentina, Brazil, Chile, Colombia, Costa Rica, and Mexico), other regions (Czech Republic and Egypt) and SSA (Kenya, Nigeria, South Africa, Uganda, Zimbabwe). With the exception of China, this list includes most of the developing major capital importers in their respective regions. The sample spans annual data for 1990–96. The data on capital flows is taken from the IMF's *World Economic Outlook* data set. Capital flows in this data set are classified into five categories: portfolio flows (bonds and equity), short-term flows, FDI, other long-term flows, and errors and omissions. In what follows we focus on portfolio flows (as a share of GDP).

To examine whether there is a systematic link between capital flows and the structure of the capital market, we introduce a variety of possible proxies for the size and depth of the domestic capital market. The three variables we consider are: the market capitalization of the equity market (in U.S. dollars), the number of listed companies in the stock exchange, and the trading value (in U.S. dollars). All the data comes from the International Finance Corporation. While these variables directly describe the equity market, they are also likely to

[26] See Kasenkende and Kitare (1997) and Matale, Mwanawina, Matale, and Mtweetwa (1997) for documentation of individual case studies.

proxy indirectly for the size of the banking sector, as typically countries with undeveloped capital markets also tend to have a smaller financial sector.[27]

We include these equity market indicators one at a time. The remaining explanatory variables are the sterilized intervention index, the capital control index and the U.S. interest rate.[28] Because it has sometimes been argued that capital inflows may themselves lead to an expansion in the domestic banking sector and/or a deepening of the capital market, we treat these equity market indicators as endogenous and use instrumental variables estimator; we use a fixed effects estimator and correct for the presence of heteroskedastic disturbances.

For each dependent variable we report the results for each equity market measure in Table 2. For total capital flows, neither market capitalization nor trading value are significant. However, the number of listed stocks is significant at all standard confidence levels and has the anticipated sign–the larger the number of listings the higher the capital inflow. The sign and magnitudes of the coefficients and statistical significance of remaining explanatory variables in the regression are in line with those reported in Montiel and Reinhart (1997). Portfolio flows, not surprisingly, appear to have the closest link to the stock market variables; both market capitalization and number of listed stocks are statistically significant with the anticipated positive sign. By contrast, none of the variables were statistically significant in the regressions explaining short-term portfolio flows. Hence, we can conclude that the absence of developed capital markets in the region is, at a minimum, partially responsible for the lack of portfolio flows to SSA.[29]

[27] Of course, in developing countries the bulk of the financing is done through the banking sector rather than the equity or bond market, hence the former tends to be relative large (see Rojas Suarez and Weisbrod (1994)).

[28] Based on the country-specific information in Montiel (1996), Kahn (1996), and Reinhart and Dunaway (1996), as well as Reinhart and Smith (1997), we have also constructed indices to measure the incidence and intensity of capital account restrictions as well as sterilized intervention. The latter provides a measure of the efforts to maintain a tight monetary policy in the presence of the capital inflows. Our policy indices range from 0 to 2 in both cases. See Montiel and Reinhart (1997) for details on these indices. The next section will discuss the sterilization issues in greater detail.

[29] For instance, equity markets in Namibia and Zambia (not included in our sample) have fewer than 10 listed companies.

Table 2. Fixed Effects Estimates–instrumental Variables: 1990–1996
18-country panel

Dependent variable	Sterilization proxy	Capital control proxy	US interest rate	Market capitali-zation	Number of listed stocks	Trading value
Capital account balance/GDP						
(1)	1.20	–0.99	–0.57	–0.01		
	(2.12)	(–0.82)	(–1.87)	(–0.02)		
(2)	1.40	–3.94	–0.65		0.01	
	(2.38)	(–0.71)	(–1.99)		(2.82)	
(3)	1.32	–0.98	–0.69			–0.02
	(2.33)	(–1.21)	(–1.98)			(–0.97)
Portfolio flows/GDP						
(1)	0.39	–0.64	–0.36	0.02		
	(1.07)	(–1.78)	(–2.45)	(2.69)		
(2)	0.28	–0.77	–0.44		0.02	
	(1.35)	(–1.67)	(–3.28)		(2.05)	
(3)	0.28	–0.35–	0.44			0.01
	(0.79)	(–1.70)	(2.71)			(1.43)

Notes: The countries in the sample are Argentina, Brazil, Chile, Colombia, Costa Rica, Czech Republic, Egypt, Indonesia, Kenya, Malaysia, Mexico, Nigeria, Philippines, South Africa, Sri Lanka, Thailand, and Uganda, and Zimbabwe. *t*-statistics are reported in parentheses. Standard errors have been corrected for general forms of heteroskedasticity.

7. Capital flows, financial liberalization, crises, and contagion

This section examines the links between financial liberalization policies, capital inflows and financial crises. We also investigate empirically whether capital flows to and from SSA are molded by developments in the larger countries in the region-that is, whether there is evidence of "contagion" or spillover effects.

7.1. Financial liberalization, sterilization policies, and real interest rates

As to causes behind surging capital inflows, for the African experiences the most common cause, at least historically, has been a commodity price boom (see Cuddington (1989)). In some of the recent inflow episodes we have discussed, the boom in coffee prices may also have fueled the surge in inflows (see Hadjimichael et. al. (1995)).[30] However, in recent years the end of Uganda's civil strife and South Africa's abandonment of an apartheid government clearly can be identified as important domestic causes stimulating the return of flight capital and attracting new investors. Notwithstanding these probable "pull" factors, work by Asea and Reinhart (1995) suggests that the sharp rise in domestic real interest rates was a key "pull" factor behind the rising capital inflows in both Kenya and Uganda. Indeed, the statistical significance of the sterilization proxy index discussed in Section 2 and presented in Table 2 offers additional evidence in that direction, as more aggressive sterilization efforts stimulate larger flows–particularly of a short-term nature.

But sterilized intervention is only part of the story why domestic interest rates rose sharply. After remaining negative through much of the 1980s and early 1990s, the combination of financial market liberalization and efforts to fully or partially sterilize the large scale foreign exchange operations of the central bank drove real interest rates higher. On a risk-adjusted basis the increases in real rates may be even more pronounced. During recent years, countries such as Kenya and Uganda have liberalized remaining exchange restrictions on current account transactions as well as trade and the capital account. In addition, some of these countries have also had successful inflation stabilization programs and somewhat better growth performance. Taken together, it could be argued that the risk premia for these countries may have declined.[31] The very timing of the surge in inflows suggests that domestic

[30] Coffee accounts for almost all of Uganda's exports and about one-third of Kenya's exports. During 1992–93 coffee prices stood at $0.80 a kilo; by mid-1994, on the wake of a frost in Brazil, coffee prices more than trebled to $3.20 a kilo (see Sharer, De Zoysa, and Donald (1995)).

[31] Indeed, the model outlined in the next section highlights the links among macrocconomic variables and the risk premia.

causes played a crucial role in attracting the flows to selected countries in SSA.[32]

During the late 1980s, the process of liberalizing and reforming domestic financial markets got underway in a number of African countries (see, for instance, Galbis (1993)). The Appendix provides a chronology of the widespread liberalization efforts in the late 1980s and 1990s and the discussion that follows focuses in the countries that have experienced a resurgence in capital inflows in the 1990s. In Ghana, ceilings on interest rates were removed in 1987, while quantitative credit controls were removed in 1992. In Kenya, interest-rate ceilings were removed in July 1991. In Uganda, the process of financial liberalization began in July 1988 when an increase of 10 percentage points was announced on most interest rates. However, interest rates continued to be administratively set by the Bank of Uganda until April 1992.[33]

In most instances, the financial liberalization was accompanied by a rise in real interest rates, often from very negative levels. However, financial liberalization has not been the only factor behind the high interest rates (consider the case of South Africa which liberalized its financial sector in the 1980s). As discussed earlier, the initial policy reaction to the rising capital inflows has been to intervene in the market for foreign exchange and sterilize the effects of the intervention through either open market operations, increases in reserve requirements, or both.

7.2. Financial liberalization and financial crises

Diaz-Alejandro (1985) was among the first to warn of the perils of financial liberalization. Describing the Chilean experience of the late 1970s and early 1980s, he noted how following financial liberalization banks engaged in greater risk taking (prompted by the kinds of moral hazard problems described in Section 2.3) often leading to credit booms which, in turn, fueled asset price booms; the eventual end to this cycle, he argued, was a financial crash. Kaminsky and Reinhart (1995) document this link between financial liberalization and financial crash for a group of developing and smaller industrial countries; they find knowing that a country had liberalized the financial sector helps you predict a banking crisis. Indeed, 18 of the 26 banking crises they examine were preceeded by financial liberalization within three years.

The African experience documented in the Appendix appears to fit this mold well, with 8 cases (Benin, Cote d'Ivoire, Ghana, Kenya, Mauritania, Nigeria, Tanzania, and Uganda) of banking crises preceded by liberalization. However, the crises do not appear to be rooted in the credit and asset price

[32] By 1993 short-term international interest rates had leveled off (albeit, at very low levels) and by February 1994, these were on the rise, making it unlikely that foreign financial sector developments were the dominant factor behind the rise in inflows.

[33] See Sharer, De Zoysa, McDonald (1995).

boom-bust pattern that is so evident in Asia, Europe and Latin America. Indeed, as Caprio and Klingebiel (1996) observe, the root appears to be that liberalization simply exposes what was already a rotting stock of bank assets. As in the recent problems of Brazilian state banks, the main culprit was the public sector, which borrowed from banks to finance unproductive investments.

7.3. Capital flows and contagion: concepts and definitions

The issue of "spillover or contagion" effects acquired renewed importance in light of the Mexican crisis in December 1994 and the effect that this event has had on other emerging market economics, particularly in Latin America.[34] More recently, the impact of the Thai crisis on other East Asian countries has received much attention from the financial press. Relatively little empirical analysis exists on how small open economics are affected by economic developments in their neighbors and what role financial markets play in the transmission of disturbances. In the wake of the Mexican and Thai crises several countries in Asia and Latin America experienced speculative attacks on their currencies, sharp declines in their equity markets, and a deterioration in the terms in which they could borrow from international capital markets. Herding behavior by undiscriminating investors is often blamed for producing common outcomes in countries with very heterogeneous fundamentals.[35] Indeed, it is difficult to trace a common thread in key economic indicators in many of these economies.

However, not all channels through which contagion can take place among small open economies require the presence of "animal spirits." First, spillovers may arise when two economics have highly integrated capital markets. In this case, shocks to the larger country are quickly transmitted to the smaller one through trade in assets; the best and most documented example of this type of integration in Latin America may be Argentina and Uruguay (see Hoffmaister and Wégh (1994), and Talvi (1994)). Second, trade patterns and arrangements play a role in the transmission of shocks (see Ades and Chua (1993)). In markets where a country competes with its neighbors, a substantial devaluation in one country can place the neighboring countries at a relative disadvantage–increasing the pressure to regain competitiveness.

Third, institutional practices may also be a source of spillover effects. For instance, in response to a large adverse shock (such as the Mexican devaluation) an open-end emerging market mutual fund expecting an increasing amount of redemptions will sell off its holdings of equity in several emerging markets in an effort to raise cash. However, given the illiquidity that charac-

[34] See, for instance, International Monetary Fund (1995).

[35] Eichengreen, Rose, and WypIosz (1995) argue that such herding behavior played a prominent role in the recent ERM crisis, where in some instances, the attacks on the currencies could be justified by poor macrocconomic fundamentals and in others not.

terizes most emerging markets, the sell-off by a few large investors will drive stock prices lower. Hence, the initial adverse shock to a single country gets transmitted to a wider set of countries. This channel of transmission is likely to be of limited empirical importance for SSA, as portfolio flows have largely been confined to South Africa. Fourth, a mechanism for such spillovers may be in the form of foreign investors first selecting the larger, usually more familiar countries as a place to invest (it is also the case that the larger countries are more accessible to the foreign investor, as equity markets and financial markets are often more developed). As confidence in the region increases, other investment opportunities are sought and the range of countries in the portfolio broadens. Fifth, recent studies on economic growth have stressed the role of technological factors (Chua (1993) and Easterly and Levine (1994)) and political instability (Chua (1993)) in regional contagion–the latter of these studies suggested these effects were particularly important for Africa. The five channels of transmission discussed thus far suggest that a large shock in a neighboring country can change the fundamentals for other countries in that region. Finally, there are "bandwagon" effects, in which investor sentiment does not discriminate among different macroeconomic fundamentals across countries (Eichengreen, Rose, and Wyplosz (1995)). In this case, even if the fundamentals of neighboring countries are not affected by a shock to their neighbor, since the investor lumps everyone together, self-fulfilling crises can emerge. The issue of "spillovers" is important for these small open economics, as it potentially makes them vulnerable to not just external fundamentals in the form of changes in the terms of trade, international interest rates, or the business cycle of large trading partners, but to economic and political developments in neighboring countries.

The next subsection examines whether there is more rigorous evidence of contagion among SSA countries. We also examine whether there is evidence of "large neighbor effects" in capital flows to and from SSA during the past 20 years.

7.4. Capital flows and contagion: evidence from SSA

In the remainder of the analysis, we turn our focus to SSA and investigate whether there is evidence of more durable forms of spillover effects in capital flows to the region. We first revisit the topic of the sensitivity of crossborder capital movements to international interest rates. Second, we test for "spillover" effects in the capital account from the large countries to the smaller ones along the lines of Calvo and Reinhart (1996). Lastly, we consider the impact of terms-of-trade (TOT) shocks on capital flows to SSA–the latter being particularly important given the heavy primary commodity composition of African exports.

The group of the larger countries (based on a per-capita income basis) includes Cote, d'lvoire, Congo, Gabon, and South Africa while the "small"

country group refers to Ghana, Kenya, Nigeria, Tanzania, and Zambia. We use annual data for the balance on the capital account (including errors and omissions) over the period 1975–96.

The sensitivity of capital flows to external factors such as international interest rates, the business cycle in industrial countries, and rates of returns on a variety of foreign assets, has been examined in a number of recent papers. The main conclusion that emerges from these studies is that the external variables play a significant role in influencing capital flows. The capital account balance is expressed as a percent of GDP; the real international interest rate used refers to a United States 3-month Treasury bill rate adjusted by the rate of inflation as measured by the consumer price index–an "expost" measure of real returns. The terms of trade measure is the IMF commodity price index divided by an index of developing countries imports of manufactured goods.

The number of observations in our panel is 198. We thus focus on a panel of countries where the dependent variable is the balance on the capital account as a percent of GDP, while in this simplest of settings, the independent variable is a real short-term U.S. interest rate, the annual percent change in the terms of trade, and a 1arge country" index to be defined below. To further examine the role of common shocks, and as an intermediate step in analyzing whether there are spillover effects from the larger countries to the smaller ones, we use (as before) factor analysis. This is the same approach as in Calvo, Leiderman, and Reinhart (1993) and is similar to the approach taken in Hardouvelis, La Porta, and Wizman (1994), who examine the extent of comovement in emerging country funds discounts.

For the capital account balance-GDP ratio, we construct the principal component indices for the entire sample.To test for spillover effects we next examine the dynamic interaction between capital account developments between the small and large countries. Here, we test the hypothesis that there are "contagion" or "spillover" effects from the large countries to the smaller ones. As noted earlier, mechanisms for spillovers may be in the form of foreign investors first selecting the larger countries as a place to invest in and, as confidence increases, diversifying among a broader range of countries or due to proximity and integrated goods and capital markets. We start with the basic relationship that links the balance in the capital account (as a percent of GDP) for country i to the real rate of interest in the U.S. and introduce the "large country index" of the capital account (denoted by LCI), lagged one period, as an explanatory variable for the small countries' capital account balances. Hence, in equation (9) below the dummy variable, d, assumes the value of zero for the large countries and one for the small countries.

$$\frac{KA}{Y_{it}} = \alpha_i + \beta_1 r^*_t + \beta_2 [dLCI_{t-1}] + \beta_3 \Delta TOT_t + u_t \qquad (9)$$

The estimation strategy was not complicated by problems of nonstationarity in the variables of interest, since the standard (Dickey-Fuller and Augmented Dickey-Fuller) unit root tests reject the null hypothesis of a unit root. The fixed-effects estimator was used. Hence, in equation (1), the intercept for country i, a, varies across countries, while slope coefficients, the s, are constrained to be the same across countries or in the case of 1_2, for a subset of countries.

At the top of Table 3 we report these estimates. The results indicate that a one percent decrease in real interest rates in the U.S. would increase the capital account balance/GDP ratio by 0.32 percent. However, while the interest rate coefficient has the expected sign–it is not statistically significant. These results are at contrast with the findings of earlier studies, which largely included Asian and Latin American countries in their sample.

Table 3. External factors and "Contagion effects": Evidence from a Panel of Sub-Saharan African Countries. 1975–96
Dependent Variable: Balance on the Capital Account as a Percent of GDP

	US real ex-post short-term interest rate	Percent change in the terms-of-trade	"Large country" index
Small countries	–0.32	0.43	0.77
	(–1.39)	(3.31)	(2.96)
Large countries	–0.32	0.43	n.a.
	(–1.39)	(3.31)	

Notes: *t*-statistics are in parentheses.

With regard to contagion effects, Table 3 highlights that the lagged large country index of the capital account enters significantly and with a positive sign, suggesting positive spillover effects–in line with the regional spillovers identified in Calvo and Reinhart (1996) and Frankel and Schmukler (1996). Rising capital inflows to the larger countries would, other things equal, tend to eventually stimulate increased capital inflows to the smaller countries in the region. This would tend to suggest, for instance, that a successful stabilization program in one or more of the larger countries (which increase inflows to that country) may have positive externalities for some of its neighboring countries. Conversely, it would imply that the civil strife that has plagued numerous African countries had dire consequences for the region as a whole.

Lastly, terms-of-trade shocks appear to have a significant and positive effect on capital flows. Most likely, these results reflect the numerous booms and busts that have characterized the volatile commodity prices–producing a surge in inflows during the bonanza years and crash when the price increase is reversed.

8. Concluding remarks

World financial markets are becoming highly globalized. At long last, capital is not just flowing out of developing countries, mostly in the form of capital flight, but is now flowing in, occasionally in unprecedentedly large sums. Recent experience in Asia and Latin America offers us a rich laboratory helping us to understand the pros and cons of capital inflows.

The conceptual part of this paper has tried to disentangle the main factors that characterize and influence capital mobility. The central lesson is that capital inflows, although definetely more desirable than capital outflows, could be harmful to the recipient country if not adequately managed. The main risk is to forget that some of the inflow is temporary and could leave in a rush–no region has proven impervious to this risk. The main concern is, thus, not so much with the inflow as such but with the potential outflow. The issue is thus similar to that raised by a boom in commodity prices: many countries around the world, notably in Africa and Latin America, have made the mistake of taking the 1970's commodity price rally as permanent and later paid for their unwarranted optimism.

Unfortunately, the management of capital flows is not easy. Sterilization is costly and capital controls are difficult to implement and may enhance corruption. The main lesson is that fiscal austerity and enhanced bank supervision and/or higher reserve requirements are the best responses to a capital inflows episode. This can be complemented with higher exchange rate flexibility, but the latter also has many drawbacks. Table 4 highlights some of these policies and calls attention to some of the "warning signals" a policymaker should heed so as to reduce the potential economic costs of a sudden reversal in capital inflows.

Table 4. Capital flow managment: Policy lessons for Sub Saharan Africa

On fiscal policy...
• Countries that increased public expenditure in the expectation that the capital inflow is a permanent phenomenon, suffer a rude wake-up call as capital inflows come to an end and their temporarily high revenues erode. In the context of SSA, treat all commodity price booms as if *they were temporary–treat all commodity price declines as permanent.*
• Allowing for capital mobility (i.e., cross-border ownership of assets) acts as a disciplining device for policymakers, making it more difficult to resort to distortionary taxation. This argues in favor of removing capital controls–at least on capital outf lows.
On debt management...
• A high volume of short-term debt relative to the stock of international reserves can be a major problem if the country entered into a balance-of-payments crisis. Recent examples of the severity of this problem are to be found in the Korean and Thai crises. South Africa, with a high short-term debt to reserve ratio is particularly vulnerable in this regard. Short-term debt usually gives rise to the "bunching effect."

Table 4 (concluded). Capital flow managment: Policy lessons for Sub Saharan Africa

On banks and asset bubbles...

- Be aware of marked increases in stock or real estate prices fueled by capital inflows and rapid credit creation, as these could reflect asset price bubbles. Except for South Africa, this is not an important issue for SSA, where portfolio flows are nil.
- Beware of rapid credit growth during the inflow phase of the cycle; when capital flows out, these loans may have to be repayed in short notice, leading to bankrupcies in the private nonfinancial sector and, possibly, bank failures.
- The high incidence of banks taking on greater risks in periods when access to international capital is relatively favorable, highlights the importance of bank supervision during a capital inflows episode. In case supervision is poor and hard to improve in the short run, it may be advisable to increase banks' minimum (remunerated) reserve requirements. In this fashion, it can be ensured that banks' are sufficiently liquid, the incidence of nonperforming loans is reduced, and deposit withdrawal as capital inflows slow down can be met without serious financial disruption. This is particularly important in SSA where many of the banking systems suffer from weak management, uneven accounting practices, poor auditing and reporting and that these problems are often particularly severe in state-run banks.

On monetary policy...

- It is a mistake to forget that under a fixed exchange rate regime, money is determined by its demand. Thus, if it goes up it is because the public wants to *hold* more money. This is not inflationary and, under these conditions, sterilization is counterproductive.
- There are "perils in sterilized intervention." Persistent and widening domestic-foreign interest rate differentials (which act as a magnet to short-term capital inflows), large quasi fiscal costs, and the temptation for governments to spend some of the accumulated international reserves are among the chief perils.

On the exchange rate regime...

- Financial trouble is not absent under flexible exchange rates and it can actually surface at the early stages of a capital inflows cycle. Can the central bank do something to prevent floating rates wreaking financial havoc? The answer is "yes." The central bank could increase money supply at the beginning of the cycle. In this manner, the central bank could prevent the exchange rate from appreciating at the beginning of the cycle. At the end of the cycle, though, it will refrain from contracting money supply because, otherwise, the same financial problems highlighted in connection with fixed exchange rates will surface here. Thus, this type of monetary management is inflation-prone: money goes up but never goes down. Financial trouble can be avoided but a sequence of capital inflow cycles will probably put the economy on an inflationary path. This need not occur, however, if the assistance to the potentially affected financial institutions comes from the government finances rather than through a monetary expansion by the central bank.
- Currency substitution signifies a major complication for the management of monetary policy under floating exchange rates. This is so because the supply of money is partly a function of the exchange rate. The domestic monetary authority controls the supply of domestic currency but foreign currency holdings are set by the private sector. With access to capital markets, foreign currency could actually be borrowed, significantly weakening the nominal anchor provided by the domestic component of **money** supply.

Table 4 (concluded). Capital flow managment: Policy lessons for Sub Saharan Africa

On the current account...
• Beware of mechanical rules used to compute what is or is not a "sustainable" current account deficit. Such "steady state" rules are difficult to apply to countries undergoing transition, which includes most developing countries, to the extent that structural reforms are taking place.
• Large current account deficits could be problematic if, for some reason, there is a sudden and unexpected slowdown of capital inflows and the government cannot offset it by running down international reserves. A sudden cut in the CAD will lead to a reduction in domestic expenditure (or absorption).

As to the empirical analysis, several of our results suggest that capital flows to most of Sub Saharan Africa are distinct from flows to other regions–there are important differences.

First, the absence of portfolio flows in the region appears to be importantly explained by the lack of developed equity markets–African stock markets are shallow or nonexistent, even by developing country standards. The only exception, thus far, appears to be South Africa.

Second, unlike the evidence from Asia and Latin America many of the financial crises that came with financial liberalization were not the product of a credit boom but rather of the poor state of bank assets at the time of the liberalization–much of it the outcome of lending to the government.

Third, unlike capital flows to Asia and Latin America, capital flows to SSA do not appear to be as responsive to changes in international interest ratesinstead terms-of-trade shocks appear to be the key external shock in influencing capital flows to the region.

As to the similarities with other regions:

Fourth, in addition to external factors, the capital account balance of small countries appears to be affected by developments and trends in the larger countries in the region–these are persistent spillover effects which suggest that SSA will require a critical mass of countries attracting foreign capital before the region as a whole starts to see a resurgence in capital inflows. Thus, as in other regions, capital flows, like financial crises, have a countagious element.

Lastly, as to the policy responses to capital inflows, the selected SSA episodes with sterilized intervention mirrored the experiences in Asia, Eastern Europe, and Latin America. Namely, sterilization resulted in higher domestic interest rates, bigger quasi-fiscal losses, and higher short-term capital inflows. The only notable difference with other regions (South Africa exempted) is that the small size of the financial sector in SSA countries limits scope for large-scale long-lived sterilization efforts.

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Appendix
The chronology of crisis in African countries

Country	Financial Liberalization	Beginning of the Bank Crisis: Date	Events	Beginning of the Balance of Payment Crisis: Date	Events (if applicable)
Benin	Oct. 1989	1988-90	80% of banks loans portfolio was non-performing. Total losses were 17% of GDP.	January1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Burkina Faso		late 1980s		January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Burundi				November 1989	The Burundi Franc was devalued by 15%
Cameron	Oct. 1990	1987-		January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Central African Republic		1980s & 1994		January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Chad		1980s & 1990s		January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Comoros				January 1994	The Comorian franc was devalued by 33%
Congo		1980s & 1991		January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Cote d'Ivoire	Oct. 1989	1988-91	4 big banks affected accounted for 90% of banking system loans; 3 definitely and one perhaps insolvent. Gov't costs estimated at CFA 677 bn (25% of GDP).	January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Egypt				1979	The currency was devalued by 79% as part of a stepwise devaluation.
Eritrea		1993	Most of baking system became insolvent.		
Equatorial Guinea				January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Gabon				January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Gambia	1986				
Ghana	1987	1982-89 1990	7 audited banks (out of 11) became insolvent. Rural banking sector affected. Restructing costs estimated at 6% of GNP. Gov't recapitalized ten-state owned commercial and development banks through a central bank bond issue.	1993	16% real devulation in the currency.

Appendix Continued

Country	Financial Liberalization	Beginning of the Bank Crisis: Date	Events	Beginning of the Balance of Payment Crisis: Date	Events (if applicable)
Guinea		1985	6 banks became insolvent accounting for 99% of total system deposits. Rapayment of deposits amounted to 3% of 1986 GDP.		
		1993-94	2 banks insolvent accounting for 22,4% of financial system assets; one bank in serious trouble. Three banks together account for 45% of the market.		
Kenya	1991			1974	16% devalution but still continued a fixed rate system. Kenya's currency devalued by 35,9% which was followed by a crawling peg.
				1981	
				1985-87	Currency experiences a 44% real depreciation.
		1985-89	4 banks and 24 non-bank financial institutions faced with liquidity and solvency problems together accounting for 15% of total liabilities of financial system. Eight failed institutions were merged into a "tumaround" bank, Consolidated Bank Limited.		
		1992	Intervention in two local banks.		
		1993-95	Serious systematic problems with banks accounting for more than 30% of assets of the financial system facing solvency problems.	1993	20% real depreciation in currency exchange rate.
Madagascar		1988	25% of loans deemed irrecoverable.		
Malawi	1988				
Mali				January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Mauritania	Nov. 1981	1984-93	1984: 5 major banks had non-performing assets ranging from 45% to 70% of their portfolio. Cost of rehabilitation estimated at 15% of GDP in 1988.		

Appendix Continued

Country	Financial Liberalization	Beginning of the Bank Crisis: Date	Events	Beginning of the Balance of Payment Crisis: Date	Events (if applicable)
Morocco to a pegged				1982 1984-85	Devaluation followed by a switch from a fixed rate regime system in 1984. 14% depreciation in exchange rate.
Mozambique		1987 – present	BCM, main commercial bank, experiences sovency problems which become apparent after 1992.		
Niger				January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Nigeria a fixed rate	July 1987	1990s	1993: insolvent banks account for 20% of total assets and 22% of banking system deposits. 1995 almost half of the banks are reported to be in financial distress.	1985-87	Currency depreciated 461% and the country switched to a flexible rate system.
Senegal		1988-91	6 commercial banks and 1 development bank closed accounting for roughly 20-30% of financial system assets. US$830 million which is equivalent to 17% of GDP.	January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
South Africa		1977	Trust bank becomes insolvent.		
Tanzania	July 1991	1987 1995	1987: the main financial institutions had arreas amounting to half of their portfolio. Implied losses amount to nearly 10% of GNP. NBC, which accounts for 95% of the assets of the banking system, has been insolvent for the last 3 to 5 years.		
Togo		1993, 94, 95		January 1994	On January 12, the CFA franc was devalued by 50% as part of an WAEMU and CAEMU agreement.
Uganda	July 1988	1994	50% of banking system facing solvency problems.		
Zaire		1991-92			
Zambia		1995	Meridian Bank became insolvent which accounted for 13% of commercial bank assets. Rough estimate of US$50 million or 1,4% of GDP.		