

## Financial Liberalization and Money Demand in CEMAC: Evidence from GMM Estimations of a Dynamic Panel

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### Abstract

The objective of this paper is to examine the impact of financial market development and liberalization on money demand behavior in Central African Economic and Monetary Community (CEMAC). We adopt the generalized method of moments (GMM) system for panel data. The empirical results indicate that financial liberalization has a negative impact on money demand. Moreover, real GDP and the GDP deflator affect it positively, while the main policy rate has a negative impact. In terms of economic policy involvement, monetary authorities must pursue reforms aimed at deepening financial liberalization measures so that banks actively participate in the financing of CEMAC economies.

**Keywords:** Financial liberalization; Money demand; Monetary policy.

**JEL Classification:** D92, E21, E51, E52.



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### 1. Introduction

Since independence, the development financing policies of African countries were defined within a Keynesian-inspired theoretical framework. Interest rates were capped at a very low level to encourage investment and economic growth. The state thus controlled the entire financial system and managed its economic development strategy. The results of these policies have led to low or even negative real interest rates. [McKinnon \(1973\)](#) and [Shaw \(1973\)](#) attribute financial repression as the main cause of poor economic growth performance in developing countries. According to the authors, financial repression hinders economic development in several ways. First, savings are discouraged because their return is low. Second, financial intermediaries are not encouraged to allocate savings effectively. Logically, by adopting a policy of financial liberalization, economic growth is encouraged because higher interest rates will facilitate the mobilization of savings and a more efficient distribution of capital. States must therefore abolish interest rate ceilings, reduce reserve requirements and abolish directed credit programmes. The idea is to "free" financial markets from intervention and let the market determine the allocation of credit.

Under the aegis of major international institutions, the majority of sub-Saharan economies began financial liberalization programmes in the mid-1980s. In addition to interest rate liberalisation, many other measures have been implemented in Africa as part of financial reforms (bank restructuring, abolition of direct monetary control, strengthening supervision). However, neo-liberal policies inspired by monetarism have not provided a miracle solution to economic development. [Reinhart and Tokatlidis \(2003\)](#), referring to sub-Saharan Africa, argue that financial reforms have had very little effect on economies. The main reason for this failure is the existence of imperfect and incomplete markets, information asymmetries and an unstable economic environment that is not conducive to the private sector.

In the Central African Economic and Monetary Community (CEMAC), financial liberalization was adopted in the 1990s as an antidote to the financial crisis that was plaguing the region. Indeed, the end of the 1980s in most CEMAC countries was marked by a serious crisis in the banking sector which led to the liquidation of several credit institutions ([Tamba and Tchamanbe, 1995](#)). This crisis is said to be the result of a depressed economic situation due to the fall in the prices of exported commodities on which the economies of the countries of the subregion were based, the predominant role played by the State as majority shareholder in most banks ([Sandretto and Tiani, 1993](#)), the inefficiency of the existing supervisory system and poor management of banking institutions ([Mathis, 1992](#); [Nembot, 1997](#)). To remedy this situation, the monetary authorities of the subregion, under the leadership of the International Monetary Fund (IMF) and the World Bank, have undertaken a structural reform comprising essentially two components, one monetary, and the other banking and institutional. This orientation was the expected result of several years of strict control by the public authorities over financial operations but also, as a response to the rise in power of a current of thinking in favour of financial liberalisation led by the pioneering work of McKinnon and Shaw in the early 1970s, which denounced the perverse effects of financial repression.

Thus, while financial liberalization generally aims to promote the optimal allocation of savings to investment in developing countries, its influence on money demand in CEMAC remains to be demonstrated. Indeed, in the light of the comparative evolution of resources collected and loans granted over the last two decades in CEMAC, one has the impression that banks are increasingly reluctant to finance investments. Their preference is more oriented towards treasury jobs and, the offer of services to customers is relegated to second place. According to the annual report of

the Banque de France on the countries of the franc zone [Banque de France \(2015\)](#), the share of credit to the economy in GDP which explains the financial depth, amounts to 18.6% in 2015 in CEMAC against 29.2% in the West African Economic and Monetary Union (WAEMU) and 29% in the rest of sub-Saharan Africa. According to World Bank statistics (2017), money supply amounts to 27.02% of GDP in 2015, a level below the optimal threshold for stimulating 36.5% growth ([King and Levine, 1993](#)). CEMAC's bancarisation rate is around 10% against 12.6% in UEMOA and 29% in the rest of sub-Saharan Africa (Banque de France report on franc zone countries, [Banque de France, 2015](#)). According to data from the Bank of Central African States ([Banque des Etats de l'Afrique Centrale, 2016](#)), the contribution of net domestic credit to money supply growth, in percentage terms, rose from 15.1 % in 1998 to -8.8 % in 2000 and 0.4 % in 2002, then -15.32 % in 2004, to -18.0 % in 2007 and -15.8 % in 2010. The annual percentage change in credit to the economy rose from 14% in 1998 to -1.9 in 2004, to 14.7 in 2007 and 8% in 2010. There has also been a fall in the tender interest rate (TIAO) from a high 12% in 1992 to a very low 2.5% in 2015. From the above, this study examines the influence of financial liberalization on money demand in CEMAC. In other words, has financial liberalization had an effect on money demand in CEMAC? In the alternative, this study attempts to provide answers to the following questions:

- What influence does the interest rate have on money demand in CEMAC?
- What is the effect of financial liberalization on money demand in CEMAC?

The general objective of this study is to analyse the influence of financial liberalisation on money demand in the CEMAC zone. We break this general objective down into two specific objectives :

- Specific objective 1: Assess the effect of the interest rate on money demand in CEMAC
- Specific objective 2: To determine the effect of bank credit to the private sector on money demand in the CEMAC zone.

In harmony with the objectives of the study, we postulate the following hypotheses:

- Hypothesis 1 : The interest rate has a negative impact on money demand in CEMAC
- Hypothesis 2: Liberalisation has a negative impact on money demand in CEMAC through bank credit to the private sector.

This study is not lacking in interest for the political, monetary and economic authorities of the CEMAC zone. Indeed, the search for an empirical relationship between financial liberalization and money demand will allow monetary authorities to refine and conduct monetary policy well. Moreover, it enables economic agents in the subregion to better understand the impact of financial liberalization on their purchasing power in order to make a sound decision for the management of their wealth.

At the methodological level, the study adopts the generalized method of moments (GMM) in system. One of the many advantages of GMMs is that it is a comprehensive method for finding a large number of common estimators as special cases, including ordinary least squares, instrumental variables and least square doubles, non-linear least squares and maximum likelihood. In practice, when the explanatory and dependent variables are highly persistent, [Blundell and Bond \(2000\)](#) show that the instruments used for the GMM difference estimator are weak and that this estimator is not relevant. The existence of a significant potential bias in the estimation of GMM differences in this work has thus led us to favour the GMM system estimator. Indeed, many of the results in the empirical literature reveal that the GMM system estimator significantly improves accuracy gains, and significantly reduces sampling bias relative to the GMM difference estimator when regressors are weakly exogenous and correlated with individual effect. Under these conditions, [Blundell and Bond \(2000\)](#) show that the GMM estimator is more appropriate. To best address the concerns raised, this article is organized as follows: Section 2 reviews the literature on the relationship between financial liberalization and money demand. Section 3 will present the study methodology, data source and description of variables. Section 4 will discuss empirical results, particularly the econometric analysis of the relationship between financial liberalization and money demand. Section 5 is reserved for the conclusion of the study.

## 2. Literature Review

This section revisits the theoretical and empirical literature on the link between the effects of financial liberalization and the empirical review of the relationship between financial liberalization and money demand.

### 2.1. Review of Theoretical Literature on the Impact of Financial Liberalization

Financial repression" forces banks to charge low and sometimes negative interest rates ([McKinnon, 1973](#)). It discourages savings and hinders the accumulation of productive capital. McKinnon and Shaw's analysis aims to show that, in a financially repressed economy, setting rates below their equilibrium value reduces savings (lower bank deposits) in favour of current consumption. Such a measure reduces the amount of funds available for investment, as a consequence of the fall in bank deposits and the rise in demand for money. It ensures better resource mobilization and increased investment. Thus, it allows income growth and economic development. For financial liberalization theorists, underdeveloped countries suffer less from a lack of financial resources than from bank intermediation that has become inefficient due to distortions in interest rate administration. [Shaw \(1973\)](#) model is based on a financial system of debt intermediation. It is a model in which investors are not forced to self-finance but financial intermediaries fully play their role of transforming savings into investment.

McKinnon and Shaw's original models have been taken up and enriched by a large number of authors ([Fry, 1978](#); [Galbis, 1977](#); [Kapur, 1976](#); [Mathieson, 1979](#)). McKinnon/Shaw's approach has been challenged by post Keynesians and neo-structuralists. The approach to interest rate liberalization has neglected many of the most characteristic foundations of developing economies. The first is highlighted by postkeynesians ([Burkett and Dutt,](#)

1991). According to these authors, increases in interest rates do not necessarily lead to increases in credit and investment. Indeed, in accordance with Keynesian concepts, consider that investment does not depend on the amount of deposits but rather on the probable anticipated demand. Thus, an increase in the interest rate would certainly induce an increase in savings, but also a relaxation of consumption since the substitution effect outweighs the income effect. In other words, if the return on savings is high enough, it encourages households to defer part of their consumption in favour of an increase in their savings. Thus, according to post Keynesians, the liberalization of interest rates leads to the economic slowdown following the decline in investment induced by the decline in aggregate demand. In addition, higher interest rates as a result of financial liberalization will increase the cost of credit (Davidson, 1986). The second is related to information asymmetries in financial markets (Stiglitz and Weiss, 1981). For these two authors, the McKinnon/Shaw approach does not take into account market imperfections. In this critique, they will pay particular attention to the microeconomic foundations of macroeconomic policies. The authors will show that the imbalances on the credit market do not come from State intervention alone but from adverse selection and incentive effects. They consider that, in a context of information asymmetry, it is difficult for interest rate liberalisation to operate effectively through a better allocation of resources and the drainage of savings to the most productive sectors. The third foundation is related to the existence of the informal sector (Taylor, 1983; Winjbergen, 1983). This criticism takes into account the existence of informal financial markets and their greater effectiveness in terms of resource allocation. Rising interest rates in the formal sector lead to higher interest rates in the informal sector, which leads to higher investment credit prices and consequently higher general price levels (cost inflation), lower real demand and also lower investment (Winjbergen, 1983).

## 2.2. An Empirical Literature Review of the Relationship between Financial Liberalization and Money Demand

Dekle and Pradhan (1999) study the relationship between financial liberalization and money demand for ASEAN-4 countries (Indonesia, Malaysia, Singapore and Thailand). One of the objectives is to evaluate if the equations are cointegrated. Despite the substantial financial liberalization that has taken place in these countries, these authors find that the money demand equations are cointegrated. Based on the fact that money demand has remained stable despite financial liberalization, they believe that if monetary authorities know the shape of these money-demand equations, then a monetary policy framework based on monetary targets can be implemented.

Using annual time series data from 1971 to 2009, Rana and Qazi (2011) analyzed the effect of financial liberalization on money demand in Pakistan. These authors conclude that financial liberalization has had a positive impact on money demand in Pakistan in the short and long term with cost coefficients higher than those in the long term. In the same country, the study by Naddem *et al.* (2016) on credit supply in Pakistan revealed a harmful effect of rising interest rates on credit to the private sector in the short term and also in the long term.

In Africa, empirical studies are not lacking. In a study on money demand in African franc zone countries, Ondo (2002) analysed the relationship between money demand and income on the one hand, and between money demand and the interest rate on the other. The results of this study show that income (real GDP) and the GDP deflator positively affect money demand ( $M_1$  or  $M_2$ ) in African Franc zone countries, with interest rates only significant with  $M_1$  and negatively affecting it. It concludes that, due to the non-neutrality of money, the BEAC and the BCEAO must use the money supply (in the strict or broad sense) as a transmission channel for monetary policy while permanently preserving price stability over the medium term.

For Senegal, Samb (2005) indicates that financial liberalization has negatively impacted bank credit by increasing restrictions on bank credit supply. It concludes that, when macroeconomic conditions in the country are taken into account, it appears that financial liberalization has led to an increase in the degree of credit restriction due to the negative indirect impact of the Senegalese banking system. According to him, this suggests that banks have not implemented financial liberalization measures.

## 3. Strategy of Empirical Research and Data Description

In this section, we present the model specification and research methodology.

### 3.1. Model Specification

To assess the influence of financial liberalization on money demand in CEMAC, this study draws on the work of Ondo (2002). The demand for money function retained by the author is specified as follows:

$$M_t = K P_t^\gamma Y_t^\theta (1 + i_t)^\sigma \varepsilon_t \quad (1)$$

With :  $P_t$  The GDP price deflator ;  $Y_t$  The real GDP ;  $i_t$ , The nominal interest rate and  $\varepsilon_t$ , The error term.

The logarithmic transformation of (1) gives :

$$\ln M_t = \ln K + \gamma \ln P_t + \theta \ln Y_t + \sigma \ln(1 + i_t) + \ln \varepsilon_t \quad (2)$$

Assuming that  $r_t$  is an approximation of  $\ln(1 + i_t)$ , equation (2) becomes :

$$m_t = k + \gamma \ln p_t + \theta y_t + \sigma r_t + e_t \quad (3)$$

$$\text{avec: } m_t = \ln M_t;$$

$$k = \ln K;$$

$$p_t = \ln p_t;$$

$$e_t = \ln \varepsilon_t$$

Specified in panel, the composite error model of equation (3) is written :

$$m_{it} = \alpha + \gamma p_{it} + \theta y_{it} + \sigma r_{it} + e_{it} \quad (4)$$

Where  $e_{it} = k_i + v_{it}$  et  $E(k_i, v_{it}) = 0$

Equation (1) is the study model, equation (2) is the logarithmic transformation of equation (1), equation (3) is the transformation of equation and finally equation (4) is the compound error model of the study. The residue in the model (4) includes a specific effect term  $k_i$ , characteristic of any country. This term is random and reflects the country-specific disruption in money demand. Thus, the specification of the model we use to assess the impact of financial liberalization on money demand is as follows:

$$\log M_2 = \alpha_0 + \alpha_1 \log \text{GDPDEF}_t + \alpha_2 \log \text{RGDP}_t + \alpha_3 \log \text{PRCRED}_t + \alpha_4 \log \text{TIAO}_t + \varepsilon_t \quad (5)$$

Where :

$\text{GDPDEF}_t$  : The *GDP price deflator* ;

$\text{RGDP}_t$  : The real GDP ;

$\text{PRCRED}_t$  : Bank credit to the private sector.

$\text{TIAO}_t$  : Central bank interest rate;

$M_t$  : The real cash balances ;

$\varepsilon_t$  : The error term.

As mentioned above, the broad money supply (M2) is chosen as the explained variable. This aggregate is closely monitored by the BEAC as an indicator of monetary policy, which justifies its inclusion in this study. As regards the explanatory variables, the following are retained. Bank credit to the private sector, real GDP, GDP deflator and tender interest rate (TIAO). As regards bank lending to the private sector, its level defines the development of the banking sector and is closely monitored by the BEAC. This variable is used to reflect financial liberalization in this study. In the absence of a well-developed financial market in developing countries, bank credit is generally the most powerful transmission channel for monetary policy. Economic activity is constrained by its available quantity. All other things being equal, the demand for money falls with an increase in bank credit. For real GDP, the choice of this variable derives from economic theories linking money demand to a transactional variable. Real GDP is used in this study as a proxy for real income to capture wealth in the sub-region. As far as the GDP deflator is concerned, it derives from taking into account the purchasing power of individuals. Indeed, in developing countries, in the absence of viable financial markets where agents can have investments in alternative financial assets, the acquisition of real assets often appears as a means of protecting against inflation. From this perspective, there is a negative relationship between the inflation rate and money balances. It is justified in the sense that inflation persistence can lead agents to get rid of money in order to acquire durable physical goods. The problem can also be observed in the opposite direction. In the presence of a generalized increase in prices, agents must increase their monetary balances to cover their usual transaction expenses. The choice of the interest rate as an explanatory variable is consistent with McKinnon and Shaw's prescriptions that capping the interest rate at low levels reduces savings, reducing banks' potential to attract capital and thus limiting the implementation of investment projects. Like Mounkala (2013), we will use the BEAC's policy rate (TIAO). This choice corresponds to the principle according to which the level of the Central bank rate has a fundamental influence on the evolution of the money supply. It serves as the basis for setting the interest rates charged by banks to their customers.

### 3.2. The Panel Estimation and Stationarity Test

Panel data econometrics take into account both individual and temporal data, which allows a better understanding of the various factors likely to explain money demand and to take into account individual specificities. We will therefore use a panel model and more precisely a dynamic panel to which we will apply the generalized moments method (GMM). A dynamic model is a model in which one or more delays of dependent or independent variables are listed as explanatory variables. Unlike dynamic panel GMMs, standard econometric techniques such as OLSs do not provide robust estimates because of the presence of the lagged dependent variable in the explanatory variables. This leads to biased estimates. The GMM method is then used to control for individual and temporal specific effects, and to compensate for endogeneity biases of the variables. The GMM dynamic panel estimator was developed by Holtz-Eakin *et al.* (1988), Arellano M. and Bond (1991), and Arellano M. B., O. (1995). There are two types of generalized moment estimators the Arellano M. and Bond (1991) or GMM difference estimator and the Blundell and Bond (1998) or GMM system estimator. Arellano M. and Bond (1991) propose a difference estimate aimed at eliminating a possible bias in the variables. The first differences of the explanatory variables of the model are instrumented by the delayed values in level of these same variables. The goal is to reduce simultaneity bias. Blundell and Bond (1998) showed using Monte Carlo simulations that the system GMM estimator is more efficient than the difference GMM estimator. The latter produces biased estimators for small samples. The GMM method is based on the orthogonality conditions between the delayed variables and the error term, both in first difference and



in level. When the dynamic model is expressed as the first difference, the instruments are in level, and vice versa. In the model to be estimated, the current values of the explanatory variables are used as instruments and for the endogenous variable, its period lagged value is used as instruments. The validity of the selected instruments can be confirmed or invalidated, based on Hansen and Sargan tests. As for the choice between the GMM method in difference and GMM in level, the second will be taken into account because of its efficiency.

But first, in order to have a good specification of the model, we will look at the questions of variable stationarity by performing unit root tests, then we will perform an autocorrelation test of the residues since the generalized moments method assumes the absence of autocorrelation of the residues. The results obtained will indicate whether further testing is needed to clarify the meaning of the relationship we are seeking to study.

### 3.3. Data and Descriptive Statistics

In this sub-section, we first present the source of the data and second, the different statistical characteristics of our study variables. Our study will be based on a panel of six countries over the period 1981 to 2015 and the choice of this period is related to the availability of data. Moreover, this choice is justified by the concern to integrate the various developments that financial liberalisation and money demand policy has undergone into CEMAC. The data collected are from secondary sources, coming from the annual publication of the World Bank, more precisely in the "book of world development indicators" contained in the CD-ROM (WDI-2017) for the four explanatory variables and, from the report of the Bank of France on the countries of the Franc zone from 1990 to 2015 for the TIAO.

Table 1 below provides a statistical description of the variables used in our study. Money supply (M2), gross domestic product (GDI) and bank credit to the private sector (PRCRED) are expressed in billions of CFA francs, while the GDP deflator (GDPDEFL) and TIAO are expressed in annual growth.

**Table-1.** Descriptive statistics of the variables

Variables	Moyenne	Ecart-Type	Min	Max
M2	598	736	32	3770
RGDP	2950	7360	505	11800
GDPDEFL	4.89	11.68	-29.69	47.04
PRCRED	364	454	22	1930
TIAO	7.10	2.46	2.5	12

Source : Constructed by the author from estimates

This table calls for some comments. We observe that, on average, the money supply in CEMAC amounts to 598 billion FCFA. During the study period, the lowest money supply (32 billion) was recorded in 1981 by Chad and the highest (3770 billion) by Cameroon in 2015. Cameroon is the country with the highest value of real GDP in the sub-region (11800 billion) in 2015 and the lowest value is recorded by the Central African Republic (505 billion) in 1983. Regarding the volume of credit distributed in CEMAC, the average is 364 billion, its maximum value (1930 billion) and its minimum value (22 billion) are respectively recorded by Cameroon in 2015 and the Central African Republic in 1994. For the TIAO, it has the same level for all CEMAC States. Its highest level is recorded in 1992 (12%) in the sub-region and its lowest level (2.5%) is recorded in 2015. Finally, on average, the GDP deflator is 4.89%. Gabon is the only country in the sub-region that recorded the highest rate (11.68%) and the lowest (-29.69) in 2000 and 2015.

## 4. Results of Empirical Research

In this section, we first present the results of the stationarity tests, then the results of the estimates and finally the economic interpretation of the econometric results.

### 4.1. Stationarity Test Results

There are several tests on panel data to evaluate the stationarity of the variables. The recently developed tests are [Breitung \(2000\)](#), [Hadri \(2000\)](#), [Levin et al. \(2002\)](#) and [Im et al. \(2003\)](#). In this study, we retain those of [Levin et al. \(2002\)](#) and [Im et al. \(2003\)](#). The results are summarized in the table below.

**Table-2.** Results of the unit root tests

Variable	LCC		IPS		Décision
	Coef	P-value	coef	P-value	
Ln(M2)	-2.93***	0.0017	-7.40 ***	0	I(0)
Ln(RGDP)	-2.00**	0.0224	-7.20***	0	I(0)
Ln(GDPDEFL)	-4.54***	0	-6.94 ***	0	I(0)
Ln(PRCRED)	-7.70***	0.0001	-6.23***	0	I(0)
Ln(TIAO)	-1.73**	0.0417	-2.01**	0.0221	I(0)

Source : Constructed by the Author from estimates

Note: \*\*\* significance at 1%; \*\* significance at 5%; and \* significance at 10%. Stationarity test results show that all variables in the study are stationary at level. We are therefore moving to the application of the GMM method in a system.

## 4.2. The Results of the Model Estimation by the GMM

The results obtained will be read at a significance level of 5%. The decision rule is as follows: if the probability is less than 5%, then we conclude that the coefficient of our variable is significant. The results are shown in Table 3. The results obtained show that the variables used to explain money demand in CEMAC have all the expected and all the significant signs at the 5% threshold except for the variable bank credit granted to the private sector, which is significant at the 10% threshold. The increase in bank lending to the private sector is negatively associated with money demand. Two explanations can be put forward. The first is that poor credit quality (credit default) can have negative effects on the money supply in CEMAC. The second is that according to McKinnon's thesis, the more economic agents have access to bank credit, the less they need to demand money in the form of self-financing. For lagged M2, real GDP and the real GDP deflator, these variables have a positive impact on money demand. The interest rate is negatively associated with money demand because an increase in interest rates discourages the holding of money in favour of financial investments. As for the validity of the instruments, Sargan's overidentification test confirms the validity of the model because its probability obtained which is 0.2378 is lower than Chi2 (122.2378). Our instruments are valid since we cannot reject the null hypothesis.

Table-3. The GMM estimator in system

Variables	Coefficients	P-values
Ln (M2 <sub>-1</sub> )	0.86990***	0.000
Ln(RGDP)	0.19811***	0.000
Ln(GDPDEFL)	0.02746***	0.001
Ln(PRCRED)	-0.04187	0.095
Ln(TIAO)	-0.23932***	0.000
Significativité globale du modèle	Wald chi2(5) = 4656.65	Prob > chi2 = 0.0000
Test Sargan	Chi2 (112) = 122.2378	Prob > Chi2 = 0.2378
Test AR1	Z = -2.63	Pr > Z = 0.009
Test AR2	Z = -0.83	Pr > Z = 0.409
Nombre d'observation =	122	Nombre des variables = (5)

Source : Constructed by the Author from estimates

Note : \*\*\* significance at 1% and \*\* significance at 5%.

## 4.3. Economic Interpretations of the Results of the Estimates

Econometric results require economic interpretations. First, the relationship between money demand, its delayed value and price developments. The results show a positive effect of the lagged money supply and GDP deflator on money demand. A 1% increase in the lagged value of the money supply and that of the GDP deflator leads to an increase of 0.9% and 0.03% respectively in money demand in the CEMAC. The positive effect of the delayed money supply could be explained by a habit effect, an inertia effect on money demand behaviour. As far as prices are concerned, the more they rise, the greater the demand for money. An increase in prices leads economic agents to increase their monetary balances in order to maintain their purchasing power constant. This result is in line with that of Ondo (2002) in the African Franc Zone but contrary to that of Mounkala (2013) in the CEMAC zone. As a result, in the CEMAC zone, there is a situation of absence of monetary illusion. Second, the relationship between money demand and real GDP. The result of the estimates indicates that a 1% increase in real GDP leads to a 2% increase in demand for cash balances by CEMAC economic agents. This means that the higher the income, the more economic agents want to hold money for precautionary and trading reasons. Indeed, most transactions in CEMAC are directly linked to real economic activities and transactions in value generally concern the purchase of goods and services and not that of financial assets, which rules out any assumptions of currency neutrality in this geographical area. This result is consistent with those of Mounkala (2013) and Ondo (2002). Third, the relationship between money demand and bank credit to the private sector and the BEAC policy rate. At the 10% threshold, bank credit to the private sector has a negative effect on money demand in CEMAC. Consequently, given that it is the variable characterizing financial liberalization in this study, we infer that financial liberalization has an influence on money demand in CEMAC. As regards the relationship between the BEAC policy rate and money demand, a 1% increase in the Central bank rate leads economic agents to reduce their cash demand by 0.23%. This explains why, the higher the BEAC's policy rate increases, the more second-tier banks increase their lending and deposit interest rates and, the less economic agents demand money because they will invest their savings in order to benefit from the high returns on bank savings. Indeed, the BEAC's policy rate serves as the basis for setting the interest rates charged by banks to their customers, the remuneration of deposits and that of loans. Thus, the increase in the policy rate slows monetary demand, which validates McKinnon's assumption in CEMAC. The first hypothesis of the study is therefore verified.

## 5. Concluding Remarks

The objective of this study was to analyse the effects of financial liberalisation on money demand in the CEMAC area over the period 1981-2015. We used a panel model and more specifically a dynamic panel to which we apply the generalized method of moments (GMM) in system. The main results obtained from this study lead to major lessons. The first is that we are seeing a strong inertia in the adjustment of real money demand. Our results are similar to those obtained by Dreger and Wolers (2009).

The second concerns neutrality, the study does not provide a clear conclusion. It was found that an increase in prices led economic agents to increase their monetary balances in order to maintain their purchasing power constant. As a result, in the CEMAC zone, there is a situation of absence of monetary illusion. However, the absence of monetary illusion demonstrates the neutrality of money: a change in the quantity of money causes a proportional change in all monetary prices and leaves the purchasing power of money unchanged; agents therefore do not change their offers and demands for goods and services. But at the same time, the results indicate that an increase in real GDP leads to an increase in demand for cash balances by CEMAC economic agents. This suggests a relationship between money demand and real activity.

The third lesson is that financial liberalization has affected money demand in the CEMAC zone. Indeed, the BEAC's main policy rate and the bank credit granted to the private sector affect money demand in accordance with McKinnon (1973) prescriptions. In terms of economic policy implications, the BEAC could use its main policy rate to revive an economy that is constantly exposed to the deterioration of the main economic aggregates due in particular to the fall in oil prices. Indeed, the reduction in the central bank rate should be translated at the level of each State by a fall in commercial banks' interest rates and by an increase in loans granted for the benefit of the real economy.

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