

# 5

## Reserve Adequacy in the CFA Franc Zone

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This chapter discusses the level and adequacy of international reserves in the CFA franc zone. Reserves can be defined as foreign currency assets that are readily available to the monetary authorities for the financing of external payment imbalances.<sup>1</sup> Although reserves are maintained for several reasons, a key function is to act as a buffer, absorbing balance of payments shocks in case access to borrowing is limited or costly, and exchange rate adjustment is not used for ensuring adjustment. Accordingly, reserve adequacy is of particular importance in the case of fixed exchange rates. Reserves also help provide confidence in the authorities' commitment to support the value of the currency. Standard measures of reserve adequacy reflect these functions.

In the case of the CFA franc zone, the convertibility guarantee provided by the French Treasury affects both the nature and the adequacy of foreign exchange reserves. Reserves are largely maintained in the operations account of the central banks of the CFA franc zone at the French Treasury, which serves both to centralize international reserves and, in case of reserve shortfalls, to provide a line of—in principle, unlimited—credit.

The chapter first presents a brief description of the rules regarding the maintenance of international reserves in CEMAC and WAEMU, followed by general considerations regarding reserve adequacy. It then reviews the

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<sup>1</sup>As defined in the 1993 IMF *Balance of Payments Manual*.

evolution of reserves since 1994, and assesses reserve adequacy, using standard measures and comparator data. Next, it discusses the costs of holding reserves, explores the sources of reserve accumulation, and considers the specific implications for reserves in CEMAC of its intention to save oil-related inflows for future generations. A reflection on the wider importance of the convertibility guarantee concludes the chapter.

## Operating Rules

At the core of the CFA franc zone are four key principles: (1) the fixed parity between the CFA franc and the euro, (2) the guarantee of convertibility of the CFA franc into euro by the French Treasury, (3) the free movement of financial flows within each zone, and (4) the pooling of exchange reserves of each regional monetary area. The convertibility guarantee is made operational through each central bank's operations account with the French Treasury, which can have a positive or negative balance. Therefore this guarantee amounts in principle to an unlimited overdraft facility.

A number of operating rules are embedded in the statutes of the BEAC and the BCEAO, as well as in the operations account conventions both central banks have signed with the French Treasury that help support these principles, by preventing and/or limiting the occurrence of drawings on the overdraft facility:

- Both central banks are required to maintain a large share of their foreign assets in the operations account with the French Treasury, thus centralizing much or most of the reserves. Following revisions to the respective operations account conventions with France, this requirement was reduced from a 65 percent floor to a ceiling of 50 percent of total foreign assets, which became effective in September 2005 in the case of the BCEAO, and which will take effect in July 2009 for the BEAC, with a first reduction to 60 percent as of July 2007.
- Both central banks are expected to maintain a level of net foreign assets equivalent to at least 20 percent of sight liabilities. If this requirement is missed for three consecutive months, a central bank board meeting is convened to adopt appropriate remedial measures.
- The provision of credit to the governments of the member countries is limited to 20 percent of tax revenues of the country concerned in the previous year. However, this practice has been discontinued in WAEMU since 2002, when BCEAO advances were replaced by treasury bills.

- Both central banks have specified procedures for addressing shortfalls in reserves, including the transfer of other public reserve assets held outside the central banks.<sup>2</sup> BEAC regulations also stipulate that, if reserve coverage declines below 20 percent of sight liabilities or if the overall operations account is overdrawn for three consecutive months, the scope for refinancing is reduced.<sup>3</sup>

In addition, formal and informal limits on capital mobility limit the scope for capital outflows, which could otherwise represent a potentially serious source of external vulnerability. Indeed, even vis-à-vis France, the anchor country, capital transactions of WAEMU and CEMAC are subject to authorization requirements and other controls.<sup>4</sup>

### Considerations Regarding the Appropriate Level of Reserves

Measures of reserve adequacy typically relate the level of reserves to the potential for balance of payments imbalances.<sup>5</sup> The standard benchmark levels of reserve adequacy for low-income countries have been developed for countries with managed exchange rates or one-sided pegs.

- The most common measure considers the level of imports of goods and nonfactor services—with a common rule of thumb requiring available reserves equivalent to at least three months of imports. This measure scales reserves in terms of the size and openness of the economy. It also indicates the period during which the import level could be sustained in case all other inflows and outflows ceased.
- Related measures compare reserves with net imports rather than gross imports or with the current account balance—indicating how long the country could go without foreign financing—or with the variability in exports or the current account balance.

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<sup>2</sup>In particular, the BCEAO, the BEAC, and all other public institutions of CEMAC and WAEMU member countries should transfer their foreign assets (cede them for CFA francs) when the funds available in the operations account are projected to become insufficient. See BEAC Statutes, Article 11, and BCEAO Statutes, Article 18.

<sup>3</sup>See BEAC Statutes, Article 11.

<sup>4</sup>For CEMAC, see IMF (2006). The analysis in this report of capital restrictions broadly holds for WAEMU as well.

<sup>5</sup>See Flood and Marion (2002) for an overview, focused on countries with access to capital markets.

- Additional indicators include the ratio of reserves to broad money, as a measure of the potential for capital flight by residents. The coverage of reserves in terms of reserve money indicates the degree to which the central bank can back its liabilities, which would support its credibility under a fixed exchange rate arrangement.
- For countries with extensive private sector capital flows, the most useful measure may be reserves in terms of short-term external debt on a remaining maturity basis, given the possible serious liquidity implications of rollover problems. This measure, however, is less relevant to the CFA franc zone, given the predominance of official medium- and long-term debt. Indeed, capital controls help prevent large capital outflows, and there is little international capital market access.

Because the credit line provided by the French Treasury is in principle unlimited, judging reserve adequacy in the CFA franc zone is relatively complicated. The unique setup of the CFA franc zone requires a careful evaluation of the usefulness of reserve adequacy standards. Although contingent credit lines are not considered part of reserves, they can perform the same function.<sup>6</sup> Indeed, in theory, given an unlimited and fully credible convertibility guarantee, the optimal level of reserves could even be argued to be zero.

However, the 1994 experience shows that the convertibility guarantee does not rule out exchange rate adjustment. The 1994 devaluation successfully addressed a fundamental external disequilibrium that would have been hard and painful to resolve through the alternative of a sustained deflationary adjustment. But even for less severe misalignments, support provided under the guarantee should be considered as no more than a temporary relief measure. After all, structural balance of payments deficits eventually always require some form of macroeconomic adjustment, because no financing source can provide indefinite support. Nonetheless, an adequate combination of reserves and/or credit lines can effectively limit the risk of forced parity adjustments. Other adjustment policies could be effective provided that sufficient time is available for these actions to take effect. A further consideration on the degree to which the convertibility guarantee can help buy time for this purpose is that, since 1998, France is subject to limits on its deficit and thus could not inject unlimited amounts of liquidity without further consequences, and the Economic and Financial Affairs Council of the European Union (ECOFIN) has to be consulted on any change of the parity.

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<sup>6</sup>If credit lines are truly usable, they can be used to augment the reserve level in deriving reserve indicators.

Against this background, the standard considerations regarding the assessment of reserve adequacy remain useful. First, they can signal the likelihood that the central banks of the CFA regions may need to draw on the operations account. Under the current arrangement, avoiding a need to draw on the credit facility has been a key objective. Therefore, this first consideration implies a clear operational function for indicators of reserve adequacy as a policy guide. Second, these measures could be related to the perception of devaluation risks by private sector agents, and thereby to the possibility of capital flight. Finally, indicators of reserve adequacy are indicative of the degree to which the franc zone could be maintained as a one-sided exchange rate peg—without the support of the French Treasury.

## Developments in Foreign Reserves Since the 1994 Devaluation

In both regions, gross international reserves have grown strongly since 1995 (Table 5.1).<sup>7</sup> CEMAC reserves have grown especially rapidly since 2003, as oil-related balance of payments inflows have accelerated. Although WAEMU gross reserves used to be significantly higher, they have leveled off since end-2002. At the same time, net reserves in WAEMU kept growing through 2006, with the difference reflecting sharply declining external liabilities of the BCEAO to the IMF.<sup>8</sup>

The import coverage of reserves has, on balance, increased significantly in both regions over the past decade—to about 4.5 months of imports or more. In CEMAC, foreign reserves covered 5.5 months of the following year's (projected) imports of goods and services at end-2006, compared with 0.8 month in 1995 (Figure 5.1).<sup>9</sup> In WAEMU, foreign

<sup>7</sup>This paper does not evaluate developments at the level of the individual member countries. Reserve coverage varies widely across member countries.

<sup>8</sup>In January 2006, WAEMU's net reserves were boosted by the elimination of liabilities to the IMF in the context of the Multilateral Debt Relief Initiative (MDRI). This relief amounted to \$455 million (about CFAF 250 billion) and related to earlier IMF lending to Burkina Faso, Mali, Niger, and Senegal. In addition, Cameroon qualified in May 2006, reducing BEAC liabilities to the IMF by \$255 million (about CFAF 130 billion).

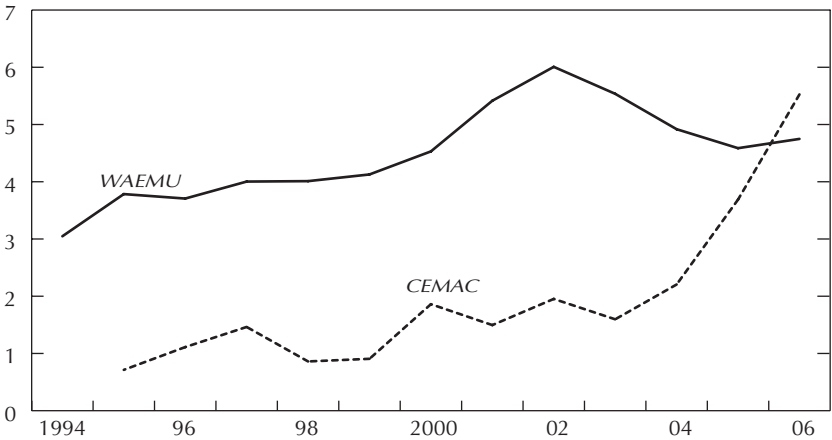
<sup>9</sup>In CEMAC, the high levels of foreign direct investment (FDI) associated with oil exploration also generate related high imports of goods and services, thus partly explaining the relatively low level of import coverage of reserves. Given the volatility of such FDI, however, it was not deemed appropriate to exclude FDI-related imports from the calculation of import coverage (this would also have been precluded by the lack of sufficiently detailed data for all CEMAC member countries).

**Table 5.1. CEMAC and WAEMU: Central Bank Foreign Assets***(In billions of CFA francs)*

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 Est.
<b>CEMAC</b>												
Net foreign assets	59.60	184.26	307.76	84.55	116.06	587.74	484.44	693.95	675.39	1,232.88	2,625.80	4,382.16
Foreign assets	196.78	366.13	524.71	310.70	388.67	929.77	849.75	1,046.98	991.10	1,535.59	2,911.10	4,498.62
Operations account (as a share of foreign assets)	163.93	288.02	385.50	180.51	251.52	786.82	680.48	867.67	814.09	1,305.62	2,647.19	4,165.94
Foreign liabilities	137.18	181.87	216.95	226.15	272.61	342.03	365.31	353.03	315.71	302.70	285.30	116.46
<b>WAEMU</b>												
Net foreign assets	608.74	755.16	961.82	898.20	1,049.10	1,348.20	2,000.83	2,594.72	2,894.47	3,027.56	3,195.39	3,694.24
Foreign assets	1,417.29	1,611.74	1,889.11	1,941.34	2,117.80	2,522.34	3,103.76	3,655.43	3,735.29	3,730.27	3,768.90	4,006.20
Operations account (as a share of foreign assets)	1,142.42	1,098.55	1,369.08	1,470.76	1,812.57	2,216.15	2,613.55	3,230.10	3,343.24	3,445.31	1,821.12	1,821.13
Foreign liabilities	808.55	856.58	927.29	1,043.13	1,068.70	1,174.14	1,102.93	1,060.70	840.82	702.71	573.51	311.96

Sources: BEAC and BCEAO websites.

**Figure 5.1. Gross International Reserves**  
(In months of next year's imports)

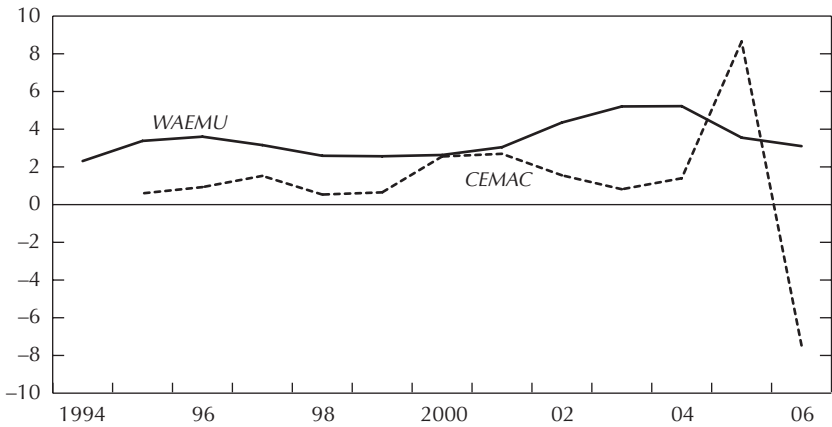


Sources: IMF, World Economic Outlook database; and authors' calculations.

reserves increased from 3.8 months to 4.7 months of imports during the same period. As a fraction of the (moving three-year average) current account deficit, foreign reserves rose from 0.6 to 8.6 during the period 1995–2005 in CEMAC (for 2006, the average past current account balance turned positive). For WAEMU, this fraction has remained more stable, at 3.2 in 1995 and 3.1 by 2006 (Figure 5.2).

Foreign reserves have comfortably met the coverage requirement in terms of reserve or base money, and have also trended upward relative to broad money. In the CEMAC region, the ratio of foreign reserves to base money rose from 0.5 in 1998 to 1.9 in 2006, and the ratio to broad money from 0.2 percent to a comfortable level of 1.1 (Figure 5.3). In the WAEMU region, these ratios have risen from 1.1 to 1.4 for base money and from 0.5 to 0.6 for broad money, during the same period. However, the high reserve coverage in terms of monetary indicators in part reflects low monetization. Short-term debt (based on a remaining maturity of less than one year) is fully covered by reserves in both regions. Reserves as a share of short-term debt rose from 0.2 in 1995 to 6.2 in 2006 in CEMAC, and from 1.7 to 10.2 percent in WAEMU (Figure 5.4).<sup>10</sup>

<sup>10</sup>Part of the recent increases stem from the reduction in short-term debt (on a residual maturity basis) as a result of debt relief. However, this measure of reserve coverage does not take into account the claim on reserves that would result if part of outstanding arrears on

**Figure 5.2. International Reserves as a Share of Current Account Deficit<sup>1</sup>**

Sources: IMF, World Economic Outlook database; and authors' calculations.

<sup>1</sup>Based on the average current account deficit over the past three years.

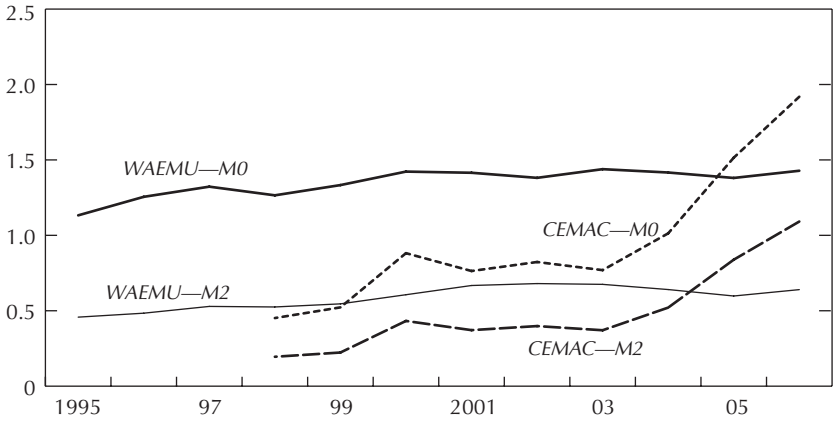
Both the BCEAO and the BEAC have comfortably maintained the required balance in the operations account throughout most of the past decade (Figure 5.5). By end-2004, the ratio of the BCEAO and BEAC operations account balances to total international reserves had risen to 85 percent and 92 percent, respectively—well above the 65 percent minimum. This high share likely reflected both the limited investment capabilities and the reasonable rate of return on the operations account (European marginal lending facility rate, which is the overnight lending rate of the European Central Bank). Nonetheless, since the September 2005 reduction in the minimum requirement for the BCEAO to 50 percent, the actual share has dropped accordingly, and the same is expected for the BEAC starting in July 2007.

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external debt service were to be cleared through government borrowing in the domestic markets. Several countries in the CFA franc zone (including Côte d'Ivoire, Guinea-Bissau, Togo, and the Central African Republic) have accumulated sizable external arrears. However, the scope for such clearance operations is limited by the depth of the local financial markets and the fiscal unsustainability of transforming sizable external arrears into costly domestic debt. Accordingly, the only viable route to arrears clearance would involve economic stabilization and debt relief, which would not affect external reserves.

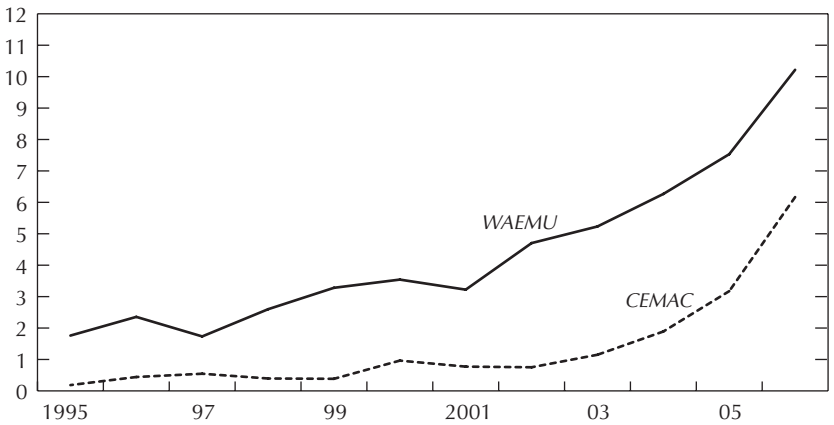


**Figure 5.3. International Reserves as a Share of Broad and Reserve Money**



Sources: IMF, World Economic Outlook database; and authors' calculations.

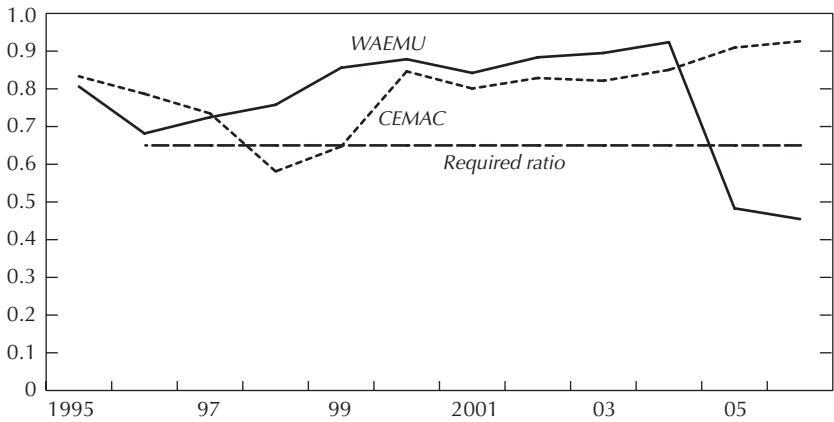
**Figure 5.4. International Reserves as a Share of Short-Term Debt**



Sources: IMF, World Economic Outlook database; and authors' calculations.

### Are Reserve Levels Adequate?

On balance, based on traditional measures of reserve adequacy, reserves appear to have reached comfortable levels in both regions. Following the rapid reserve buildup in CEMAC in recent years, the import coverage of reserves now well exceeds the common rule of thumb of three months.

**Figure 5.5. International Reserves as a Share of Gross Reserves**

Sources: IMF, World Economic Outlook database; and authors' calculations.

**Table 5.2. Comparisons of International Reserves Across Regions**

	In Months of Imports			2006 Ratio to:		
	1995–2004	2005	2006	Broad money	Reserve money	Short-term debt <sup>1</sup>
WAEMU	4.6	4.6	4.7	0.6	1.4	10.2
CEMAC	1.5	3.7	5.5	1.1	1.9	6.2
CMA (excluding South Africa)	2.9	2.0	2.7	0.3	3.7	...
Comoros	7.5	7.3	6.4	1.0	1.3	...
ECCU	2.6	2.8	3.1	0.2	1.1	5.0
Sub-Saharan Africa	3.9	...	...	...	...	...

Sources: Authorities' data and IMF, World Economic Outlook database.

<sup>1</sup>Excluding external payments arrears.

Coverage is also at least comparable with other zones (Table 5.2). The ratio of reserves to imports in the Common Monetary Area (CMA), another common currency area in Africa, was lower, at 2.7 months in 2006, while the average for African countries with a fixed exchange regime amounted to about 4 months.<sup>11</sup> The import coverage of reserves in the Eastern Caribbean Currency Union (ECCU), the Caribbean common

<sup>11</sup>The figure for the CMA refers to the combined reserves of Lesotho, Namibia, and Swaziland, which have pegged their currencies to the South African rand. The CMA is different from the franc zone, however, because it does not involve reserve pooling.

currency area, is also lower than in WAEMU and CEMAC. At more than 6 months of imports, reserves in the Comoros—which is also part of the CFA franc zone—are relatively large. However, because the Comoros has a separate bilateral agreement with France, it does not benefit from reserve pooling and thus would need larger reserves of its own.

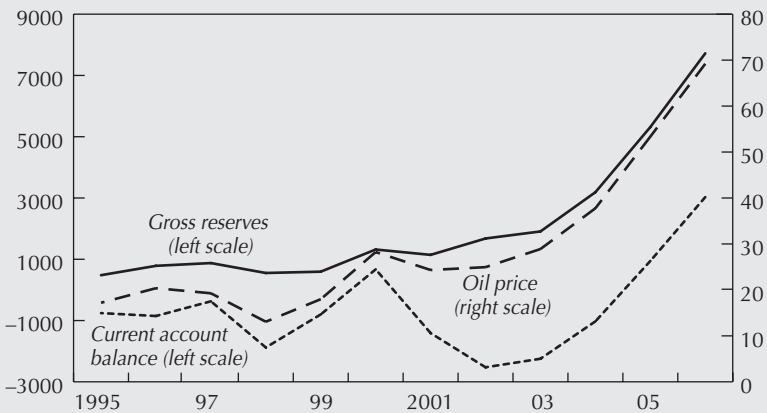
### Box 5.1. The Impact of Oil Price Fluctuations on CEMAC's Reserve Adequacy

Five out of six CEMAC member countries are oil exporters, with oil accounting for 80 percent of the region's exports, and about 35 percent of total GDP. As a result, oil price fluctuations are the single largest determinant of current account fluctuations. On the financial account side, the large swings in FDI are mostly linked to investments in the oil sector (see figures a and b).

To illustrate the vulnerability of reserves to oil price fluctuations, a one-standard-deviation decline in the oil price was assumed for 2006 (corresponding to \$11.6 per barrel). Assuming further that only export revenues would adjust in the short term, the corresponding fall in reserves would be \$3.35 billion. In that case, the reserves-to-imports ratio would fall by almost two months in 2006, from a projected 5.1 months to 2.9 months. At the same

#### a. CEMAC: Balance of Payments Flows

(In millions of U.S. dollars)



Sources: IMF, World Economic Outlook database; and authors' calculations.

Judgment remains difficult in the absence of well-supported benchmarks. The vulnerability of both the CEMAC and the WAEMU countries to terms of trade shocks argues for maintaining a relatively high level of reserves. The CEMAC region is heavily dependent on oil exports (see Box 5.1), whereas the WAEMU area's exports are concentrated in a limited

time, the ratio of reserves to short-term debt would fall by over 200 percent in 2006, from 492 to 278 percent (see table).

### CEMAC: Projected Reserve Adequacy Indicators, 2006

(In percent, unless otherwise indicated)

Gross Reserves as a Percent of:	Imports	Short-Term Debt
2006 WEO oil price (\$69.2 pb)	5.1	492.3
WEO price + 1 standard deviation <sup>1</sup>	7.3	706.2
WEO price – 1 standard deviation <sup>1</sup>	2.9	278.4

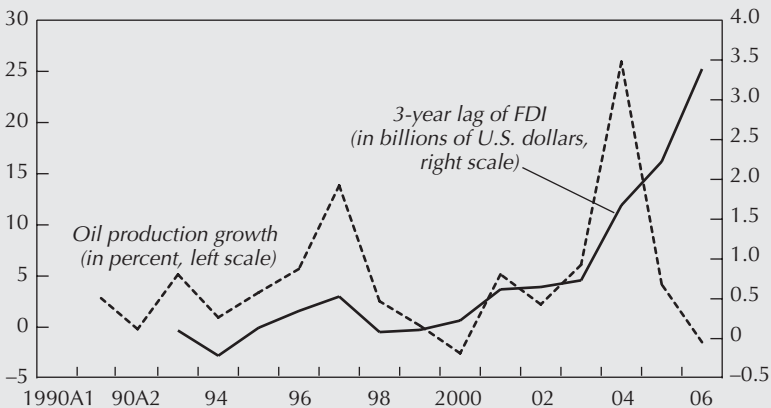
Sources: IMF, *World Economic Outlook (WEO)* and IMF staff calculations.

Note: pb = per barrel.

<sup>1</sup>Ten-year standard deviation 1996–2005 = \$11.6.

### b. CEMAC: FDI and Oil Production Growth

(In millions of U.S. dollars)



Sources: IMF, World Economic Outlook database; and authors' calculations.

**Table 5.3. The Variability of Reserves Across Regions**  
*(Coefficient of variation, 1995–2005)*

	Reserves in Terms of		Terms of Trade Change
	U.S. dollars	Imports	
CEMAC	0.8	0.5	28.1
WAEMU	0.3	0.2	12.4
CMA	0.6	0.3	7.2
CMA (excluding South Africa)	0.1	0.2	8.4
Comoros	0.4	0.2	19.8
ECCU	0.3	0.2	6.5
Sub-Saharan Africa	. . .	0.5	15.1

Source: IMF, International Financial Statistics database.

range of primary commodities. In principle, reserve pooling helps limit the joint reserve needs. However, the high correlation of external shocks across the countries within the groups reduces this benefit. Table 5.3 provides a first look at the impact of shocks. The first two columns show the variability of reserves, and the third column shows the incidence of terms of trade shocks. These indicators seem to underscore CEMAC's vulnerability to external shocks, as its reserve variability exceeds the level in any of the other regions. However, whereas terms of trade shocks are fairly homogeneous across CEMAC oil producers and thus would indicate less benefits from pooling reserves, Fielding, Lee, and Shields (2004) also find that CEMAC area output shocks tend to be fairly heterogeneous, larger, and more persistent than in WAEMU, with the exception of the Central African Republic, the only non-oil producer in CEMAC.

Measures of reserve need based on balance of payments volatility suggest relatively large reserve needs for CEMAC, but they do not define any particular reserve requirement. Because a key function of reserves is to cover temporary adverse shocks in foreign inflows, the incidence of such shocks can provide an empirical and zone-specific measure of reserve adequacy.<sup>12</sup> These requirements are derived using a simple calculation, and shown in Tables 5.4 and 5.5. For each of the areas, the tables show the standard deviation of the current account and FDI inflows as

<sup>12</sup>These measures should be considered as illustrative. They do not relate to all motives for building up reserves, nor to all possible shocks. The size of the underlying shock (in this case, two standard deviations) is arbitrary. The degree to which the two measures of reserve needs should be added up depends on the covariance of FDI and current account shocks. Finally, if the shocks are serially correlated, larger reserves would be necessary than suggested by this measure.

**Table 5.4. Comparisons of the Variability of Selected (Net) Inflows and the Implied Reserve Need—by Country**

	Current Account <sup>1</sup>		Foreign Direct Investment <sup>1</sup>	
	Standard deviation <sup>2</sup>	Implied reserve need <sup>3</sup>	Standard deviation <sup>2</sup>	Implied reserve need <sup>3</sup>
CEMAC (average)	12.7	5.6	10.5	4.3
Cameroon	1.0	1.2	1.4	1.6
Central African Republic	2.4	2.6	0.4	0.5
Chad	13.8	8.0	13.8	8.0
Congo, Rep. of	15.6	7.2	8.9	4.1
Equatorial Guinea	36.5	9.6	34.8	9.2
Gabon	6.9	4.8	3.8	2.6
WAEMU (average)	3.5	2.5	0.9	0.6
Benin	1.7	1.5	1.0	0.9
Burkina Faso	2.9	2.9	0.3	0.3
Côte d'Ivoire	4.4	3.2	1.0	0.8
Guinea-Bissau	8.8	4.8	1.2	0.7
Mali	2.3	1.7	2.0	1.4
Niger	2.4	2.4	0.1	0.1
Senegal	1.6	1.1	1.3	0.8
Togo	3.8	2.1	0.0	0.0

Source: IMF, International Financial Statistics database.

<sup>1</sup>As a share of GDP.

<sup>2</sup>Standard deviation of annual flows, 1991–2005.

<sup>3</sup>Reserve coverage in months of imports needed to cover a two-standard-deviation shock. Based on import shares to GDP during 1991–2005.

a share of GDP during 1991–2005.<sup>13</sup> The reserve coverage that would be needed to accommodate a two-standard-deviation shock is also indicated for both variables. Results from this exercise are shown in Table 5.4 for each CEMAC and WEAMU member country separately. These country indicators are relevant as policymakers seek to maintain reserve adequacy in each member country. Table 5.5 shows both the average levels for the members of the zone (as derived in Table 5.4), and the indicators for the zone as a whole, and also presents these data for the comparator zones. The indicators for the zone as a whole are derived at the central level, so they incorporate the benefits from reserve pooling. In the case of CEMAC, to cover a two-standard-deviation current account shock, import coverage should amount to about six months of imports for the average country, whereas for the zone as a whole coverage of three months would suffice. Fairly similar results are shown for FDI shocks. For WAEMU, where balance of payments variability is smaller, this exercise also suggests a significantly smaller reserve need.

<sup>13</sup>Current account variability largely reflects terms of trade shocks.

**Table 5.5. Comparisons of the Variability of Selected (Net) Inflows, and the Implied Reserve Need**

	Current Account <sup>1</sup>				Foreign Direct Investment <sup>1</sup>			
	For average member		For zone as a whole		For average member		For zone as a whole	
	Standard deviation <sup>2</sup>	Implied reserve need <sup>3</sup>	Standard deviation <sup>2</sup>	Implied reserve need <sup>3</sup>	Standard deviation <sup>2</sup>	Implied reserve need <sup>3</sup>	Standard deviation <sup>2</sup>	Implied reserve need <sup>3</sup>
CEMAC	12.7	5.6	3.8	2.8	10.5	4.3	3.7	2.8
WAEMU	3.5	2.5	1.7	1.3	0.9	0.6	0.6	0.5
CMA	4.3	1.7	...	...	2.3	0.9	...	...
CMA (excluding South Africa)	5.4	1.7	...	...	2.5	0.8	...	...
Comoros	5.8	4.3	5.8	4.3	0.3	0.2	0.3	0.2
ECCU	5.3	2.1	4.6	1.5	5.6	2.2	3.0	1.0
Sub-Saharan Africa	7.4	4.8	...	...	3.2	2.1	...	...

Source: IMF, International Financial Statistics database.

<sup>1</sup>As a share of GDP.

<sup>2</sup>Standard deviation, 1991–2001.

<sup>3</sup>Reserve coverage in months of imports needed to cover a two-standard-deviation shock. Based on average import shares to GDP during 1991–2003.

A more direct assessment of risks to CEMAC's oil revenues also supports the need for a substantial reserve base. In the above exercise, reserve needs reflect the past volatility of current account and FDI inflows. For CEMAC, the main source of the high standard deviations of these parts of the balance of payments has been the sharp increases in oil revenues and oil-related FDI since 1999. The CEMAC's high reserve and terms of trade variability shown in Table 5.3 also largely reflect the impact of the sharp increase in oil production and oil prices on export revenues. The key question, however, is whether these sharp increases can be considered as permanent—in which case, past variability would not signal large risks going forward, which would warrant especially high reserve coverage. Over the medium term, while oil production can still be broadly maintained, the main risk would concern a possible drop in oil prices. Accordingly, further sensitivity analysis was conducted to show the sensitivity of the current account and reserves to a possible shock in oil prices. As shown in Box 5.1, a one-standard-deviation fall in the oil price would already lead to a loss of reserves of about two months of imports in 2006.

## The Cost of Foreign Reserve Holdings<sup>14</sup>

The cost of holding reserves could have important implications for optimal reserve holdings. The higher these costs, the more important it would be to develop alternative shock absorbers, or to limit the incidence of adverse shocks, in order to contain reserve needs. At the same time, in the absence of quantified measures of the benefits from reserve holdings, this analysis cannot yield a clear-cut assessment of what reserve level would be optimal.

The calculation of the (net) cost of holding reserves requires information on the marginal product of capital and the return on reserves. The (net) cost of holding reserves can be calculated as the difference between the opportunity cost of reserve holdings and the return available on the assets held as reserves.<sup>15</sup> We approximate the opportunity cost of reserve holdings by the marginal product of capital in the zone, given that a euro that is added to the zone's reserves could have been used to raise production capacities of the

<sup>14</sup>We thank Se-Jik Kim for important contributions to this section.

<sup>15</sup>These costs of holding reserves for the country as a whole should be distinguished from the fiscal cost of holding reserves. Fiscal costs occur in case of sterilization of the monetary impact of larger reserves, through the increased sale of public sector debt to the private sector (at an interest rate exceeding the return on foreign reserves).



**Table 5.6. Cost of Holding International Reserves**

	1999	2000	2001	2002	2003	2004	Average
<b>CEMAC</b>							
Return difference (percent)	2.8	7.2	9.3	7.5	9.3	15.5	8.6
Marginal product of capital	6.8	13.0	13.6	11.3	12.3	18.5	12.6
EMLFR	4.0	5.8	4.3	3.8	3.0	3.0	4.0
Average reserves (billions of CFA francs)	349.7	659.2	889.8	948.4	1,019.0	1,263.3	
Cost of reserve holding (percent of GDP)	0.08	0.33	0.56	0.45	0.56	1.00	0.50
<b>WAEMU</b>							
Return difference (percent)	11.3	3.9	13.3	9.4	13.8	10.9	10.4
Marginal product of capital	15.3	9.7	17.6	13.2	16.8	13.9	14.4
EMLFR	4.0	5.8	4.3	3.8	3.0	3.0	4.0
Average reserves	2,029.6	2,320.1	2,813.0	3,379.6	3,695.4	3,732.8	
Cost of reserve holding (percent of GDP)	1.27	0.49	1.89	1.53	2.34	1.79	1.55

Source: IMF staff calculations.

Note: EMLFR=European marginal lending facility rate.

member countries.<sup>16</sup> This approach assumes that higher gross reserves in the zone are closely associated with higher net reserves rather than higher foreign borrowing, which is indeed the case: the increase in net reserves for the last decade explains 88 percent of the accumulation of gross reserves in CEMAC and 105 percent in WAEMU.<sup>17</sup> The return on reserves is proxied by the rate of return on assets in the French Treasury's operations account, given that—at least until recently—a very large share of reserves has been held in the operations account. The reserves in the operations account receive the European marginal lending facility rate (EMLFR), which amounted to about 4 percent on average for the period 1999–2005.

To estimate the marginal product of capital, we use various data on production technology. Assuming a standard Cobb-Douglas or constant elasticity of substitution (CES) production function, the marginal product of capital is equal to the capital income share multiplied by the output-capital ratio. Given the lack of reliable data on the capital stock in the

<sup>16</sup>This association assumes that available resources are used effectively for additional investments, without serious waste—which may be a strong assumption. If domestic capital markets functioned efficiently, lending rates would provide an alternative measure of the opportunity cost. However, both lending rates and treasury bill rates are biased downward by ongoing excess liquidity within the banking system.

<sup>17</sup>Higher gross reserves could instead have been attained through higher foreign borrowing, leaving net foreign assets unchanged. In that case, the more relevant cost of raising reserves would be the borrowing cost. This approach has been applied, for example, in Hviding and Ricci (2006).

zone, we follow Kim's (1998) approach to approximate the output-capital ratio without information on the capital stock. More specifically, we derive the output-capital ratio from the following relation:

$$\text{Investment/output} = (\text{growth rate} + \text{rate of capital depreciation}) * (\text{capital/output}).$$

Based on some earlier studies (for example, Bigsten and others, 1998; and Kim, 1998), we assume that the capital income share in the zone is 0.32 and the depreciation rate is equal to 0.05. Then, readily available information on the investment-to-GDP ratio can be used to generate estimates of the marginal product of capital.<sup>18</sup>

By that measure, holding reserves appears to carry a considerable cost in both the CEMAC and WAEMU regions (Table 5.6). The estimated average marginal product of capital for the period 1999–2004 is 12.6 percent for CEMAC and 14.4 percent for WAEMU.<sup>19</sup> Meanwhile, the rate of return is 4.0 percent for the same period. Accordingly, the net cost of holding a unit of reserves is 8.6 percent for CEMAC and 10.4 percent in WAEMU.<sup>20</sup> Using average reserves calculated for each period, the total cost of holding reserves amounted on average to 0.5 percent of annual GDP in CEMAC and 1.6 percent of GDP in WAEMU for 1999–2004.<sup>21</sup> It

<sup>18</sup>Hauner (2005) estimates the internal rate of return from investment in 100 countries for which data on capital stock are available, and uses the rate of return for the calculation of the cost of holding reserves.

<sup>19</sup>These estimates of the marginal product of capital for the two regions are substantially lower than those estimates for some African countries made by Bigsten and others (1998) for example, 32 percent for Ghana, 35 percent for Zimbabwe, and 22 percent for Kenya. It is a well-known puzzle as to why capital does not flow from rich countries with a lower marginal product of capital to poor countries with a higher marginal product of capital (Lucas, 1990). Some proposed solutions to the puzzle include differences in human capital, external benefits of human capital, capital market imperfections, and differences in investor protection.

<sup>20</sup>Reflecting diminishing marginal returns on capital stock, the marginal product of capital appears to have trended downward for both regions. The average marginal products of capital for the period 1995–98 were 14.5 percent for CEMAC and 19.5 percent for WAEMU, higher than those for the period 1999–2004. Of course, a large adverse output shock (inducing a negative growth) could push the marginal product of capital down below the trend (as happened in 1999).

<sup>21</sup>The sensitivity of the results to changes in key parameters can also be assessed. For the capital income share parameter, we may assume 0.25, a lower value compared with that in the benchmark case. In this case, reserve holdings would cost 0.3 percent of GDP in CEMAC and 1.1 percent in WAEMU. If we assume that the capital income share is 0.4, the cost of holding reserves rises to 0.7 percent of GDP in CEMAC and 2.1 percent in WAEMU. If the rate of capital depreciation is 0.08 instead of 0.05, the cost could amount to 0.7 percent of GDP in CEMAC and 2.4 percent in WAEMU.

also follows that reducing reserve coverage by one month of imports could yield about 0.3 percent of GDP as a result of higher investments.

## The Sources of Reserve Accumulation

The development of the level of international reserves is expected to depend, in particular, on external price developments, the exploitation of natural resources, financial inflows, and fiscal policies within the zone. Changes in net international reserves correspond to the overall balance of payments, in the absence of valuation changes:<sup>22</sup>

$$\Delta R = CA + NCFI^P + NCFI^G, \quad (5.1)$$

where  $CA$  represents the current account and  $NCFI^P$  and  $NCFI^G$  represent net capital and financial inflows of the private and government sectors, respectively. The current account, in turn, equals the sum of the net private sector savings and the fiscal balance including public current transfers from abroad:<sup>23</sup>

$$CA = (S^P - I^P) + (T - G). \quad (5.2)$$

- Changes in international commodity prices affect the current account both directly (for given trade volumes), and through the resulting volume response. The latter response is generally analyzed using import and export elasticities. However, the direct changes in net exports will only affect the current account to the extent that they are saved. In this context, two caveats are of importance. First, decisions on spending and savings are essentially intertemporal, and thus the impact of changes in foreign prices depends on whether these are deemed transitory or permanent.<sup>24</sup> Second, if the private sector is liquidity constrained, foreign price shocks will not affect net private sector savings.

<sup>22</sup>The latter have been relatively minor, as most reserves have been maintained in the operations account and thus denominated in French francs/euros. Gross reserves are affected also by changes in the BCEAO's external liabilities, in particular to the IMF.

<sup>23</sup>The two terms on the right-hand side include net private and government current transfers from abroad. The fiscal balance excludes capital grants.

<sup>24</sup>For example, in the case of a transitory improvement in the terms of trade, consumption smoothing would require part of the higher income to be saved, thereby improving the balance of payments. This is the Harberger-Laursen-Meltzer effect, which, however, could be offset by the intratemporal and intertemporal substitution effects resulting from the associated changes in relative prices and the real interest rate (see, for example, Agénor, 2000, p. 27).

- The impact of changes in commodity exports based on the exploitation of natural resources is essentially similar to that of a terms of trade improvement—boosting reserves to the extent that the proceeds are saved.
- Because the private sector has little direct access to international capital markets, capital and financial inflows in low-income countries are generally dominated by FDI flows, net foreign public borrowing, and debt relief. The resulting balance of payments impact will depend on the degree and timing of the impulse to spending generated by the resource transfer.
- Finally, changes in reserve accumulation could be linked directly to domestic government financing (which, in the absence of changes in arrears, equals  $T-G+NCFI^G$ ). Indeed, if the private sector is liquidity constrained, the impact of commodity price shocks on the current account and the overall balance of payments would strongly depend on whether governments tend to spend the resulting windfall revenue or adopt an expenditure smoothing strategy.

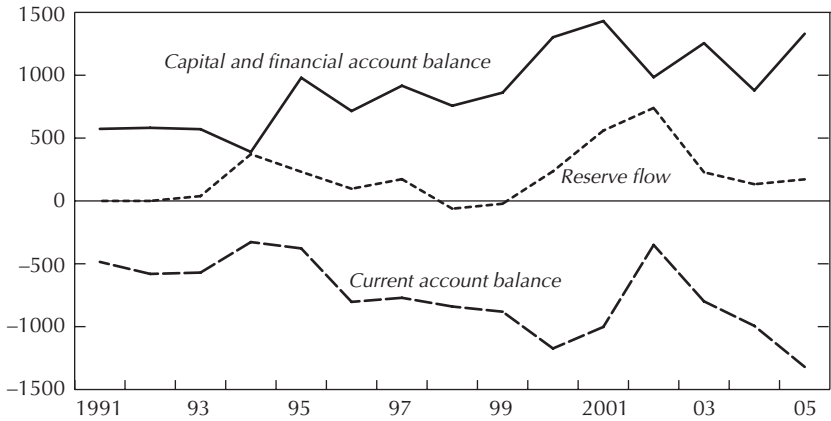
Overall balance of payments developments in WAEMU since 1994 do not show a clear trend (Figure 5.6). In nominal terms, net reserves have risen in almost every year, but the size of the annual accumulation has varied widely, associated, in particular, with changes in the current account.

The reserve path over time confirms the importance of terms of trade effects. Reserve changes do not appear to be associated strongly with the fiscal outcomes (Figure 5.7). In any case, domestic government financing has been relatively stable compared with the large swings in reserves accumulation. Although changes in the financial account also do not appear clearly related to the annual buildup of reserves, the reserve outflows shortly before the 1994 devaluation (not shown in the figure) were in part driven by a sharp shifts in financial flows.<sup>25</sup> The association between reserves and the terms of trade and the current account is evident from the data (Figure 5.8).<sup>26</sup> For example, the terms of trade and reserves accumulation increased

<sup>25</sup>The impact of interest rate policies on reserves is likely muted by the absence of external capital mobility and efficient domestic capital markets (that would allow for transmission to reserves through the level of spending and, thereby, (net) imports).

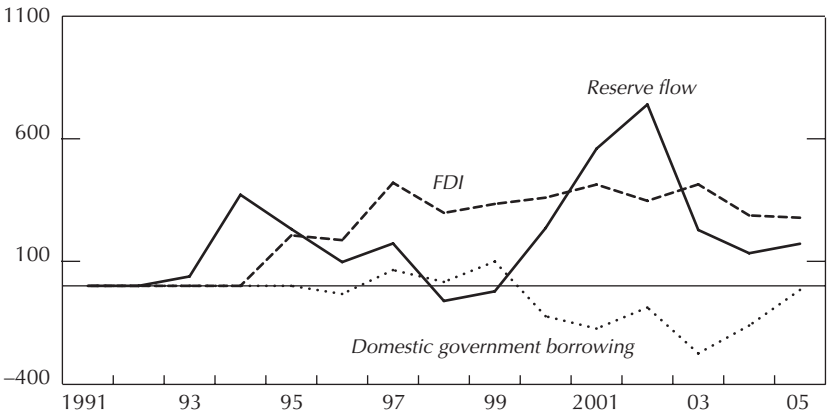
<sup>26</sup>More generally, as the CFA franc zone countries are heavily reliant on commodity exports (and imports), the domestic price of these commodities may be more relevant as an indicator of competitiveness than measures of (real or nominal) effective exchange rates. For goods whose prices are determined in world markets, the specific trading partners—and their exchange rates, prices, and costs—are unlikely to have much impact on the trade prices affecting importers and exporters in the CFA franc zone.

**Figure 5.6. WAEMU: Balance of Payments**  
(In billions of CFA francs)



Sources: IMF, World Economic Outlook database; and authors' calculations.

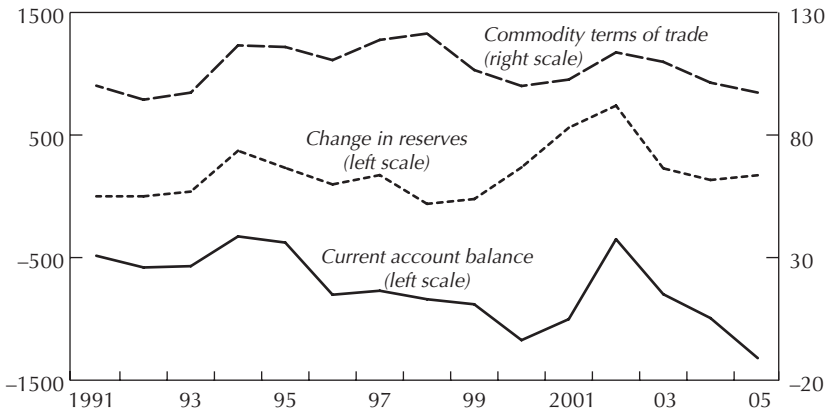
**Figure 5.7. WAEMU: Financial Determinants of Reserve Growth**  
(In billions of CFA francs)



Sources: IMF, World Economic Outlook database; and authors' calculations.

in 1997 and 2002 with peaks in the price of cocoa—the region's largest export commodity. This result confirms the importance of considering reserve coverage in light of WAEMU's vulnerability to current account and terms of trade shocks.

**Figure 5.8. WAEMU: Trade Determinants of Reserve Growth**  
(In billions of CFA francs)

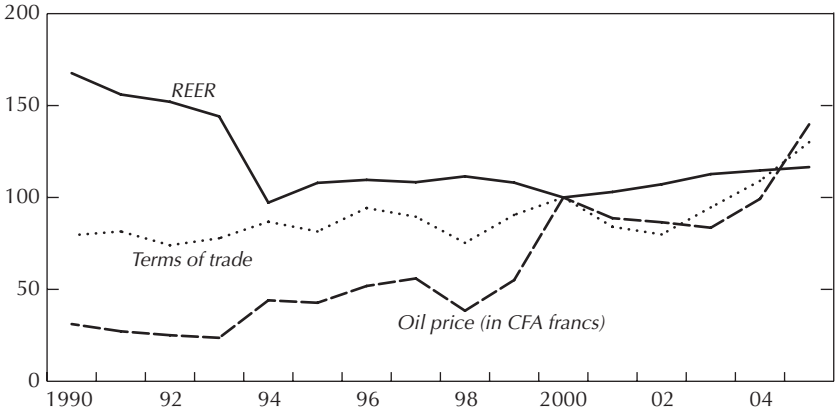


Sources: IMF, World Economic Outlook database; and authors' calculations.

For the CEMAC area, the main force behind recent developments has been the rapid increase in oil production, in conjunction with rising oil prices. About three-quarters of goods exports and more than 65 percent of exports of goods and nonfactor services consist of oil—and both ratios have gradually risen since the early 1990s. Accordingly, the terms of trade have improved significantly both at the end of the 1990s and again since 2002 (Figure 5.9), with sharply rising oil prices (measured in CFA francs). The oil price, by itself, explains about two-thirds of the variation in the terms of trade since 1991.

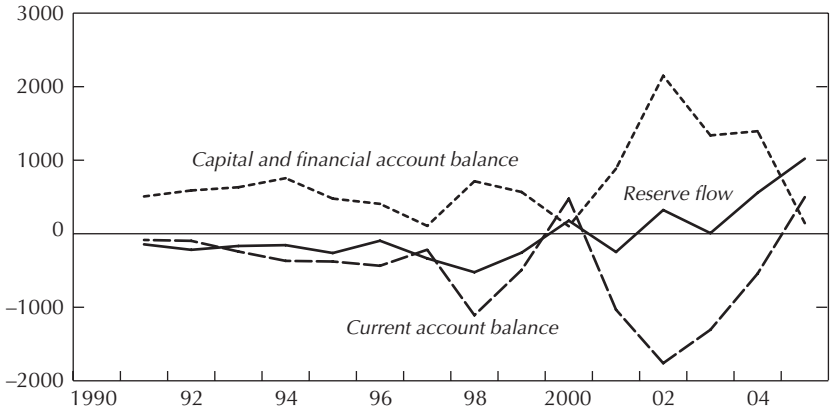
Reserve accumulation in CEMAC has been supported by the rising oil revenues and FDI inflows, and by the improved fiscal balance. The reserve inflows since the 1990s have been associated with rising oil-related inflows even though the current account has not shown a clear trend (Figure 5.10). What also stands out, and helps explain the previous point, is the current account's strong negative correlation with (oil-related) FDI. FDI has increased sharply since 2000 (shown in Figure 5.11). Spending based on FDI is reflected in sharply higher private sector net dissavings and imports, worsening the current account. On balance, the oil boom appears to have boosted reserves through two distinct channels. First, part of the fiscal windfall from the higher oil prices has been saved. Because these savings are, to a large extent,

**Figure 5.9. CEMAC: Exchange Rates and the Terms of Trade**  
(2000 = 100)



Sources: IMF, World Economic Outlook database; and authors' calculations.

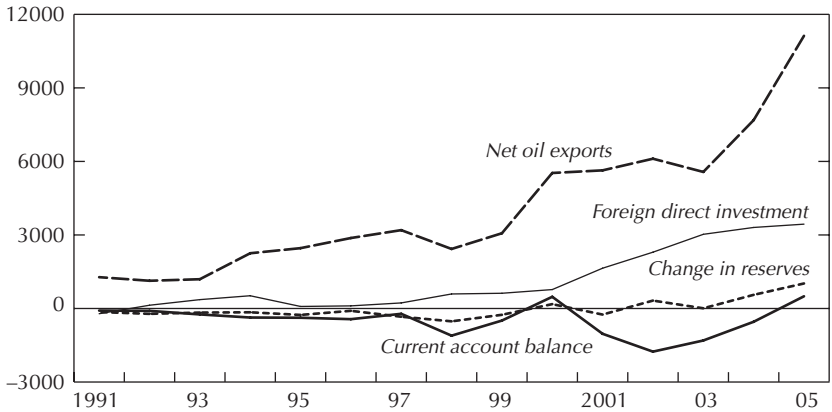
**Figure 5.10. CEMAC: Balance of Payments**  
(In billions of CFA francs)



Sources: IMF, World Economic Outlook database; and authors' calculations.

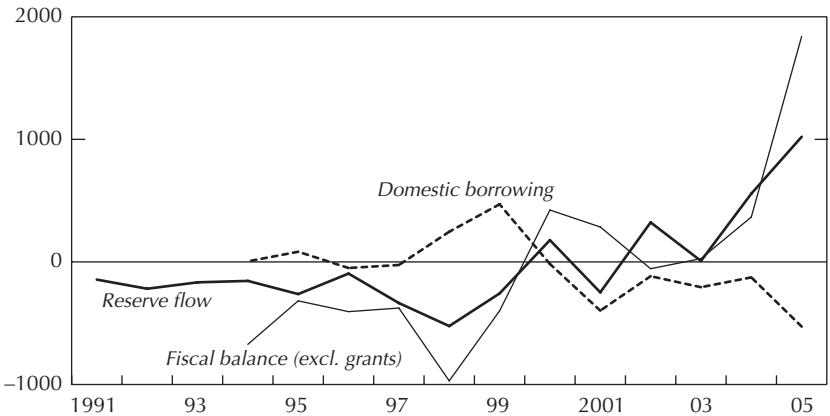
reflected in lower domestic financing (rather than in lower foreign financing), they led to higher international reserves (Figure 5.12). Second, there is a clear positive correlation between reserve accumulation and FDI, which suggests that not all of these inflows have been

**Figure 5.11. CEMAC: Other Determinants of Reserve Growth**  
(In billions of CFA francs)



Sources: IMF, World Economic Outlook database; and authors' calculations.

**Figure 5.12. Fiscal Determinants of Reserve Growth**  
(In billions of CFA francs)



Sources: IMF, World Economic Outlook database; and authors' calculations.

reflected in higher spending—leaving a positive net effect on the balance of payments. Unfortunately, given the short time series and the strong correlation between oil prices and FDI inflows, the relative importance of these two channels would be hard to assess.



## Reserve Adequacy and CEMAC Oil Funds

For CEMAC countries, the establishment in 2006 of oil-related Funds for Future Generations (FFGs) and Oil Stabilization Funds (OSFs) at the BEAC raises further issues regarding reserve adequacy. CEMAC oil producers (all member countries except the Central African Republic) have different oil resource endowments and are at different stages in the oil production cycle. But in most countries, oil reserves are expected to be largely depleted over the coming decade or so. It therefore makes sense for each of them to set aside some portion of current oil receipts for future generations.

A framework for facilitating oil-based savings for future generations should provide adequate financial incentives for the governments in the member countries. The repatriation requirement for foreign exchange proceeds, combined with the pooling of reserves at the BEAC, implies that most of the region's oil inflows add to the BEAC's reserves. As a counterpart, CEMAC governments build up CFA franc deposits at the BEAC. However, remuneration on regular deposits is low, and as a result some CEMAC member countries had taken several ad hoc initiatives, some of them outside of the BEAC, to help ensure adequate remuneration given the need to preserve the value of their oil wealth.<sup>27</sup>

To increase the incentives for CEMAC oil producers to repatriate foreign exchange earnings, the BEAC has established remunerated FFGs and OSFs. In 1998, the CEMAC ministers agreed on the necessity to generate savings out of oil revenues and to establish FFGs. Chad, Equatorial Guinea, and Gabon established such funds, outside of the BEAC for Chad and Equatorial Guinea, and in the form of an account at the BEAC but with minimal contributions in the case of Gabon. Concerned about the need to maintain the principle of reserve pooling, in 1999 CEMAC ministers agreed on further implementing rules for the FFGs and on the creation of OSFs.<sup>28</sup> According to these rules, which were formally adopted by the BEAC's administrative board on July 12, 2001, the funds would be established at the BEAC and would

<sup>27</sup>Until 2006, remuneration was linked to the amount of outstanding advances provided by the BEAC (each year, member states can draw up to 20 percent of the preceding year's revenue). Only the portion of deposits in excess of these advances could be remunerated, and in practice only Equatorial Guinea and Gabon had such excesses.

<sup>28</sup>CEMAC Ministerial Committee, "Note d'Orientation sur la Mise en Oeuvre des Fonds de Réserve pour les Générations Futures et du Mécanisme de Stabilisation des Recettes Budgétaires," September 20, 1999.

be remunerated. In the case of Chad, the BEAC also agreed on a set of conventions establishing an OSF and an FFG. The Chadian decree specified that 10 percent of all royalties and dividends received by the state would be allocated to the FFG. This was similar to the conditions set in the 1998 Gabonese law establishing an FFG. In 2006, however, Chad's regime based on fixed savings rules was no longer tenable, and the initial savings arrangements were replaced by a new system of remunerated deposits at the BEAC.

The regime introduced in 2006 includes four types of remunerated term deposits held by the member governments at the BEAC. The funds are denominated in CFA francs and managed at the BEAC, and remunerated at a rate linked to the returns of the BEAC's operations account with the French Treasury, with penalties for early withdrawals (Table 5.7) The deposit types are: (1) deposits held in the context of a Fund for Future Generations, with a minimum maturity of five years, (2) deposits held in the context of a Stabilization Fund, with a six-months maturity, (3) regular one-month deposits, and (4) one-month deposits held by a member country that is drawing on the advances provided by the BEAC.

However, after a year or so, use of these funds, FFGs in particular, has remained low. At end-2006, FFGs for Gabon and Equatorial Guinea amounted to only 3 percent of total foreign reserves (equivalent to about \$7.6 billion) and OSFs for Gabon, Equatorial Guinea, and Chad to 30 percent of total foreign assets. Member countries mention the relatively low remuneration (in comparison with CEMAC-wide average inflation of about 5 percent in 2006) and the lack of investment flexibility as reasons for the low use of FFGs.

Within the frame of the recently revised operations account convention with France, the counterpart of FFGs will be excluded from the pool of foreign assets on which the new ceiling of 50 percent that can be invested in the operations account will be calculated. In practice, this will mean that (1) the foreign-exchange counterpart of FFGs can be taken

**Table 5.7. Remuneration of Government Deposits at the BEAC**

	Apr. 2006	Jun. 2006	Aug. 2006	Oct. 2006	Dec. 2006	Mar. 2007
Regular government deposits	1.4	1.7	2.4	2.6	2.7	2.8
Oil Stabilization Funds	1.7	2.0	2.7	2.9	3.0	3.1
Funds for Future Generations	1.9	2.2	2.9	3.1	3.2	3.3
Memorandum item:						
Remuneration on the operations account	3.5	3.8	4.0	4.3	4.5	4.8

Source: BEAC.

out of monetary reserves and invested in longer-term assets, and (2) the remuneration on these funds no longer will need to be linked to that on the operations account.

This need to separate FFGs from monetary reserves within the BEAC's accounts has important implications for the amount of fiscal savings to be channeled to these funds. Although current reserve levels seem adequate, oil-based savings should not be detrimental to overall reserve adequacy. In addition, given that oil represents 80 percent of the region's exports, oil-related inflows will have to continue to form the bulk of reserve accumulation. Accordingly, mechanisms, including a satisfactory burden-sharing formula across CEMAC members, should be put in place to ensure that a sufficient part of the export receipts from oil will continue to be included in the BEAC's common reserve pool as a backing for the fixed exchange rate.

## The Role of the Convertibility Guarantee

The effects of the guarantee of convertibility by the French Treasury are multifaceted, possibly far-reaching, and, mostly, hard to quantify. By enhancing the credibility of the exchange rate peg, and thereby its credibility as a monetary anchor, the guarantee helps anchor exchange rate and inflation expectations, affecting interest rates, capital flows, and the investment climate. Arguably, without the French convertibility guarantee, the zone would have had to build up larger reserves to maintain the peg. However, it is difficult to gauge the extent of the reserve savings due to the French convertibility guarantees.

The return on reserves does not appear to have been dampened by the requirement to hold most reserves in the operations account. Reserves in the operations account are remunerated at the EMLFR, which averaged 3 percent in 2004 and 2005. An alternative rate of return proxied by the three-month euro interbank offered rate (EURIBOR), remained on average at about three-quarters of one percentage point below the EMLFR.

The benefits from the convertibility guarantee could be substantial. As discussed earlier, if the guarantee could be quantified and credit were readily available, one could, in principle, add the contingent credit line to the reserves of the BCEAO and the BEAC to calculate adjusted reserve adequacy indicators. As a tentative illustration, we consider the case where both regions save reserves equivalent to two months of imports. So the CEMAC's reserves would have been 5.8 months of current imports in 2005 without the convertibility guarantee, instead of

**Table 5.8. Benefit of Convertibility Guarantees**

	Benchmark Case (Two Months of Imports)							One- Month Average	Three- Month Average
	1999	2000	2001	2002	2003	2004	Average		
CEMAC	0.17	0.44	0.62	0.54	0.57	1.01	0.56	0.28	0.84
WAEMU	0.60	0.22	0.75	0.51	0.76	0.61	0.57	0.29	0.86

Source: IMF staff calculations.

**Table 5.9. Comparisons of Inflation Performance, 1997–2005<sup>1</sup>**

	Annual Average		Standard Deviation	
	Average <sup>2</sup>	Median <sup>2</sup>	Average <sup>2</sup>	Median <sup>2</sup>
CEMAC	2.8	2.6	3.2	2.7
WAEMU	3.0	2.4	4.0	2.6
CMA (excluding South Africa)	7.3	7.3	2.5	2.5
Comoros	3.4	3.4	1.8	1.8
ECCU	1.9	1.6	1.8	1.8
Sub-Saharan Africa	16.8	6.6	14.1	3.4

Source: IMF, World Economic Outlook database.

<sup>1</sup>Based on the consumer price index.

<sup>2</sup>Unweighted average (median) for the countries in the group of the average (standard deviation) of 1997–2005 inflation per country.

3.8 months. In this case, the benefit of the convertibility guarantee is 0.56 percent of regional GDP on average for 1999–2004 in the CEMAC region and 0.57 percent of GDP for the WAEMU region (Table 5.8). In view of the above discussion, the reserve saving in CEMAC could be greater than in WAEMU.

In addition, the convertibility guarantee has likely been key to the relatively favorable inflation performance in the CFA franc zone. Inflation in the area compares very favorably with performance in sub-Saharan Africa as a whole (Table 5.9). By supporting confidence in the peg, the convertibility guarantee has likely helped anchor exchange rate and inflationary expectations.

There is little scope for an assessment of the impact of the convertibility guarantee on investor confidence. Some evidence is provided by investment ratings. A 2004 Standard & Poor's Research Note argued that

Reflecting the strength of the arrangements backing the CFA franc and the guarantees of convertibility from the Treasury of the Republic of France, potential ratings of the zones' central banks (and with that the rating ceiling for the respective zone) could be investment grade—significantly higher than

the public ratings currently assigned to individual member states, which all are in the “B” category. That said, BEAC’s and BCEAO’s ratings would not be same as its guarantor, the French Treasury (AAA/Stable/A–1+) due to the limited nature of the guarantees (Standard & Poor’s, 2004).

## Concluding Remarks

Maintaining a fixed exchange rate in the presence of sizable terms of trade shocks requires a significant buffer in the form of foreign exchange reserves. In terms of imports of goods and nonfactor services, reserve coverage of at least four months would seem advisable for CEMAC, whereas for WAEMU slightly lower coverage could be within acceptable limits. With limited capital mobility, and in the absence of substantial private sector external debt, measures of reserve adequacy based on monetary aggregates or short-term debt seem less pertinent. Nonetheless, experience at the time of the 1994 devaluation and the 2000 introduction of the euro illustrated that capital flight does pose some risk. Against this background, WAEMU and CEMAC reserve levels seem broadly adequate.

The importance of a careful evaluation of the proper reserve level is heightened by the considerable cost attached to holding reserves. For example, the net cost of holding a unit of reserves is estimated at 10.4 percent in WAEMU. The total costs of holding reserves then amounted to 1.6 percent of annual GDP (on average for 1999–2004).

The exploitation of CEMAC’s oil reserves has provided an opportunity for raising reserves to an appropriate level. Setting up designated FFGs can help provide appropriate mechanisms for further promoting and maintaining savings. However, given that savings channeled through FFGs should not be part of reserves, a sufficient proportion of savings should remain under the control of the monetary authorities for short-term use.

The importance of the convertibility guarantee is hard to assess. In principle, an (unlimited) line of credit reduces the need for reserve holdings. If it was indeed readily available, this guarantee could help explain the relatively low levels of CEMAC’s reserve holdings in the past compared to traditional benchmarks. It is, however, harder to reconcile with the fact that in WAEMU (and in the Comoros), and since 2004 also in CEMAC, reserves have substantially exceeded such benchmarks. One possible interpretation is that both zones have a strong preference for avoiding any need to draw on this guarantee, and that it is best perceived as a last-resort instrument, which in practice is likely to be quite limited. Further, the

guarantee does not appear to have dampened the rate of return on foreign reserve holdings and has most likely helped anchor inflation expectations and maintain investor confidence in the zone.

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