Monetary Policy in the Franc Zone

Country-level Credit Policy

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5.1   Introduction

The official goals of monetary policy in the Franc Zone are to maintain price stability and
maintain an appropriate level of foreign reserves, which are the pooled foreign exchange
reserves of the member states (IMF 2001: 17). At the zone level the BCEAO uses a mixture
of indirect policy instruments (the discount rate mechanism, a repurchase agreement facility

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Helsinki. Remaining errors are as always the responsibility of the authors.

and a system of periodic auctions of central bank bills)[2] to pursue these goals. However, the monetary policy at the zone level will not necessarily suit all the member states in the zone. Table 5.1 shows the cross-country correlations between some of the macroeconomic variables that the BCEAO appears to react to at the zone level (Shortland and Stasavage 2003). It can be seen that output gaps and inflation rates are not strongly correlated within the zone.[3] There may therefore be a need to complement the interest rate setting at the zone level with further policies to suit the economic situation in individual Franc Zone member countries.

In the past country-level credit planning was the main monetary policy tool in the Franc Zone (Honohan 1990: 3). The monetary programming exercise determined planned credit growth in each member country and the programme was implemented through credit ceilings on government borrowing and central bank refinancing of private sector credit. Credit growth in one country did not substantially spill over from one country to the other countries in the zone, as the capital markets were not well integrated.

Despite the recent efforts to move towards indirect tools of monetary policy and away from credit planning, the BCEAO retains a number of policy tools, which would enable it to continue to pursue independent credit policies for each member country. The tools of credit ceilings on governments and limits on the rediscounting of bank loans have been strengthened since the late 1980s and a third potential policy tool has been introduced: reserve requirements on banks. Capital market integration also remains underdeveloped. A weak

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2 These are relatively infrequent. For example during 2000 there were no auctions of central bank bills.

3 This is also true for the pre 1994 period as shown by Bayoumi and Ostry (1997).

system of payments and delivery and a lack of confidence among banks about other banks' solvency prevent inter-bank lending, especially across national borders (IMF 2001: 19). Country-level credit planning is therefore still a potential monetary policy mechanism.

The policy framework for the Franc Zone is discussed in a number of recent publications (for example, Union Monetaire Ouest Africaine 1989, IMF 2001). There is also some empirical literature on monetary policy formation in the Franc Zone (for example, Fielding 2002, Savvides 1998). However, there are no recent examinations of how monetary policy is conducted at the national level: the existing studies are based on data before the devaluation of the CFA franc in 1994. The aim of this study is to address the question whether a systematic country-level credit policy has been implemented since 1995.

BCEAO policy tools

The first policy tool of the BCEAO that could be used to achieve balanced money growth is the enforcement of credit ceilings on government borrowing (IMF 2001: 18). The BCEAO statutes limited central bank credit to each member government to 20 per cent of the previous year's fiscal receipts.[4] However, it is not clear to what extent the central bank could resist governments' credit demands in practice. For example the annual data provided by the IMF show that the monetary authority's claims on governments (excluding IMF loans which are

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4 In September 1998 the council of ministers decided to phase out central bank financing of government budget deficits entirely by 2002, except for within-year advances to smooth cash-flows.

administrated by the BCEAO and lent on to the national governments) exceeded 20% of government revenues in Togo in 1995 and 1996 and in Côte d'Ivoire in 1994.

If the BCEAO's ability to resist government borrowing was limited, it may have restricted private sector borrowing in response to rising government borrowing, by imposing ceilings on central bank refinancing of private sector credit. The BCEAO's control over lending to the private sector has been strengthened considerably in recent years. Until 1989 the BCEAO had a statutory obligation to refinance all short-term agricultural credit granted by commercial banks, as theoretically these would be 'self-liquidating' as the harvest was sold. This law was amended in 1989, because it was found that the system was abused and the short-term credits were not repaid as expected. Since then agricultural credits have been treated in the same way as ordinary credits and a single ceiling has been applied (Union Monetaire Ouest Africaine 1989).

The third policy tool at the disposal of the BCEAO is the use of reserve requirements. Liquidity ratio rules require banks to hold a certain fraction of their assets as reserve deposit and the system of setting reserve requirements has been in place since 1993 (IMF 2001). According to the IMF Country Report in 2001 reserve requirements are used as a policy tool on a country-by-country basis 'taking into account the disparities in the progression of bank liquidity positions in each country' (IMF 2001: 17). However, the policy has not been used actively during the 1990s. Reserve requirements were changed only infrequently (twice each in Mali and Burkina, three times in Togo and four times in Senegal and Côte d'Ivoire for 1995 to 2000). Moreover, actual reserves and required liquid reserves are only weakly correlated. An examination of banks' liquid reserves shows that actual reserves tended to exceed required reserves, sometimes by as much as a factor of ten, but during periods of hikes

in the required reserve ratio, actual reserve ratios were lower than required reserve ratios in Burkina, Côte d'Ivoire, Senegal and Togo. It is possible though that the BCEAO used 'moral suasion' as a policy tool to influence banks' reserve levels, using the credible threat of imposing higher liquid reserve requirements.

Given that the BCEAO has a number of policy tools, which may have been used in different combinations, looking at the use of the policy tools individually may give misleading results. We therefore examine to what extent the BCEAO controls private sector credit in the Franc Zone member countries, without focusing on a particular policy tool. Did the BCEAO reduce total credit in response to emerging inflationary pressure in individual economies? Did the BCEAO sterilize foreign capital inflows and foreign borrowing? And did the BCEAO react to increased government borrowing by restricting private sector credit?

We use data on Burkina Faso, Côte d'Ivoire, Mali, Senegal and Togo, which represent the bulk of output of the West African monetary union and for which monthly data (and quarterly data on GDP) are available. The analyses are based on monthly or quarterly data from 1995 to 2000, that is, since the devaluation of the CFA franc. We exclude observations before 1995 because in the run-up to the devaluation of the CFA franc monetary policy was dominated by the concern over peg stability. Moreover, most of the time series only become stationary after the devaluation. The end date of 2000 is used because the GDP data from Fielding *et al.* (2003) are only available until the end of 2000.

The chapter is structured as follows. The following section discusses two previous studies of monetary policy in developing countries, which employ a similar methodology to the one used in this chapter. Section three discusses the data and methodology. Section four examines

whether the BCEAO has systematically influenced domestic credit and credit to the private sector in response to monetary policy target variables. Section five concludes.

5.2 Previous Studies of Monetary Policy in Developing Countries

There are a number of previous studies of monetary policy making in developing countries, for example, Connolly and Taylor (1979), Fry (1993 and 1995), Kamas (1985 and 1986), Savvides' (1998), Fielding (2002). The following discussion focuses on the 1995 study by Fry and the 1998 study by Savvides. The 1993 and 1995 studies by Fry examined monetary policy in six Pacific Basin developing countries with a control group of 21 other developing countries using annual data from 1960 to 1988. Fry's monetary policy reaction function was specified as:

$$\Delta \textbf{DC/Y} = \beta_0 + \beta_1 \, \Delta \textbf{NFAY/Y}_{\textbf{it}} + \beta_2 \, \Delta \textbf{NFAY/Y}_{\textbf{it-1}} + \beta_3 \, (\pi\text{-}\pi^*)_{\textbf{it}} + \beta_4 \, (\pi\text{-}\pi^*)_{\textbf{it-1}} + \beta_5 \, \textbf{oilinf}_{\textbf{t}}$$

$$+ \, \beta_6 \, \textbf{oilinf}_{\textbf{t-1}} + \beta_7 \Delta \textbf{CGY}_{\textbf{it}} + \beta_8 \, \Delta \textbf{CGY}_{\textbf{it-1}} + \beta_{10} \, \textbf{REXCHL} + u_{\textbf{it}}$$

The dependent variable is the change in domestic credit scaled by GDP to account for size effects (ΔDC/Y). The dependent variables are all potential objectives of monetary policy or economic variables the central bank needs to take into account when determining domestic credit. ΔNFAY/Y$_{it}$ is the change in net foreign assets of the banking system. The variable is included to examine whether the central bank sterilizes the effects of the accumulation of foreign assets. (π-π^*) is the differential between domestic and foreign inflation as inflation rates have to converge for long run currency stability. The central bank may either accommodate or resist the effect of foreign price shocks, which are proxied by oil-price inflation (oilinf). The central bank may also react to increases in government borrowing

(ΔCGY) by cutting back lending to the private sector. If the central bank completely neutralized the public sector borrowing then the coefficient on this variable would be zero, partial neutralization would result in a coefficient less than one. A further variable that the central bank may react to is the lagged real exchange rate (REXCHL). The impact of the variable is ambiguous. Depreciations are inflationary and therefore may necessitate a restrictive credit policy. However, real depreciations raise the cost of servicing foreign debts and may therefore increase public sector borrowing.

The estimation method is iterated 3-stage least squares (I3SLS). The I3SLS method estimates a system of structural equations where some equations contain endogenous variables. In the first stage instrumented values of the endogenous variables are developed. The second stage obtains a consistent estimate of the covariance matrix of the equation disturbances. In the third stage a generalized least squares type estimation is performed using the covariance matrix estimated in the second stage and the instrumented values in place of the endogenous variables. Cross equation restrictions were imposed on all coefficients except the intercepts. The endogenous variables are ΔNFAY/Y_{it} and $(\pi-\pi^*)_{it}$. The instruments for ΔNFAY/Y_{it} and $(\pi-\pi^*)_{it}$ are all exogenous variables as well as lagged values of the endogenous variables, as well as US inflation, the world interest rate, world economic growth, lagged values of real GNP growth and money (M2) growth.

Fry's results showed that developing country central banks react systematically to a number of economic variables. In the full sample the countries sterilized a small fraction (17 per cent) of foreign capital inflows and tended to accommodate domestic inflation and increases in oil prices. Central banks also accommodated most of the governments' credit requirement, contracting credit to the private sector by only 12 per cent of the increase in the governments'

credit requirements. The Pacific Basin countries on the other hand sterilized 41 per cent of foreign capital inflows, were less accommodating regarding oil price inflation and neutralized two thirds of government borrowing.

A highly relevant application of Fry's methodology is Savvides' (1998) study of the development of domestic credit in five SSA countries including three countries in the Franc Zone.[5] Savvides (1998) estimated the following regression, also using iterated 3-stage least squares (3SLS) with annual data from 1968–1991 for Côte d'Ivoire and Gabon and 1975–1988 for Cameroon.

$$\Delta \textbf{DC/Y} = \beta_0 + \beta_1 \, \Delta \textbf{NFAY/Y}_{\textbf{it}} + \beta_2 \, \Delta \textbf{NFAY/Y}_{\textbf{it-1}} + \beta_3 \, (\pi\text{-}\pi^*)_{\textbf{it}} + \beta_4 \, (\pi\text{-}\pi^*)_{\textbf{it-1}} + \beta_5 \, \textbf{oilinf}_{\textbf{t}}$$

$$+ \beta_6 \, \textbf{oilinf}_{\textbf{t-1}} + \beta_7 \Delta \textbf{CGY}_{\textbf{it}} + \beta_8 \, \Delta \textbf{CGY}_{\textbf{it-1}} + \beta_{10} \, \textbf{REXCHL} + \beta_{11} \, \textbf{DET/Y}_{\textbf{t-1}} + u_{\textbf{it}}$$

The Savvides regression therefore uses all the explanatory variables of the Fry regressions, and also tests whether the central bank reacts to growing external indebtedness (DET/Y) by restricting the growth of domestic credit. Cross-country equality restrictions were imposed on all coefficients except the intercept. $\Delta \text{NFAY/Y}_{it}$ and $(\pi\text{-}\pi^*)_{it}$ were treated as endogenous variables and all the exogenous variables as well as lagged values of the endogenous variables were used as instruments. Savvides results show that there was no systematic sterilization of reserve accumulations in the Franc Zone member countries and that the (lagged) inflation differential and oil price inflation were accommodated. However private sector credit was restricted to some extent as public sector credit was expanded. With respect to rising external

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[5] The countries in the Savvides paper are Cameroon, Côte d'Ivoire, Gabon, Ghana and Nigeria, but a separate regression is performed for the Franc Zone countries.

indebtedness the central bank action was stabilizing. Finally the BCEAO responded to a real depreciation of the CFA franc by increasing domestic credit.

5.3 Data and Methodology

We use the I3SLS methodology and most of the explanatory variables suggested by Fry (1995) and Savvides (1998). However, there are a number of important differences in our regressions.

(1) We use monthly data as the BCEAO makes interest rate policy decisions on a monthly basis. Therefore the analysis based on monthly data is consistent with the timing of BCEAO board meetings and it allows us to focus our examination on the period after the devaluation of the CFA Franc.

(2) Our data are from 1995 to 2000. The starting point of January 1995 was chosen to examine monetary policy after the devaluation of the CFA franc. Moreover, several of the time series only become stationary in 1995 or have large structural breaks in the months following the devaluation. The end point of 2000 was dictated by the availability of the quarterly output gap data, taken from Fielding *et al.* (2003), as the IFS only records annual GDP data.[6] All variables other than the output data are taken from the International Financial Statistics database.

(3) We do not use domestic credit scaled by GDP (**DC/Y**) as the dependent variable, but private sector credit. The total credit series (***32...ZF…) is calculated by the IFS as the sum of claims government, claims on the private sector and claims on other

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6 To get a monthly dataset we used the quarterly figure for the three months in the quarter.

financial institutions. In the Franc Zone central bank credit to the government (**CGY**) is a very large part of total credit to government, especially because IMF credits are channelled through the BCEAO. **CGY** is therefore a major component of total credit and should not be used as an explanatory variable in the domestic credit regression. We circumvent this problem by using credit to the private sector/GDP (**PSC/Y**) as the dependent variable.[7] This still allows us to examine whether the BCEAO offsets government borrowing from the central bank, which would be indicated by a negative coefficient for the **CGY** variable. In the **CGY** variable used in the regressions we remove the component of the monetary authorities' claims on the government that is accounted for by IMF credits, to get a purer proxy for government borrowing from the central bank.

(4)   Both the Fry (1995) and Savvides (1998) regressions include a variable tracking the changes in the real exchange rate. We exclude this variable in our regressions, as the variable is not relevant for the Franc Zone countries after the devaluation of 1994. Any movement in the real exchange rate would be captured by the inflation differential.

(5)   We replace the variable of the level of foreign debt/GDP (**DET/Y**) with the change in the level of foreign debt/GDP (Δ**DET/Y**), because the DETY series is not stationary in Senegal and Togo unless it is differenced once. All other variables suggested by Fry (1995) and Savvides (1998) are already in differences and are stationary.[8]

(6)   As we cannot reject the null hypothesis of no residual auto-correlation in the regression for Togo and only marginally reject it for Côte d'Ivoire we also include a lagged

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7   IFS line ***32D…ZF… claims on private sector from 'Monetary Survey'.

8   According to both the augmented Dickey Fuller and the Phillips Perron tests.

dependent variable in the regressions. This corrects the problem of residual auto-correlation in all country regressions.[9]

(7)   To account for potential seasonal effects in the monthly series we also include the dependent variable lagged by a year. Part of private sector credit may well be linked to the agricultural cycle and we do indeed find there to be statistically significant seasonal effects particularly in Burkina Faso and Senegal.

(8)   Lastly we test whether the cross-equation restrictions are valid and as some of the constraints can be rejected we re-estimate the equations without the constraints on the coefficients.

There are two further variables, which are potential target variables for the BCEAO. First the BCEAO may respond to a contraction in economic activity by expanding domestic credit and vice versa. However, the only proxy for GDP data is the quarterly series constructed by Fielding *et al.* (2003). A monthly interpolation of any output gap measure based on these quarterly data is unlikely to be a good proxy of the data on economic activity available to the BCEAO at its monthly meetings.[10] Unfortunately data on unemployment and industrial production, which could serve as an alternative proxy for information available to the BCEAO are only published quarterly or annually, if at all.[11]

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[9] Using a Lagrange Multiplier test (Greene 2003: 271).

[10] When a measure of the output gap based on the Fielding data is included its coefficient is never significant.

[11] Industrial production is available quarterly for Côte d'Ivoire and Senegal only and unemployment is available annually for Côte d'Ivoire only (IFS).

Second, given the constraints of the peg the BCEAO may also be sensitive to a loss of its centrally held foreign exchange reserves. BCEAO policy rules require credit restrictions whenever gross foreign assets fall below 20 per cent of sight liabilities. However, the 20% ratio was not breached in the period under investigation and the variable was not significant in any specification of the regressions. We therefore do not include it in the regressions reported below.

The subsequent regression therefore tests whether the BCEAO reacts to the following monetary policy target variables: the change in banks' foreign exchange reserves/GDP, the change in the level of foreign debt/GDP, the countries' inflation differentials with France, the change in central bank credit to the government/GDP[12] and oil price inflation.

$$\Delta\textbf{PSC/Y} = \beta_0 + \beta_1 \, \Delta\textbf{PSC/Y}_{\textbf{it-1}} + \beta_1 \, \Delta\textbf{PSC/Y}_{\textbf{it-12}} + \beta_3 \, \Delta\textbf{NFAY/Y}_{\textbf{it}} + \beta_4 \, \Delta\textbf{NFAY/Y}_{\textbf{it-1}} +$$

$$\beta_5 \Delta\textbf{DET/Y}_{\textbf{t-1}} + \beta_6 \, (\pi\text{-}\pi^*)_{\textbf{it}} + \beta_7 \, (\pi\text{-}\pi^*)_{\textbf{it-1}} + \beta_8 \, \Delta\textbf{CGY}_{\textbf{it}} + \beta_9 \, \Delta\textbf{CGY}_{\textbf{it-1}} + \beta_{10} \, \textbf{oilinf} + u_{it}$$

Current net foreign assets and the current inflation gap are treated as endogenous variables as they are linked to domestic credit through the banks' balance sheets. All the exogenous variables as well as lagged values of the endogenous variables (lag length t-2) are used as instruments. The methodology used is I3SLS.[13] The regressions are initially performed with cross-country equality restrictions on the coefficients (other than the

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[12] IFS lines ***12A..ZF… minus (***2..AA.ZF… times ***.2TL.ZF…)

[13] Qualitatively similar results are obtained if OLS is used instead of I3SLS. We report the I3SLS results because it is the more efficient estimation method and to make the results comparable to the Savvides results.

intercepts) following Savvides and Fry. We then test the validity of the constraints on the coefficients. Given that most constraints are rejected at the 5 per cent level we re-estimate the equations without the cross-country equality restrictions. The results show that there was no systematic response to target variables across the five countries.

5.4.1 Regressions with Constrained Coefficients

In the regression of the determinants of private sector credit, where the coefficients (other than on the intercepts) are constrained it appears that the BCEAO was sensitive to some monetary policy variables.

$$\Delta \textbf{PSC/Y} = \beta_0 - 0.130^{***}\ \Delta \textbf{PSC/Y}_{\textbf{it-1}} + 0.324^{***}\ \Delta \textbf{PSC/Y}_{\textbf{it-12}} + 0.060^{***}\ \Delta \textbf{NFAY/Y}_{\textbf{it}}$$

$$- 0.028^{*}\ \Delta \textbf{NFAY/Y}_{\textbf{it-1}} + 1.402^{*}\ \Delta \textbf{DETY}_{\textbf{t-1}} - 0.076^{***}\ (\pi\text{-}\pi^{*})_{\textbf{it}}$$

$$+ 0.017\ (\pi\text{-}\pi^{*})_{\textbf{it-1}} + 0.014^{***}\ \Delta \textbf{CGY}_{\textbf{it}} + 0.002\ \Delta \textbf{CGY}_{\textbf{it-1}}$$

$$- 0.001\ \textbf{oilinf} + u_{\textbf{it}}\ [14]$$

Only a very small fraction of increases in current foreign capital inflows are lent on to the private sector and there appears to be an attempt to sterilize lagged foreign capital inflows. The coefficients on the foreign assets variables (current and lagged) are significant at the 1 and 5 per cent level respectively. The results also show a marginally significant relationship between increases in long-term foreign debt and increasing domestic credit, contradicting the Savvides result of a stabilising central bank reaction to rising external indebtedness. There is evidence of a contraction in private sector credit to in response to a higher current inflation

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[14] See Table 5.1 for details.

differential: the coefficient on the current inflation differential is negative and the relationship is statistically significant at the 1 per cent level. However, the BCEAO does not seem to offset increases in government borrowing by reducing private sector credit, as the coefficient on this variable is positive. There is no statistically significant relationship between changes in oil prices and changes in private sector credit.

These results are in contrast with those of Savvides for the period before the devaluation of 1994. There is no longer evidence of a policy to restrict private sector credit in response to government borrowing from the central bank and no stabilizing response to rising external indebtedness. On the other hand credit does not rise to accommodate inflation or oil price shocks, but credit policy appears to be restrictive in response to rising inflation.

5.4.2   Regressions with Unconstrained Coefficients

When we test whether we can accept the constraints placed on the coefficients in the estimation, we find that we have to reject the constraints on the dependent variable with the 1-year lag, the lagged changes in net foreign assets and foreign liabilities and the lagged changes in government borrowing. We therefore repeat the I3SLS regression without constraining the coefficient estimates. The results presented in Table 5.3 show firstly that eliminating the constraints on the coefficients results in an improved fit for all the country regressions.[15] Secondly it appears that policy in the five countries responds differently to the independent variables and that there is no clear pattern of a BCEAO credit policy at the country level.

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[15] See R-squared statistics reported in Tables 5.2 and 5.3.

Burkina Faso

In Burkina Faso there are three potential BCEAO target variables, which are statistically significant. The coefficients on both current and lagged government borrowing from the central bank are positive and highly significant, showing no attempt by the BCEAO to offset the effect of increased government borrowing on total credit in the economy. Similarly foreign capital inflows feed into domestic credit. The coefficient on the inflation differential is negative as expected and but not statistically significant.

Côte d'Ivoire

In Côte d'Ivoire current capital inflows feed into private sector credit to a much smaller extent than in Burkina Faso, Mali and Senegal and there appears to be some attempt to sterilize lagged foreign capital inflows. The central bank action regarding external indebtedness appears to be stabilising (significant at the 10% level). However, the coefficient on the inflation variable is now positive (as well as significant at the 1 per cent level) suggesting that inflation is accommodated, rather than contained. Again, there appears to be no pattern of restricting private sector credit in response to current government borrowing and while the coefficient on lagged government borrowing is negative it is not statistically significant.

Mali

In Mali both current and lagged increases in banks' net foreign assets feed into private sector credit. The coefficient on the inflation differential is negative as expected, but not statistically

significant. There is no statistically significant relationship between private sector credit and government borrowing from the central bank.

Senegal

In Senegal current foreign capital inflows are reflected in increasing private sector credit. There appears to be a restrictive credit policy in response to rising inflation, and again private sector credit rises with government borrowing from the central bank. The coefficient here is; however, lower than in any of the other countries in the zone.

Togo

In Togo there is no evidence for a policy of sterilizing lagged foreign capital inflows and changes in the inflation differential with France appear to be accommodated rather than contained. Private sector credit again rises with increases in current government borrowing.

The estimation results based on the unconstrained coefficients therefore cast doubt on the results obtained in section 5.4.1. There does not appear to be a systematic policy to restrict credit in response to emerging inflationary pressures. While the regressions for Burkina Faso, Mali and Senegal show the expected negative coefficient on the inflation differential, the coefficient is positive and significant in Côte d'Ivoire and Togo. Similarly there is no systematic attempt to sterilize foreign capital inflows or foreign borrowing. Increases in long-term foreign liabilities are only marginally significant in Côte d'Ivoire. The only variable that is highly significant in 4 out of the five regressions is the government borrowing from the central bank. But when the BCEAO is lending to the member governments it does nothing to

offset its effect on domestic credit: domestic credit increases as governments borrow more. This result is in contrast to the Savvides results for the period before the devaluation, where the BCEAO kept a tighter control on domestic credit and restricted credit to the private sector to offset advances made to governments.

5.5 Conclusions

Our results suggest that the BCEAO did not take a particularly active role in steering private sector credit in the Franc Zone member countries, although in theory it has several policy instruments at its disposal. While the first set of regressions with constrained coefficients supported a hypothesis of restrictive credit policy in response to emerging inflationary pressures, the second set of regressions showed that across the different countries there is no evidence for a systematic policy. Not only do the significance levels and the magnitude of the coefficients vary widely, but in some cases the signs on the coefficients are reversed. The only result that is consistent across all the countries is that there is no policy to restrict private credit if governments increase their borrowing from the BCEAO.

It appears therefore that the BCEAO operates interest rate policy at the zone-level, but does little to steer credit policy at the country level, at least on a monthly basis.[16] This does raise

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[16] Another interpretation of the results would be that credit planning takes place on an annual basis (which would, however, be in contrast with the monthly setting of interest rates). In this case we would not necessarily observe credit responding to monthly variations in monetary policy target variables. However, we cannot test the response of the BCEAO to

the question of why the *de jure* powers of the BCEAO to restrict domestic credit growth have been strengthened in recent years, with the restrictions imposed on the refinancing of agricultural credits, the introduction of reserve requirements and the phasing out of central bank financing of government deficits. However, the first two of the measures predate the devaluation of the CFA franc in 1994 and may have been attempts to salvage the peg rather than being intended to strengthen BCEAO monetary control during periods of peg stability. It is therefore possible that BCEAO credit policy would become more pro-active if pressures on the currency re-emerged in the future.

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Table 5.1

Correlations

Inflation	WAMU	Burkina	Mali	RCI	Senegal	Togo
WAMU	1.0000					
Burkina	0.7206	1.0000				
Mali	0.7213	0.4419	1.0000			
RCI	0.4883	0.2018	0.1224	1.0000		
Senegal	0.4159	0.0675	0.2626	-0.1744	1.0000	
Togo	0.2329	0.1202	-0.1568	0.2668	-0.2368	1.0000

Output gap*	Burkina	Mali	RCI	Senegal	Togo
Burkina	1.0000				
Mali	0.1185	1.0000			
RCI	-0.0153	0.0490	1.0000		
Senegal	0.4895	-0.0195	-0.0482	1.0000	
Togo	0.0871	0.0308	0.1423	-0.0682	1.0000

Credit to government	Burkina	Mali	RCI	Senegal	Togo
Burkina	1.0000				
Mali	0.8324	1.0000			
RCI	0.7988	0.8035	1.0000		
Senegal	0.5945	0.6091	0.5249	1.0000	
Togo	0.7653	0.7843	0.6219	0.5423	1.0000

* Based on Fielding *et al.* (2003) quarterly GDP data

Table 5.2

Private sector credit regressions I3SLS estimates with constrained coefficients

	Burkina Faso	Côte d'Ivoire	Mali	Senegal	Togo
Lagged dependent variable (t-1)	-0.130*** (.0528)	-0.130*** (.0528)	-0.130*** (.0528)	-0.130*** (.0528)	-0.130*** (.0528)
Lagged dependent variable (t-12)	0.324*** (.0438)	0.324*** (.0438)	0.324*** (.0438)	0.324*** (.0438)	0.324*** (.0438)
(Change in banks' net foreign assets)$_t$	0.060*** (0.0167)	0.060*** (0.0167)	0.060*** (0.0167)	0.060*** (0.0167)	0.060*** (0.0167)
(Change in banks' net foreign assets)$_{t-1}$	-0.028** (0.0160)	-0.028** (0.0160)	-0.028** (0.0160)	-0.028** (0.0160)	-0.028** (0.0160)
(Change in foreign liabilities)$_{t-1}$	1.402* (0.7763)	1.402* (0.7763)	1.402* (0.7763)	1.402* (0.7763)	1.402* (0.7763)
$(\pi-\pi^*)_t$	-0.076*** (0.0273)	-0.076*** (0.0273)	-0.076*** (0.0273)	-0.076*** (0.0273)	-0.076*** (0.0273)
$(\pi-\pi^*)_{t-1}$	0.017 (0.0226)	0.017 (0.0226)	0.017 (0.0226)	0.017 (0.0226)	0.017 (0.0226)
(Change in CB lending to government)$_t$	0.014*** (0.0015)	0.014*** (0.0015)	0.014*** (0.0015)	0.014*** (0.0015)	0.014*** (0.0015)
(Change in CB lending to government)$_{t-1}$	0.002 (0.0016)	0.002 (0.0016)	0.002 (0.0016)	0.002 (0.0016)	0.002 (0.0016)
Oil price inflation $_t$	-0.001 (0.0006)	-0.001 (0.0006)	-0.001 (0.0006)	-0.001 (0.0006)	-0.001 (0.0006)
Constant	-0.017 (0.0089)	-0.005 (0.0140)	-0.003 (0.010)	-0.003 (0.0077)	-0.004 (0.0223)
R-Squared	0.6819	0.3027	0.1835	0.3396	0.2839

Table 5.3

Private sector credit regressions I3SLS estimates with unconstrained coefficients

	Burkina Faso	Côte d'Ivoire	Mali	Senegal	Togo
Lagged dependent variable (t-12)	-0.188* (0.1091)	0.210* (0.1140)	-0.138 (0.1152)	-0.276** (0.1144)	-0.384*** (0.116)
Lagged dependent variable (t-12)	0.198*** (0.0573)	-0.008 (0.1564)	0.131 (0.1039)	0.164** (0.0773)	0.080 (0.0880)
(Change in banks' net foreign assets)$_t$	0.370*** (0.0994)	0.033** (0.0172)	0.468*** (0.0987)	0.475*** (0.1903)	0.185 (0.1218)
(Change in banks' net foreign assets)$_{t-1}$	-0.005 (0.1092)	-0.039** (0.0164)	0.168* (0.1003)	0.093 (0.1657)	-0.112 (0.1107)
(Change in foreign liabilities)$_{t-1}$	-0.693 (0.9518)	-3.029* (1.8331)	1.042 (1.6336)	0.991 (1.2686)	-0.503 (2.086)
$(\pi-\pi^*)_t$	-0.049 (0.0331)	0.148** (0.0718)	-0.055 (0.0467)	-0.101*** (0.0384)	0.288*** (0.1148)
$(\pi-\pi^*)_{t-1}$	-0.011 (0.0260)	0.085 (0.0539)	0.035 (0.0375)	-0.033 (0.0309)	-0.079 (0.0947)
(Change in CB lending to government)$_t$	0.019*** (0.0067)	0.032*** (0.0037)	-0.003 (0.0052)	0.007*** (0.0019)	0.0142*** (0.0030)
(Change in CB lending to government)$_{t-1}$	0.015** (0.063)	-0.066 (0.0048)	-0.001 (0.0062)	0.002 (0.0018)	0.005 (0.0035)
Oil price inflation $_t$	-0.000 (0.0007)	0.001 (0.0015)	-0.000 (0.0009)	-0.000 (0.0007	0.003 (0.0026)
Constant	-0.0013 (0.0065)	0.029* (0.0142)	-0.005 (0.0095)	-0.009 (0.0075)	0.041* (0.0242)
R-Squared	0.8795	0.5837	0.5433	0.5439	0.4992