

DOLLARIZATION AND ITS IMPLICATIONS IN GHANA

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ABSTRACT

This paper reviews the dollarization and currency substitution literature with special regard to its implications for Ghana. It assesses the significance of dollarization in Ghana relative to the experience of other countries and with regard to evidence of increased use of foreign currency in Ghana. As a result of relaxation of foreign exchange regulations and increased inflation, the move to foreign currency is not entirely unexpected.

Problems imposed by dollarization include: potentially destabilizing effects on the economy by causing depreciation of the exchange rate or, in a fixed exchange rate regime, a run on the country's foreign exchange reserves; decreased ability by government to gain control over resources through seigniorage; and, increased difficulty for monetary authorities to stabilize the economy through the use of monetary policy. Dollarization increases the risk that the government will intervene in the foreign exchange market and impose other measures that increase inefficiencies in financial markets. Dollarization can also make the banking system more vulnerable to both capital flight and to fluctuations in foreign exchange.

Although it does not appear that the degree of dollarization in Ghana has reached massive proportions, it is substantial and needs to be factored into the formulation of economic policy. Options discussed in the literature range from encouraging full dollarization to intervening directly in an effort to discourage any dollarization. The obvious solution to dollarization is to maintain low inflation so that the incentive to use foreign exchange is reduced. Aside from trying to maintain fiscal discipline the government should monitor closely the level of dollarization. Data on dollarization should be calculated and published by the Bank of Ghana. The monetary authorities must also regulate the banking sector so as to avoid its endangerment by the process of dollarization. In addition, the monetary authorities need to be equipped analytically to understand how monetary policy, exchange rate policy, and debt management operate in an economy that uses foreign as well as domestic currency.

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INTRODUCTION

During the past decade, Ghana has progressively liberalized its controls on foreign exchange, making it easier to hold foreign currency in bank accounts abroad, as foreign exchange deposits within Ghana, and as foreign currency within Ghana. Although data on these holdings are only partially available, and questions can be raised as to their accuracy, these data plus casual observation suggest that Ghanaians are increasing their holdings of foreign exchange, especially U.S. dollars.¹ In addition, there is evidence that dollars are being held not only as a store of value but also increasingly as a unit of account and even as a medium of exchange.

The reasons for this are at least two-fold. First, it is expected that holdings of foreign exchange would increase as a result of the easing of regulations regarding the legality of this action and the creation in recent years of foreign exchange accounts for residents by commercial banks within Ghana. This is because it is convenient for Ghanaians and other residents of Ghana who engage in international transactions to keep part of their monetary holdings in the form of foreign exchange. Second, and more important, however, dollarization is also likely to occur as a result of inflation, a persistent problem in Ghana over the past few years.

Dollarization has become a pervasive phenomenon in many developing countries, regardless of the level of financial development, degree of integration with the rest of the world, or type of exchange rate regime. Reasons for dollarization vary. In small, very open economies, the cost of conducting monetary transactions may be minimized if they are in dollars. Elsewhere, in instances where high and variable rates of inflation have persisted and substantial uncertainties exist regarding monetary and fiscal policy, a large proportion of domestic sales and other transactions may be undertaken in foreign rather than local currency in order to protect the value of the assets being exchanged (Agenor and Montiel, 1996, p. 89).

There is by now a substantial literature on dollarization—and currency substitution, to which it is closely related.² Much of this literature is based on the experience of Latin America and the transition economies of Eastern Europe and the former Soviet Union. The literature attempts to

¹ Because the term dollarization has been used to describe the process of substitution of convertible currency for local currency, especially in Latin America, and because most of Ghana's foreign exchange holdings are in U.S. dollars, the term dollars will be used interchangeably with foreign exchange in this paper. It should be understood, however, that this term applies equally to U.S. dollars and any other convertible currency.

² The terms dollarization and currency substitution have been used interchangeably by some authors and as separate concepts by others. For example, Calvo and Vegh (1992) define dollarization as the use of foreign currency as a store of value and unit of account, but not necessarily as a medium of exchange, whereas the term currency substitution is reserved for foreign currency used as a medium of exchange. Since the use of foreign currency as a medium of exchange generally occurs only after it has been used as a store of value and unit of account, currency substitution may be thought of, in this sense, as the final stage of dollarization. The term "dollarization" originated to describe the substitution of U.S. dollars for local currency in Latin America starting in the early 1980s, where emphasis was first placed on the role of the dollar as a store of value and unit of account. The term "currency substitution" was introduced somewhat later and was meant to generalize the process to include the role of money as a medium of exchange and to apply it to currencies other than the dollar. We will use the terms dollarization and currency substitution interchangeably in this paper to imply the substitution of foreign for local currency for any or all the reasons that money is held. It is important to keep in mind, however, the different motivations that exist for holding foreign currency at any stage.

define dollarization, to examine theoretically and empirically its causes and consequences, to ask whether it should be encouraged or discouraged, and to explore its implications for policy formulation. This paper reviews some of this literature and examines its relevance for Ghana today. It also assesses the importance of dollarization in Ghana relative to the experience of other countries.

DEFINITION AND CAUSES OF DOLLARIZATION

The general definition of dollarization is the substitution of a convertible foreign currency for a local currency (Calvo and Vegh, 1992, p. 1). The local currency may or may not be convertible, but it must be a less than perfect substitute for the foreign currency. In addition, dollarization is to be distinguished from capital flight, which may involve a switch into non-monetary, as well as monetary, financial assets.

There are essentially three reasons for holding money, which is generally defined as a financial asset that bears no inherent rate of return.³ The first is that it is a store of value, or a way of maintaining wealth so that it can be used in the future. This function is clearly not fulfilled during rapid inflation, when money loses value relative to the value of real goods and services. This results in a decreased willingness on the part of the public to hold money and a preference for other assets.

The second reason for holding money is that it serves as a unit of account, a way of converting financial and non-financial assets into a common denominator. During inflationary periods, the nominal value of non-financial assets tends to rise. This poses no problem if the value of financial assets rises at the same rate, since the relative prices of different assets in this case remain unchanged. Frequently, however, this is not the case. An important instance is short-term borrowing accompanied by long-term lending. During an inflationary period, the real value of the outstanding balance of a long-term loan decreases. If the rate of interest on the loan is fixed, the real value of those payments decreases as well. Even if interest rates are variable rather than fixed, so that they rise with people's expectations regarding inflation, long-term rates are likely to adjust more slowly than short-term rates, so that the lender is faced with the rising value of its liabilities relative to the value of its assets. The currency in which inflation is taking place becomes less reliable as a unit of account.

The third reason for holding money is as a medium of exchange. In the absence of money, exchange takes place through barter. This is inconvenient and costly. Because goods and services can be converted into money, which can be used to purchase other goods and services, exchange is facilitated. Money also serves as the medium of exchange for financial assets, and between financial and non-financial assets. In its capacity as a medium of exchange, however, money has to be held. If it loses value while it is being held because of inflation, it is less useful

³ The broader definitions of money include time-deposits and other forms of quasi-money, which are very close substitutes for money. These near money assets are interest-bearing because people have to be induced to decrease their liquidity by holding these assets rather than money defined in its strictest sense. The difference between near-money and non-monetary, financial assets is fairly arbitrary, therefore, as is the distinction between capital flight and the early stages of dollarization (Sahay and Vegh, 1995).

as a medium of exchange. In periods of hyperinflation, for example, people will as soon as possible convert money into any kinds of goods, whether they ultimately want them or not, in order to maintain purchasing power. Since the transactions costs associated with these exchanges are high compared with the exchange of money, people prefer to hold foreign currency, which retains its value, as a medium of exchange.

As inflation begins to accelerate, domestic residents typically first begin to shift their asset holdings away from local currency to the extent it is being held as a store of value. This may involve the purchase of less liquid assets such as interest-bearing financial securities or real goods and services. The gains associated with maintaining the value of wealth is partially offset, however, by the losses associated with being less liquid, that is being less able to convert these assets into money at no cost or risk. Holding of foreign currency offers an attractive option. Even though there may be some cost in converting this into local currency should the need arise, this is often less than the cost associated with converting other types of assets, especially if the foreign exchange market is more fully developed than the market for financial and non-financial assets. This is often the case in developing countries, especially in Africa.

The shift to other currencies does not take place so quickly with respect to the other two functions of money—serving as a unit of account and as a medium of exchange. This is because there are substantial costs associated with using foreign currency for these purposes. Maintaining accounts in more than one currency is costly and is a continuous expense rather than an expense associated with simply converting one currency into the other should the need arise, which is related more to its use as a store of value. Nevertheless, maintaining accounts in two separate currencies may be less costly and less risky than trying to index the value of assets to take account of inflation, currency depreciation, and changing rates of interest. Thus the use of foreign currency as a unit of account probably occurs not long after its use has been accepted as a store of value (Melvin and Peiers, 1996, p. 34).

Complete currency substitution occurs when foreign currency is substituted for local currency not only as a store of value and unit of account but also as a medium of exchange (Calvo and Vegh, 1992). This requires more sweeping institutional changes in order to assure acceptance of the foreign currency by all parties to a transaction. There may be substantial economies of scale in this process, since the more widespread is the use of the foreign currency, the more likely is it that it will be accepted as a medium of exchange.⁴ It is also more likely to occur sooner for transactions involving “big-ticket” items such as real estate or automobiles, or for large transfers of funds. Even where currency substitution is well advanced, however, local currency tends to retain its functions as unit of account and medium of exchange for most transactions involving non-durable good and services (Calvo and Vegh, 1992, p.2).

Most writers have stressed that currency substitution is a consequence of macroeconomic instability, which results when participants in the market try to shelter themselves from the effects of inflation. Frequently this inflation occurs because the government runs fiscal deficits that

⁴ As we will see later, this may help to explain why currency substitution tends to persist, once it becomes widespread, even if the original inflation that caused it is reduced or eliminated. This has been particularly important in Latin America.

cannot be absorbed by the private sector increasing its savings through the purchase of government securities or other means. Although dollarization may cause problems, it is not the fundamental reason for these problems.

EVIDENCE OF DOLLARIZATION IN GHANA

There is considerable evidence of increased dollarization in Ghana. Partly, this is because of the elimination of most exchange controls and the relaxation of restrictions on the holding of foreign exchange, but there is also a strong presumption that it has resulted from the inflation that has characterized Ghana over the past five years. This conclusion is based partly on casual observation that foreign currency has been increasingly used as a store of value, a unit of account, and even a medium of exchange. The data, though limited, also confirm at least a moderate degree of dollarization.

Reduction of Exchange Controls

The 'adjustment era' in Ghana following 1983 saw massive reforms in exchange rate policy and the legal right to retain foreign exchange. The basic objective of these changes was to improve Ghana's international competitiveness and maintain external balance. This was to be accomplished partly through movement towards a market determined exchange rate and enhanced freedom to hold foreign exchange.

At the beginning of the Economic Reform Program (ERP), the exchange rate was determined administratively, with an annual import program used to ration and allocate foreign exchange. Exporters were required to repatriate all earnings of foreign exchange; they were not permitted to hold foreign exchange. Following a series of devaluations in the initial phases of the ERP, the foreign exchange market was gradually liberalized. Starting in 1986, Ghana moved to a dual exchange rate with a two-window system. Window One maintained a fixed but adjustable exchange rate while Window Two used a weekly auction system. The rate in Window One was applicable to government transactions, petroleum imports, and cocoa and other traditional exports. The rate in Window Two applied to all other transactions. To avoid a sharp depreciation in the exchange rate, prior deposit requirements and credit controls were imposed. Importers placing bids for foreign exchange were required to deposit the local currency equivalent with their bankers. Deposit money banks were prohibited from lending to customers for purposes of bidding in the auction market.

While these developments were going on, parallel market foreign exchange operations were legalized through the licensing of forex bureaux. In 1992, the auction system was replaced by an interbank wholesale system in which a weekly wholesale exchange was used to determine the interbank rate. However, only banks were permitted to participate in the wholesale market. The forex bureaux were explicitly prohibited from participation. Conversely, banks were not allowed to retail to the forex bureaux, though some banks have subsequently set up their own forex bureaux to have access to that market.

In theory, therefore, there is no arbitrage between the interbank market and the forex bureaux market. Although the Bank of Ghana intervenes in the forex bureaux market by selling foreign exchange to the bureaux through the Precious Minerals Marketing Company (PMMC), the two markets are in principle segmented, with the forex bureaux operating as an essentially self-financing system. In practice, however, some arbitrage is occurring because the difference in the rates between the two markets has narrowed substantially over the past few years.

In tandem with the changes in the marketing arrangements for foreign exchange have been changes in surrender requirements. In the initial phases of the reforms, some exporters were permitted to retain up to 35 percent of their foreign exchange receipts in foreign accounts, to facilitate acquisition of critical imported inputs. This system was gradually liberalized so that today nontraditional exporters are no longer required to surrender their foreign exchange earnings. However, earnings from traditional exports—cocoa, gold, and timber—are still surrendered to the Bank of Ghana. Given the dominance of these products in exports, and the fact that the Government's external aid receipts and debt service payments are channeled through the central bank, the Bank of Ghana controls about 85 percent of foreign exchange inflows.

Recent Inflation

From the beginning of reform in 1983, Ghana's fiscal strategy was not to cut back but rather to increase government expenditures through increasing revenues. This was to be achieved by broadening the tax base and strengthening tax administration. Supported by net foreign lending and excess capacity in the economy, this strategy seemed to work. As shown in Table 1, by 1986, a surplus was recorded in the government budget.

Throughout this adjustment period, Ghana pursued broadly restrictive monetary policy, though, as seen in Table 1, the expansion of the demand for money was considerable. In the initial phases, monetary restraints were imposed through direct controls, i.e., the setting of global and sectoral credit ceilings. After 1990, however, these were increasingly replaced with indirect methods of monetary control—largely open market operations. By 1990, the expansion of the money supply had dropped almost to single digits.

Table 1
Fiscal Balance, Change in Money Supply, and Rate of Inflation

| | Fiscal Surplus | | Change in M2 | Rate of Inflation |
|------|----------------|-------|--------------|-------------------|
| | (mill cedis) | %GDP | % | % |
| 1981 | -4,706.8 | -8.16 | 41.42% | 74.72% |
| 1982 | -4,848.0 | -6.10 | 20.98% | 12.53% |
| 1983 | -4,933.3 | -2.68 | 33.79% | 88.81% |
| 1984 | -4,843.0 | -1.79 | 42.93% | 8.69% |
| 1985 | -7,579.0 | -2.21 | 37.96% | 17.74% |
| 1986 | 299.0 | 0.06 | 39.16% | 27.54% |
| 1987 | 4,059.0 | 0.54 | 42.74% | 30.88% |
| 1988 | 3,911.0 | 0.37 | 38.03% | 24.98% |
| 1989 | 10,300.0 | 0.73 | 43.61% | 24.73% |
| 1990 | 3,300.0 | 0.17 | 12.49% | 31.81% |
| 1991 | 39,000.0 | 1.51 | 24.05% | 11.64% |
| 1992 | -144,400.0 | -4.80 | 42.02% | 11.86% |
| 1993 | -97,300.0 | -2.47 | 23.41% | 23.84% |
| 1994 | 111,700 | 2.26 | 37.67% | 27.61% |
| 1995 | -91,100 | -1.22 | 33.90% | 53.11% |
| 1996 | -395,900 | -3.82 | 28.17% | 28.79% |

Source: IMF, International Financial Statistics;
Center for Policy Analysis, Macroeconomic Review and Outlook, 1997

Note: Percentage change in M2 and in the rate of inflation are calculated as continuous compound rates of change. This varies somewhat from Ghana's official estimates, which are considerably higher.

Starting in 1992, this strategy began to falter. In 1992, total government expenditures, as a result of a peace-keeping operation in Liberia and district elections, grew at a rate of about 45%, or three times the growth of nominal GDP, while revenues rose by only 2.7%, resulting in a fiscal deficit of almost 5% of GDP. The following year, divestiture proceeds from the sale of gold mines and foreign grants improved the situation, reducing the deficit to 2.7% of GDP, though questions arose as to how these sources of revenue should be treated in the government's accounts and how sustainable they were. Similarly, from 1994 through 1996, large structural deficits were masked by unsustainable receipts from divestiture and other capital transactions. Yet despite these extraordinary receipts, the fiscal deficit continued to grow, amounting to almost 4% of GDP in 1996. This was exclusive of capital expenditures, most of which were financed with external grants and loans (CEPA, 1997).

On the monetary side, from an annual growth rate of 12.5% in 1990, the money supply grew by 42% in 1992, 23.4% in 1993, 37.7% in 1994, 33.9% in 1995, and 28.2% in 1996. The severity of the impact of such growth on the economy was enhanced by the fact that it took place at a time of declining growth in real GDP. Furthermore, government borrowing increased substantially at the same time that the maturity of the domestic debt was shortened. In 1996, the gross debt/GDP

ratio stood at 20.5%, with nearly 30% of this debt in the form of short-term Treasury bills (CEPA, 1997, p. 38).

The combination of fiscal deficits, poor monetary management, and weak performance of the productive sector resulted in a significant increase in inflation, which accelerated from 12 percent in 1992 to 24 percent in 1993, 28 percent in 1994, and 53 percent in 1995. In 1996, the inflationary trend was reversed, though this was due not to a sound macroeconomic environment but rather to exogenous factors such as a good performance of the food sector, failure to deregulate petroleum product prices, frequent central bank interventions in the foreign exchange market, and co-operation from trade unions—none of which was considered as sustainable (CEPA, 1997, p. 62).

Evidence of Dollarization

There exists a strong presumption that the relaxation of controls on holding foreign exchange, combined with accelerating inflation, has resulted in an increase in foreign currency in circulation as well as a rise in foreign currency deposits held in local banks. Unfortunately, there are no data on the amount of foreign currency in circulation. Furthermore, the published data on bank deposits from the Bank of Ghana do not make a distinction between those held in foreign exchange accounts and those held as cedis. We have been able to obtain some recent unpublished data, however, which are presented in Table 2. These monthly data for the period December 1995 through December 1996 suggest that foreign exchange deposits make up approximately 30 percent of total deposits, and that this percentage held relatively steady during the year.

Table 2 - Deposit Liabilities of Banks, Dec. 1995-Dec. 1996

| | For Exch Dep US\$ equivalent (US\$m) | Interbank Exch Rate (cedis/US\$) | For Exch Dep (bill cedis) | Cedi Dep (bill cedis) | Total Dep (bill cedis) | For Exch Dep as % Tot Dep |
|--------|--|-------------------------------------|------------------------------|--------------------------|---------------------------|------------------------------|
| Dec-95 | 220.2 | 1444 | 317.97 | 783.25 | 1101.22 | 28.87% |
| Jan-96 | 232.7 | 1498 | 348.59 | 822.01 | 1170.6 | 29.78% |
| Feb-96 | 246.36 | 1542 | 379.89 | 858.89 | 1238.78 | 30.67% |
| Mar-96 | 250.54 | 1582 | 396.35 | 882.3 | 1278.65 | 31.00% |
| Apr-96 | 257.24 | 1607 | 413.39 | 926.75 | 1340.14 | 30.85% |
| May-96 | 248.5 | 1631 | 405.3 | 939.24 | 1344.54 | 30.14% |
| Jun-96 | 258.57 | 1654 | 427.67 | 960.91 | 1388.58 | 30.80% |
| Jul-96 | 270.02 | 1686 | 455.24 | 986.72 | 1441.96 | 31.57% |
| Aug-96 | 265.87 | 1693 | 450.11 | 1030.56 | 1480.67 | 30.40% |
| Sep-96 | 279.84 | 1711 | 478.81 | 1058.32 | 1537.13 | 31.15% |
| Oct-96 | 278.59 | 1724 | 480.29 | 1115.11 | 1595.4 | 30.10% |
| Nov-96 | 289.1 | 1732 | 500.72 | 1139.14 | 1639.86 | 30.53% |
| Dec-96 | 299.49 | 1740 | 521.11 | 1060.88 | 1581.99 | 32.94% |

Source: Bank of Ghana

Although the data from the Bank of Ghana are insufficient to estimate trends, there is casual evidence that foreign currency deposits in local banks are rising. Furthermore, in at least one case, the dollar is being used as a unit of account. The Home Finance Company (HFC), which was incorporated in 1990, issues home mortgages denominated in dollars at a relatively low rate of interest based on rates abroad. To compensate for this low rate of interest, the principal on

these loans is revalued in cedis with changes in the exchange rate.⁵ In addition, the HFC recently raised capital by issuing U.S.\$ 2.65 million worth of dollar-denominated bonds, which are currently listed on the Ghana Stock Exchange.⁶ The unit of account on these transactions is thus effectively U.S. dollars.

The only other relevant data that currently exist refer to the deposits of Ghanaian residents in overseas banks. These data are collected quarterly by the International Monetary Fund and are published in *International Financial Statistics*. Figures 1 and 2 show the trends in these deposits compared with Ghana's official reserves. The detailed data are presented in Appendix Table A-1.

Figure 1 shows that these deposits are sizable and that they approximately doubled from the middle of 1983 to the middle of 1991. Thereafter, they fluctuated around a relatively constant trend. As shown in Figure 2, throughout most of the period for which data are available, overseas deposits averaged between roughly 50 and 100 percent of official foreign exchange reserves.⁷ In some years, they exceeded the level of official reserves.

Although not strictly speaking part of dollarization, these overseas deposits are an alternative to holding foreign exchange within Ghana. Once the rules prohibiting the holding of foreign exchange by Ghanaian residents in Ghana were relaxed, some of these overseas funds were undoubtedly transferred back to Ghana. They could be transferred overseas again. Although there is no evidence of a large increase in overseas deposits held by Ghanaian residents during the period of recent inflation, this was also the period during which Ghanaian exporters were first allowed to retain their foreign exchange within Ghana. In the absence of inflation, this would probably have resulted in some decline in overseas deposits as these were shifted to Ghana.

⁵ Complaints are frequently heard that this does not take into consideration the ability of the borrower to service the loan, since incomes may not move proportionately with the exchange rate.

⁶ We are grateful to Joe Abbey, Executive Director of the Center for Policy Analysis, for supplying this information and the data in Table 2.

⁷ Although sizable, the level of deposits held abroad by Ghanaian residents was not been very large in relation to official reserves during 1981-90 compared with all Africa (205 per cent) or Latin America (386 per cent). Furthermore, the annual rate of growth of these deposits for Ghana during the 1980s was less than ten per cent compared with 70 per cent for Latin America and 60 per cent for all of Africa.

Figure 1

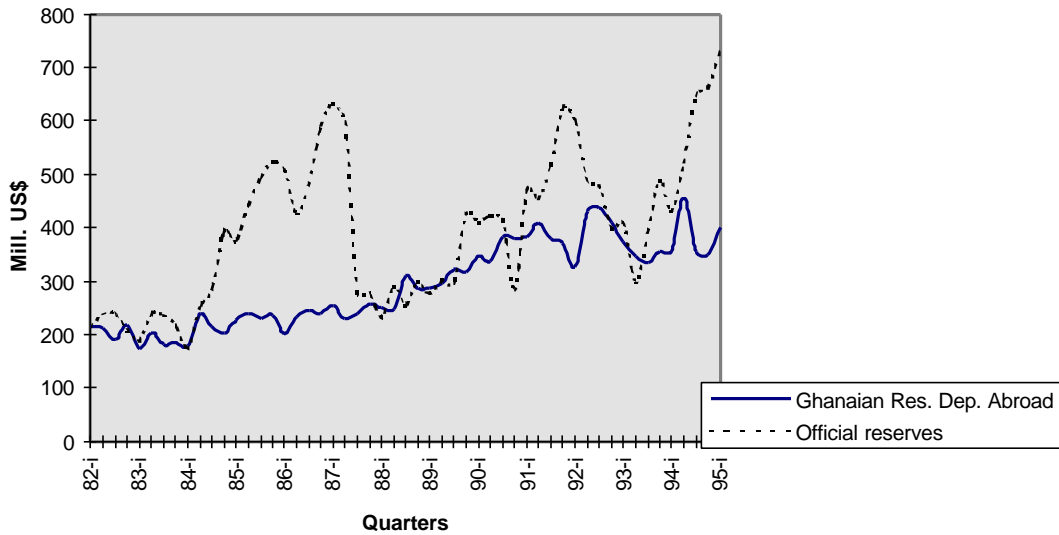
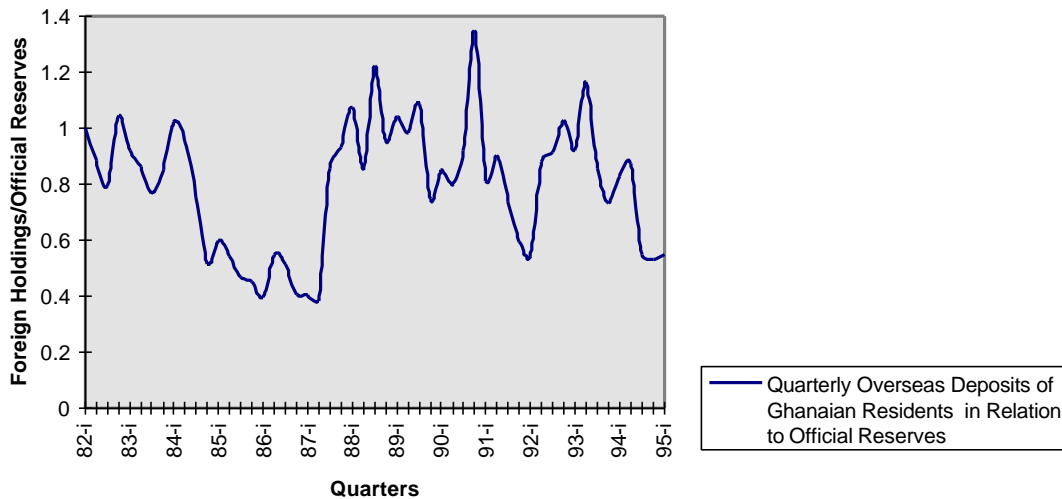


Figure 2



Since there is no evidence that overseas deposits declined in relation to official foreign exchange reserves, there must have been roughly a 75 percent increase in the overall level of foreign currency deposits, both in Ghana and abroad, during this period.

All this suggests that substantial, but not overwhelming, dollarization has occurred within Ghana. The value of dollars held by Ghanaian residents within and outside Ghana equals at least two

thirds of the total value of cedi holdings. At the end of 1996, foreign exchange deposits within Ghana totaled \$300 million, plus approximately \$400 million in deposits held by Ghanaian residents abroad. At the prevailing exchange rate, this equals the equivalent of 1218 billion cedis, compared with 1,802 billion cedis held within Ghana as deposits and currency in circulation. This estimate of foreign exchange holdings does not take into account, moreover, foreign currency in circulation in Ghana, for which no estimates exist. Thus, although it does not appear that the degree of dollarization has yet assumed massive proportions, it is clear that it is substantial and needs to be taken into account in the formulation of economic policy.

The next section examines the consequences of dollarization for Ghana. This is followed by sections that look at the degree of dollarization in Ghana in comparison with other countries of the world, and the resulting implications for Ghanaian policy.

CONSEQUENCES OF DOLLARIZATION

Dollarization, or currency substitution, has a number of consequences for the economy, and especially the capacity of the government to manage it. In the short run, the process of dollarization, involving conversion of domestic currency into foreign currency, has potentially destabilizing effects on the economy. For example, it tends to cause the exchange rate to depreciate, or, if a fixed exchange rate regime prevails, it results in a run on the country's foreign exchange reserves. Such an outflow may also create a liquidity shortage and force up domestic interest rates, exerting a potentially recessionary effect on output and employment (Agenor and Montiel, 1996, p. 93).

Once a given level of dollarization has occurred, there are additional long-term consequences. First, it decreases the government's ability to gain control over resources through non-inflationary seigniorage, or the running of a non-inflationary deficit that increases the supply of money in proportion to the increase in demand for it. Second, it limits the capacity of the government to assess an inflation tax resulting from a deficit in excess of the public's willingness to hold additional money balances or to lend to the government for the purpose of financing the deficit. Third, it makes it more difficult for the monetary authorities to stabilize the economy through the use of monetary policy. Fourth, it increases the risk of government intervention to reduce dollarization through elimination of foreign exchange accounts and other measures that increase inefficiencies in financial markets. Fifth, it increases the transactions costs associated with market exchange compared with a situation in which there is a single, stable currency. Sixth, it makes the banking system more vulnerable to capital flight and to fluctuations in the exchange rate. Finally, it makes it more difficult for the government to tax all sources of its residents' income.

Loss of Seigniorage

Seigniorage occurs when the government runs a fiscal deficit, which it finances through an increase in the money supply. This is inflationary only to the extent that the public does not want to hold the additional money. If GDP is expanding and the desire of the public to hold real money balances is constant in relation to GDP, there will be an increase in the public's demand for money. If the growth of the money supply does not exceed the increase in demand for it, the fiscal deficit is not inflationary, and the government benefits from an excess of expenditures over revenue. To the extent that the public holds foreign currency in place of local currency, part of the benefit from seigniorage passes to the foreign government whose currency is being held.

Inflation Tax

Where a fiscal deficit is inflationary, the government benefits from an inflation tax. This occurs because the government gets first access to the additional resources involved in the excess of expenditures over revenue that cannot be financed through seigniorage or the issuing of interest-bearing government securities that the public is willing to hold. The excess of aggregate demand over aggregate supply then generates inflation, which reduces the disposable real income of the public, as would any other tax. When people react by partially shifting their asset holdings into foreign currency, which is not subject to the same degree of inflation, the pressure of excess supply in relation to demand for local currency rises, and more inflation must be generated in order to satisfy the government's needs. Ultimately, the process is self-defeating for the government because higher inflation induces even greater fleeing from the local currency. For any given level of inflation, then, the ability of the government to assess an inflation tax is reduced to the extent that the public holds foreign exchange in lieu of domestic monetary assets.

Monetary Policy

Dollarization makes the economy more vulnerable to inflation, decreases the effectiveness of monetary policy, and increases the volatility of the exchange rate. This occurs because dollarization increases the elasticity of response of the public to changes in the real rate of interest on holdings of domestic monetary assets. For example, suppose that the public holds only domestic currency and domestic currency deposits. If, in the face of a given fiscal deficit, the monetary authorities want to tighten the domestic money supply by operating in the open market to sell government securities in exchange for local currency, this results in a decline in the price of those securities and a rise in interest rates. If the only two assets that the public holds are government bonds and local currency, interest rates will rise to the point that induces people to hold the additional bonds in the place of the money used to purchase them.⁸

To the extent that the public holds foreign as well as domestic currency and deposits, some of this foreign exchange will be sold for local currency in order to buy domestic bonds. This will result in both an appreciation of the exchange rate and a lesser decrease in domestic monetary assets held by the public. If the monetary authorities allow the appreciation of the cedi to take place, this will help to control inflation through the direct effect that it will have on the prices of tradable goods and services. It may also have a deflationary effect on the overall level of output and income. This is the classical way in which monetary policy operates under a flexible

⁸ In Ghana, as in many African countries, the market for government securities is thin, reducing the ability of the monetary authorities to mop up excess liquidity in this way.

exchange rate regime. It may also help to explain why the real exchange rate in Ghana has tended to appreciate over the past few years in the face of persistent fiscal deficits and high rates of interest. However, although inflation may be lessened through this mechanism, it has the unfortunate side effect of crowding out not only domestic investors but also producers of tradeable goods, especially exports. On the other hand, if the monetary authorities intervene to stabilize the currency, this will result in the sale of cedis, which will defeat the purpose of selling government bonds to mop up excess liquidity. Monetary policy will in this case be ineffective.

Dollarization may also affect the stability of the money multiplier, that is the ratio of the money supply broadly defined to the monetary base (reserves of the deposit money banks with the Bank of Ghana plus currency held by the public). For example, if the monetary authorities try to tighten the domestic money supply, the public may react by increasing their holdings of domestic currency through the selling of foreign exchange. This will have the effect of increasing the currency/deposit ratio and decreasing the money multiplier, which will reduce the effectiveness of the central bank's action in tightening the monetary base.⁹

Risks of Government Intervention

Given the losses of government in terms of real resources and the problems posed for monetary authorities, it is little wonder that governments frequently react to increased dollarization by trying to suppress it. This they can do in any number of ways. First and most obviously, they can make it illegal to hold foreign exchange in the form of currency or deposits. Second, they can tighten exchange controls, hoping to reduce the access of residents to deposits held abroad. The problem with these actions is not only that they create inefficiencies in money and financial markets but also that they have severe adverse effects on the markets for real goods and services. In addition, they are often counterproductive. That is, they induce the capital flight that they attempt to prevent, because of the increased uncertainty that results from these actions.

Transactions Costs

One of the advantages of a single, unified currency is that transactions costs are minimized. These costs include the opportunity cost of holding stocks of different currencies in place of interest-earning assets, the time and effort that goes into maintaining additional accounts and engaging in currency exchanges, and the risks associated with unforeseen and unhedged changes in exchange rates. To the extent that dollarization increases the number of currencies held and used by the public, these transactions costs are increased.

Vulnerability of the Banking System

One of the problems resulting from increased dollarization is greater vulnerability of the banking system. Even partial dollarization can leave banks exposed because of the ease with which foreign currency deposits can be transferred into and out of the country as a result of changes in expectations regarding interest rates and exchange rates. It is important, therefore, to impose

⁹ The money multiplier equals $(cd + 1)/(cd + rd)$, where cd is the ratio of currency to deposits and rd is the ratio of deposit bank reserves with the Bank of Ghana to their customer deposits.

large reserve requirements on foreign currency deposits or to ensure that these mature evenly over time (Calvo and Vegh, 1992, p. 9).

Difficulty of Taxation

The holding of foreign currency as deposits abroad is an important way of avoiding verification of income, turnover, or other elements of the tax base. This lessens the ability of the government to tax its residents and may contribute to inflation. This is less true of foreign currency deposits held in domestic banks.

DOLLARIZATION IN GHANA RELATIVE TO OTHER COUNTRIES

Although some dollarization has occurred in Ghana, it is not clear to what extent this has been due to the natural tendency to diversify asset holdings when this is legally permitted, versus the use of foreign currency as a store of value, unit of account, or medium of exchange because of lack of confidence in the value and stability of the cedi. In addition, there is concern over the problems cited above that result from currency substitution.

The situation is complicated by the fact that some of these problems would exist even if dollarization had not occurred in Ghana. For example, greater freedom in the movement of capital into or out of Ghana has consequences for monetary and exchange rate policy regardless of whether or not dollarization has taken place. If the monetary authorities try to stabilize the exchange rate under these conditions, they are less able to regulate the domestic supply of money and credit. If they let the exchange rate float, they have greater control over the money supply, but only at the cost of often unpredictable movements in the exchange rate. All that dollarization does is to facilitate shifts between domestic and foreign currency, which increases the elasticity of response to the effects of monetary policy.

One way of gauging the severity of the problem is to compare the degree of dollarization in Ghana with that in other countries at varying stages in their history. While most of the literature on currency substitution deals with its causes rather than its consequences, and while data are scarce on domestic deposits of foreign exchange, there has been some recent analysis of the importance of dollarization in different parts of the world, especially in relation to inflation or expected changes in the rate of exchange. For example, the ratio of dollar to peso-denominated deposits in Mexican banks was fairly stable at around 5% during the early 1970s, until in 1976 it rose to about 28% following the devaluation of the peso after a long period of stability with respect to the U.S. dollar. Then in 1982, the ratio rose suddenly to a peak of 58% as a result of expectations regarding further devaluation, after which it fell dramatically following the freezing of dollar deposits and the imposition of exchange controls (Melvin, 1988, p.548).

In Bolivia, after a steady rise in the dollar/peso time deposit ratio to about 77% in 1979, it dropped significantly for two years as a result of the re-imposition of exchange controls by the new military government. In 1982, with the loosening of economic and civil restrictions, it rose sharply to a peak of 158%, and then fell dramatically to zero following the government's prohibition of dollar-denominated contracts (Melvin, 1988, p. 548-51).

In each of these countries, there is evidence of a growing preference for dollars, which has been expressed openly only when allowed by government. Since each of these experiences was characterized by considerable uncertainty and unpredictable action by government, it is difficult to evaluate the degree of dollarization that might be thought of as normal under conditions of low inflation and reasonable predictability regarding movement in the exchange rate and changes in government policy.

The ratio of foreign exchange to domestic currency deposits for Egypt and Indonesia, two countries that experienced one-third to one-half the rate of inflation in Ghana during the 1990s, averaged 27% for Indonesia and 45% for Egypt from 1990 to 1996 (International Monetary Fund, 1997). This may be compared with the ratio of dollar to cedi deposits during 1996 in Ghana, which was relatively constant at about 43%. This is somewhat lower than the ratio of 58% to 77%, or higher, that led to the re-imposition of exchange controls and the prohibition of foreign exchange deposits in Mexico and Bolivia – albeit at a time when the use of these measures was much more common around the world than it is today.

Since the degree of dollarization in Ghana is similar to that in Indonesia and Egypt, but the rate of inflation in Ghana is considerably higher than it is in these other two countries, one might ask about the dynamics of dollarization. For example, if there is continued uncertainty regarding inflation and depreciation of the local currency, is there a tendency for the public to shift gradually towards greater dollarization, so that the degree of dollarization depends not only on the extent of this uncertainty but also on how long it has persisted. In addition, there may be a ratchet effect, where dollarization that occurs during periods of macroeconomic instability may not be reversed during subsequent periods of stability.

This appears to have been the experience of Latin America, where sustained dollarization occurred in most countries once financial and exchange rate restrictions were lifted during the 1970s and 1980s. As of 1993, the dollarization ratio—defined in this case as the ratio of foreign currency deposits to broad money inclusive of those deposits—remained within the range of 70% to 80% despite substantial decreases in inflation in many of these countries. This may be compared with a dollarization ratio in Ghana, defined in the same way for 1996, of only 22%.

The experience of the economies in transition has been somewhat different. Depending on the particular institutional constraints that applied at the time, the dollarization ratio varied from 0% to 10% at the start of reform in the late 1980s, rising to a peak of 30% to 60% in 1992-93. The major exception to this was in Poland and the former Yugoslavia, where the dollarization ratio increased to 70% to 80% during the 1980s with rapidly rising inflation and deregulation of foreign exchange. Dollarization was also particularly pronounced in Romania and Russia, where high inflation and regulated interest rates made the holding of domestic assets very unattractive. Unlike the experience in Latin America, however, dollarization decreased substantially following the implementation of successful stabilization programs in Estonia, Lithuania, Mongolia, and Poland (Sahay and Vegh, 1995, p. 2). It is important to note, however, that, with the possible exception of Poland, the period of high inflation and increased dollarization was not as long nor as chronic in these countries as it had been in most of Latin America.

The economies in transition that experienced dollarization can be grouped into five types:

- early reformers with chronic inflation (Poland and former Yugoslavia)
- recent reforms with large initial macroeconomic imbalances (Albania, Bulgaria, Romania)
- recent reformers with low initial macroeconomic imbalances and low inflation (Hungary, Czech Republic, Slovak Republic)
- high inflation countries of the former Soviet Union (Russia and Ukraine)
- successful reformers with de-dollarization (Baltic Republics and Mongolia)

Although foreign exchange has substituted in most of these countries as a store of value and unit of account, the domestic currency has continued to be used virtually everywhere as the primary medium of exchange.

Among the early reformers with chronic inflation, the dollarization ratio has generally remained in excess of 40%, even after it has fallen once inflation has been brought under control. In Russia and Ukraine, where rates of inflation have been even higher and have fluctuated more widely, the dollarization ratio has varied within the same range, from about 30% to 45%. Macroeconomic imbalances in Albania, Bulgaria, and Romania resulted in more modest inflation, and the dollarization ratio there has remained somewhat lower, at 20% to 30%. In Hungary and the former Czechoslovakia, inflation has seldom exceeded 15%, and the dollarization ratio there has varied between 10% and 20%. Finally, the Baltic Republics and Mongolia have reduced their inflation rates to very low levels and have seen dollarization rates fall to about 10% to 20% (Sahay and Vegh, 1995, pp. 7-12).

In summary, the experience of Ghana appears to be much more similar to that of the economies in transition than of Latin America. Ghana's dollarization ratio in 1996 of 22% is just above the range found in countries that have either maintained low inflation or have been able to stabilize their economies after a fairly brief bout of inflation. Nevertheless, the experience of Latin America, and possibly also of Poland, suggests that the longer that inflation is prolonged, the greater is the danger that dollarization will be institutionalized, so that it will be more difficult to reduce after inflation has decreased.

IMPLICATIONS FOR GOVERNMENT POLICY

This section discusses the implications of dollarization for government policy. Options discussed in the literature range all the way from encouraging full dollarization to intervening heavily to discourage any dollarization. Though some of these extreme options are not viable practically, they highlight rather boldly the pros and cons of different options.

Full Dollarization

Full dollarization is sometimes proposed as a means of controlling inflation by eliminating the power of the monetary authorities to create high-powered money. In principle, domestic inflation should then equal the rate of inflation in the issuing country. However, full dollarization removes the exchange rate as an option for cushioning the effects on the economy of external shocks, such as a decline in the terms of trade. Furthermore, full dollarization eliminates the gains to the

government from seigniorage and the inflation tax.¹⁰ In addition, unless the central bank is fully integrated with the central bank of the issuing country, the domestic banking system will be operating without a “lender of last resort”. This is especially a problem if full dollarization is undertaken as a means of overcoming inflation in the presence of persistent fiscal deficits, since the banking system will be under pressure to bail out the government and thus experience a deterioration in the quality of its loan portfolio (Calvo and Vegh, 1992, p. 6).

Discourage the Holding of Foreign Currency

A strategy of discouraging the holding of foreign currency helps to reduce exchange rate fluctuations, to decrease inflation in the presence of fiscal deficits, and to enhance the capacity of the monetary authorities to implement stabilization programs. However, it is also likely to reduce total liquidity in the economy and to have a negative impact on GDP (Rostowski, 1992). This is because the public is unable to escape the combined pressure of fiscal deficits and restrictive monetary policy by either selling foreign exchange or using it directly as a means of payment. Alternatively, if inflation is not avoided through restrictive monetary policy, the private sector without recourse to holding foreign currency is forced to finance the deficit through an inflation tax.

One way in which a strategy of discouraging the holding of foreign currency can be pursued is by paying attractive interest rates on local currency bank deposits. This amounts to an artificial subsidy, however, which is difficult to sustain. Another is the forced conversion of foreign currency deposits into domestic money. While this may at first seem attractive, experience has shown that it frequently stimulates capital flight and drives the dollarized economy underground (Melvin and Fenske, 1992).

Stabilizing Macroeconomic Policy

Since inflation tends to encourage dollarization, one way to reduce the holding of foreign currency is to implement a stabilization program through restrictive monetary and fiscal policy. As we have seen, however, dollarization does not always decrease following the implementation of such a program (Guidotti and Rodriguez, 1991). This is probably because high inflation leads to institutional changes that facilitate the holding of foreign currency, and these changes are not easily reversed (Dornbusch, Sturzenegger, and Wolf, 1990). Particularly important in this respect are the economies of scale associated with expanding the use of foreign currency as a medium of exchange. The more widespread is its use, the greater is its acceptance by the public, and thus the easier is its persistence once the macroeconomic situation has changed (Melvin and Peiers, 1996, p. 39). Thus it is critical that the environment that gives rise to dollarization in the first place not be maintained for too long. Although insufficient research has been conducted to determine just how long this might be, it is clear from the experience in Poland and Latin America that a dollarization ratio above 40% is difficult to reverse fully if it has persisted for a decade or more.

If the monetary authorities do try to pursue a stabilization program, it is important that the

¹⁰ Fischer (1982) estimates that there are many countries for which seigniorage constitutes over 10 percent of total government revenue.

conceptual basis for this program take dollarization into account. One conclusion that emerges from the analysis of the effects of dollarization is that it makes any analysis of monetary policy based on the assumption of a constant money multiplier and a constant velocity of circulation relatively suspect. It is important, therefore, to allow for differences between foreign and domestic assets due to variations in risk, as in the portfolio balance model (Pilbeam, 1992, ch. 8).¹¹ This model appears to be well suited to describe the situation in Ghana, where there are generally perceived to be greater risks on domestic assets associated with inflation, depreciation, default, political considerations, and perhaps simply being located in the continent of Africa. The model would show, for example, the foreign exchange operations that are necessary to leave the real exchange rate unchanged as a result of open market operations designed to mop up domestic currency.

CONCLUSIONS and RECOMMENDATIONS

Although dollarization in Ghana has not assumed the proportions that it has in some other countries, especially in Latin America, it is clear that it is an important and probably growing phenomenon. Yet it is difficult to draw any unqualified conclusions regarding the pros and cons of dollarization and how the government of Ghana should react to this phenomenon. It is important to realize that dollarization is more a symptom than a cause of instability. Above all, it indicates the reaction of the public in Ghana, as it has in many other countries of the world, to fiscal instability, and the desire of people to avoid its consequences in the form of an inflation tax, an erosion of their wealth, and a squeeze on their liquidity. Melvin and Peiers (1996) even look on dollarization as a market-enforced monetary reform where the public, rather than the monetary authorities, introduces a new monetary unit, which forces a certain level of discipline on the government.

One the other hand, it is clear that dollarization poses distinct problems for the state. Above all, it decreases the ability of the government to raise revenue through seigniorage and an inflation tax. Although one could argue that an inflation tax is not desirable from a social perspective, non-inflationary seigniorage is surely one legitimate way for the government to gain some command over resources, especially given the very weak tax base that exists in Ghana and other African countries. Furthermore, it is possible to argue that a modest inflation tax is not a bad way for the government to finance its expenditures, because of the difficulty of otherwise taxing the rural and informal urban sectors of the economy. This argument loses some of its force to the extent that inflation leads to dollarization, which limits the revenue that can be raised in this way.

The fact that dollarization makes it more difficult for the monetary authorities to stabilize the economy through the use of monetary policy probably must be accepted as one of the costs of becoming part of the global economy. It has long been recognized that monetary policy becomes less effective in the presence of international capital flows if countries are unwilling to allow their economies to adjust through movements of the exchange rate. Dollarization facilitates the

¹¹ This model is being constructed for Ghana, in cooperation with the Research Department of the Bank of Ghana, by the Center for Policy Analysis as part of the EAGER project financed by the U.S. Agency for International Development.

movement of capital, but it is by no means necessary for that movement to take place. There are many other aspects of globalization that are having that effect.

To the extent that the monetary authorities do try to limit movements in the exchange rate in the presence of a relatively free capital market, fiscal rather than monetary policy must be used to maintain macroeconomic equilibrium. This is fitting given the fact that fiscal imbalance is a major factor causing dollarization in the first place. Lack of fiscal discipline leads to inflation, which in turn results in dollarization, which helps to undermine the effectiveness of monetary policy in undoing the damage associated with fiscal deficits. The obvious solution is to avoid fiscal deficits in the first place.

The government can of course intervene to prevent dollarization by making it illegal, but this just drives it underground and creates all of the rent-seeking opportunities that Ghana has tried so hard in recent years to eliminate. In addition, this is also likely to create enormous inefficiencies in money and financial markets, which will seriously inhibit the development of financial intermediation, and ultimately investment and growth.

Aside from trying to maintain fiscal discipline, what can the government do? First, it should monitor the situation closely. One step in the right direction is the recent establishment of the indicator M2+, which includes foreign exchange as well as cedi deposits in the definition of the money supply. In addition, the Bank of Ghana should regularly publish data on foreign exchange deposits held by domestic residents within Ghana. The ratio of foreign exchange deposits to M2+, inclusive of those deposits, should be calculated and published as the most widely recognized indicator of the degree of dollarization.

The monetary authorities must also regulate the banking sector so as to avoid its being endangered by the process of dollarization. This may involve imposing significant reserve requirements on foreign currency deposits and ensuring that these assets mature evenly over time. In addition, the monetary authorities need to be equipped analytically to understand how monetary policy, exchange rate policy, and debt management operate in an economy that uses foreign, as well as domestic currency, to conduct its business.

The Bank of Ghana has recently shown a willingness to undertake this task, but perhaps without adequate understanding of its complexities. For example, the cash reserve requirement has been changed from 10% of total cedi deposits to 8% of all deposits, including both cedi and foreign exchange accounts. One problem that this has created is that the cedi equivalent value of foreign exchange deposits rises with the depreciation of the cedi. This excessively penalizes banks that do much of their business in foreign exchange. One alternative might be to maintain separate reserve requirements for cedi and foreign exchange deposits, but to require that the reserves for the foreign exchange deposits be maintained in foreign exchange. This would enable the monetary authorities to discourage excessive dollarization by maintaining a higher reserve requirement on foreign exchange than on cedi deposits.

With respect to the need for danger signals, the government should understand first that a modest level of dollarization is likely to exist even without inflation, since the public finds it convenient to work with more than one currency. The experience that we have examined from other

countries suggests that a dollarization ratio from 10% to 20% is not unreasonable, even in the absence of inflation. The current ratio of 22% for Ghana is therefore just above the margin. Should that ratio rise to 30%, this would suggest a significant increase in dollarization as a hedge against uncertainties regarding inflation and changes in the real rate of interest and the real rate of exchange. If the ratio should rise to 40%, this would indicate wholesale flight from the cedi as a store of value and unit of account, but probably not as a medium of exchange.

A dollarization ratio of 40% is an indication of the danger of hyperinflation, but it by no means implies that it is assured. Many countries, especially in Latin America, have attained much higher ratios without experiencing hyperinflation. More relevant is the fact that if dollarization is sustained at this level for a substantial period of time—perhaps a decade or so—it is likely to become institutionalized and will be difficult to reverse. Whether the same will occur with a dollarization ratio of 20% to 30%, no one really knows.

In summary, then, dollarization is more an indicator of a macroeconomic problem than a problem per se. It reduces the ability of government to assess an inflation tax and it increases the importance of fiscal policy in maintaining macroeconomic stability, but these are desirable in their own right. It also requires that the central bank extend its regulatory authority over the banking system. But it does not require extraordinary measures of control—certainly not at the level of dollarization that exists in Ghana today. Indeed, these measures are likely to make the situation worse by driving dollarization underground and by encouraging the keeping of foreign exchange overseas. Instead, dollarization should be monitored as an indicator of the soundness of the macroeconomic situation. If it increases to the danger levels suggested above, this should be taken as a signal of the need for monetary, and especially fiscal, responsibility.

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Table A-1 - Quarterly Overseas Deposits of Ghanaian Residents in Relation to Official Reserves, 1983-1995

| | (A) Ghanaian Res. Dep. Abroad Millions of U.S.\$ | (B) Official reserves Millions of U.S.\$ | (A/B) Quarterly Overseas Deposits of Ghanaian Residents in Relation to Official Reserves |
|------------|--|---|--|
| 1982 Q1 | 213.38 | 214.11 | 1.00 |
| 1982 Q2 | 210.58 | 237.61 | 0.89 |
| 1982 Q3 | 189.29 | 239.13 | 0.79 |
| 1982 Q4 | 216.88 | 207.69 | 1.04 |
| 1983 Q1 | 174.08 | 188.84 | 0.92 |
| 1983 Q2 | 204.11 | 237.18 | 0.86 |
| 1983 Q3 | 180.83 | 235.82 | 0.77 |
| 1983 Q4 | 185.22 | 217.31 | 0.85 |
| 1984 Q1 | 177.57 | 173.33 | 1.02 |
| 1984 Q2 | 238.16 | 249.31 | 0.96 |
| 1984 Q3 | 214.25 | 284.08 | 0.75 |
| 1984 Q4 | 202.21 | 393.26 | 0.51 |
| 1985 Q1 | 226.33 | 375.89 | 0.60 |
| 1985 Q2 | 240.01 | 442.24 | 0.54 |
| 1985 Q3 | 230.72 | 494.28 | 0.47 |
| 1985 Q4 | 235.88 | 524.60 | 0.45 |
| 1986 Q1 | 200.08 | 508.95 | 0.39 |
| 1986 Q2 | 232.41 | 425.43 | 0.55 |
| 1986 | 245.09 | 478.06 | 0.51 |

| | | | |
|------------|--------|--------|------|
| Q3 | | | |
| 1986 Q4 | 240.34 | 589.56 | 0.41 |
| 1987 Q1 | 254.30 | 630.60 | 0.40 |
| 1987 Q2 | 229.19 | 596.71 | 0.38 |
| 1987 Q3 | 239.16 | 278.70 | 0.86 |
| 1987 Q4 | 257.60 | 276.63 | 0.93 |
| 1988 Q1 | 249.76 | 231.95 | 1.08 |
| 1988 Q2 | 248.34 | 290.10 | 0.86 |
| 1988 Q3 | 310.06 | 253.97 | 1.22 |
| 1988 Q4 | 285.15 | 298.82 | 0.95 |
| 1989 Q1 | 287.14 | 275.74 | 1.04 |
| 1989 Q2 | 295.19 | 300.72 | 0.98 |
| 1989 Q3 | 321.16 | 294.88 | 1.09 |
| 1989 Q4 | 317.73 | 425.61 | 0.75 |
| 1990 Q1 | 347.71 | 410.12 | 0.85 |
| 1990 Q2 | 337.60 | 422.33 | 0.80 |
| 1990 Q3 | 383.72 | 416.71 | 0.92 |
| 1990 Q4 | 380.47 | 282.14 | 1.35 |
| 1991 Q1 | 383.57 | 472.17 | 0.81 |
| 1991 Q2 | 409.29 | 454.35 | 0.90 |
| 1991 Q3 | 379.27 | 515.15 | 0.74 |
| 1991 Q4 | 371.27 | 624.24 | 0.59 |
| 1992 Q1 | 326.58 | 601.78 | 0.54 |

| | | | |
|------------|--------|--------|------|
| 1992 Q2 | 429.00 | 487.60 | 0.88 |
| 1992 Q3 | 437.47 | 478.05 | 0.92 |
| 1992 Q4 | 409.08 | 398.01 | 1.03 |
| 1993 Q1 | 374.46 | 407.36 | 0.92 |
| 1993 Q2 | 346.46 | 297.69 | 1.16 |
| 1993 Q3 | 334.82 | 390.60 | 0.86 |
| 1993 Q4 | 356.27 | 486.88 | 0.73 |
| 1994 Q1 | 356.78 | 432.01 | 0.83 |
| 1994 Q2 | 457.03 | 521.60 | 0.88 |
| 1994 Q3 | 355.84 | 648.25 | 0.55 |
| 1994 Q4 | 349.66 | 661.07 | 0.53 |
| 1995 Q1 | 402.18 | 731.66 | 0.55 |

Source: IMF, International Financial Statistics

