

## Assessing the Relationship between Monetary Stability and Financial Stability in CEMAC

Fabien Clive Ntonga Efoua\*

*The goal of this paper is to make an assessment of the correlation between monetary stability – namely price stability - and macro financial euphoria in the Economic and Monetary Community of Central Africa (CEMAC). Our methodological approach which combines econometrics, graphical and historical analyses, shows that the relationship between the selected indicators of macro financial exuberance and inflation is not obvious in all of CEMAC apart from the Central African Republic (CAF). Nonetheless, since we consider CAF is the only country in CEMAC to be constantly in a situation of political instability, we may assume that the positive correlation between euphoria and inflation in that country has little or nothing to do with monetary policy performances. This enables us to give an empirical justification – it is the originality of this research - the persistent situation in liquidity excess and the credit rationing in CEMAC Zone. It even raises the question of whether lower inflation in CEMAC may be more associated to "Good Luck" than "Good Policy" hypothesis.*

**Keywords:** Monetary stability – Financial stability - The "*this-time-is-different syndrome*" - Bank overliquidity - "*financial pornography*" - CEMAC.

**JEL Classification:** C1, E0, E5, G01, N00.

### 1. Introduction

None would have expected that much of the world would struggle with an economic and financial crisis after the bursting of the housing bubble in the United States in 2007. In fact, if it is commonly acknowledged that subprime crisis has plunged the markets into an unprecedented degree of fear since the early 20th century, recent evidence suggests that what happened in the wake of the Lehman Brothers bankruptcy in September 2008 is likely the most severe global financial crisis ever (Greenspan 2010). Nonetheless from the point of view of most economists and historians, the current crisis known as the "*Great Recession*", resembles be mistaken for the Great Depression of the 1930s (Krugman 2009). Although these two (2) crises are unprecedented in scale in the global financial history, the mechanisms involved in their unexpected arrival are similar to those implicated in other financial crises worldwide: financial innovations, optimism, declining risk aversion, rising asset prices, speculative euphoria, increasing leverage (Kindleberger & Aliber 2005, Bordo 2007). This pattern was observed in the major international financial crises of recent decades, including the *krach* of 1987, the Asian crisis in 1998, and the bursting of the dot-com bubble in 2000/2001. All these crises have marked their epoch. Before 2007, they all were compared with the *Great Depression* of the 1930s.

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If safeguarding financial stability is *de facto* one of the challenges of the moment in developed and emerging countries - for example through the implementation of "stress tests" aimed to assess the stability of the banking system and its ability to resist to certain shocks (recession, strong deviation of the exchange rate, oil shock, a sharp decline in stock prices, etc..) -, it may seem curious to see how the countries of Sub-Saharan Africa in general, and those of the Economic and Monetary Community of Central Africa (CEMAC<sup>1</sup> - of which the Bank of Central African States (BEAC)<sup>2</sup> is the issuing institute for six (06) member States: Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea and Gabon) in particular remained apart from these concerns until the very recent past. As an illustration, the *Financial Stability Review 2011*<sup>3</sup> dedicated to "global imbalances and financial stability", does not even mention the word "Africa" (except in "South Africa" or "North Africa") notwithstanding multiple agreements between African States and France through the Franc Zone<sup>4</sup>.

So to speak, most of African economies have on the whole performed well over the past decade. From the early 2000s until the start of the crisis in 2008, growth was generally high, with inflation on the decline and fiscal balances strengthening (IMF 2008). These good performances were partly due to a sustained increase in commodity prices, and partly to improved domestic policies (Bank of France 2009). According to the Bank for International Settlements (BIS 2011), the Global Recession has led to a marked but only temporary slowdown in growth in Africa. Nevertheless, the conditions of macroeconomic and financial stability have been preserved, and by mid-2011 there were encouraging signs that many African countries were returning to the pre-crisis growth path. In particular, five of the six (5/6) countries of CEMAC are oil producers. The consumer price index (which measures the inflation rate) in the BEAC Area is one of the lowest in Sub-Saharan Africa (Bank of France 2010). We can add that the CEMAC banking system not only has excess liquidity, but the *Banking Commission of Central Africa Reports*<sup>5</sup> regularly point out the stability of the financial system in this Area dominated by the banking sector.

However, many studies have pointed out the existence of the antinomy between excess liquidity – what most authors call *overliquidity* – on the one hand, and credit rationing on the second in the banking system of CEMAC (Bank of France (1998-2012), Fouda Owoundi (2005), Avom & Eyeffa (2007), Calvin (2008)).

Taking into consideration this issue – what we may term the "*overliquidity* paradox" (see fig.2) -, leads us to ask the question whether there is a connection between this fact and monetary policy within the BEAC Area. In simple terms, we may wonder why and how credits can be rationed in a relatively stable macro financial environment – marked by a banking system with an excess of liquidity and a more credible commitment of the Bank of Central African States (BEAC) in the fight against inflation. In fact if many authors focus on information asymmetries and the weakness of legal institutions to explain the bank *overliquidity* paradox in CEMAC Zone<sup>6</sup>, our view - which must be seen as a complementary rather than alternative explanation - is that insufficient attention has been paid to the link between monetary policy performances in terms of inflation statistics and the pro cyclical behavior of the banking system in CEMAC.

Indeed, for research purposes, it should be interesting to know whether there is a relationship between the *overliquidity* paradox and the monetary policy performances in CEMAC. The answer to this question is likely to improve the implementation of monetary policies in the BEAC Area. Furthermore, few people remember that BEAC Area experienced a severe banking crisis which also affected many other Sub-Saharan African

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countries between the second half of the 1980s and the early 1990s. This crisis was the result of questionable banking practices and irrational optimism which led to inflating financial bubbles, in particular the credit boom. It may therefore seem strange this crisis is not mentioned in any reference book that deals with financial issues worldwide, especially if we take into consideration the speculative climate characterized by "*financial pornography*" and behaviors of "*animal spirits*" in CEMAC these last years<sup>7</sup>.

Before presenting the steps of our analysis, let us explain briefly what we mean by monetary stability and financial stability.

In economic literature, "monetary stability" is synonymous with "price stability", *i.e.* a moderate positive inflation rate. Indeed, the fight against sharp fluctuations in the general price level is the main objective of Central Banks in the contemporary world. For example, the European Central Bank considers that price stability is an inflation rate close to 2% over the medium term. For the countries of the CEMAC, the standard convergence is 3% on average, with respect to the increase in the consumer price index. If it is possible to give a precise definition of price stability, this is not really the case for financial stability.

In fact, on one hand, economic literature does not give any clear or unanimous accepted definition of financial stability, the latter is usually regarded as the absence of financial instability (Schinasi 2004); but there again, is no precise definition. Most authors – among whom Kindleberger (2000) - prefer to identify financial instability episodes from their events because the concept of financial instability (or financial crisis, there is no precise definition either), covers so many aspects through the markets and institutions involved (stock markets, real estate, foreign exchange markets, bank credit, sovereign debt, etc..) that it would be difficult to give a precise definition of. This is the reason why financial stability is generally considered as the absence of financial instability. We make use of the "*metaphor of the gorgeous woman*" - hard to define but recognizable from first sight - to report the difficulty in the definition these concepts (Ntonga Efoua 2014).

On the other hand, if it is generally accepted in the narrow sense that episodes of financial crises are related to bank runs (Friedman & Schwartz (1963), Schwartz 1995), the view of Kindleberger (*op.cit.*) is that "financial instability" is a generic term used for both periods of speculation (macro financial euphoria, liquidity excess) on the one hand, and the periods of financial stress or distress (thunder atmosphere, renewed risk and uncertainty) on the other. These seemingly opposing concepts - as corresponding to different phases of the economic cycle -, are no less correlates since panic episodes (bank runs) are often preceded by instability and financial distress usually fueled by a credit bubble (credit boom)

This lack of consensus - on the definition of the concept of financial instability depending on the phase of the economic cycle (euphoria or panic) -, has renewed the theoretical debate on the effects of price stability on financial stability (*cf. Infra*). It should therefore be interesting to discuss this with empirical elements within the framework of CEMAC.

Let us now consider the organization of this paper: the next section provides a recent literature review of the theoretical debate regarding the effects of monetary stability on financial stability. The third relates to our methodology which combines econometric techniques, graphical and historical approaches; followed by an explanation of our findings (section 4) and a conclusion (section 5). As we shall see, this enables us to justify the *overliquidity* paradox in CEMAC.

## 2. Literature Review

The Global Recession triggered by the Subprime crisis of 2007 has as never before put back monetary policy in the center of policies oriented towards price stability and long-lasting growth. In fact, if we accept this definition of Stiglitz (1997) that monetary policy includes the actions that aim at influencing the money supply and credit availability, and that affects economic activity through many channels (interest rate, currencies, credit, balance-sheet, etc. (Bernanke & al. 1999, Bernanke 2003, Bernanke 2007, Mishkin 2007), it seems obvious that monetary policies have either to prevent financial crises (or instability) or to take adequate measures to cope with them. We can therefore assume that Central Banks have generally two (2) main objectives: monetary stability (price stability) and financial stability.

In economic literature, there are two opposing views on the role of monetary policy and its effects on financial stability. They are summarized in two hypotheses: the "Schwartz hypothesis" and the "credibility paradox of Central Banks" hypothesis<sup>8</sup>.

According to the traditional view - what is termed the "Schwartz hypothesis" -, financial instability is exacerbated by unanticipated changes in inflation. In fact, excessive fluctuations in inflation increase the uncertainty that lenders and borrowers face in assessing the actual performance of leveraged investments, which ultimately leads to a weakening of financial relations. According to Bordo & Wheelock (1998), most banking crises in the financial history of the United States, United Kingdom, and Canada were preceded by inflationary pressures. Issing (2003) summarizes this widespread view as follows: "*price stability and financial stability tends to mutually reinforce each other in the long run*". Thus, the Monetarist view is that a stability price-oriented monetary policy helps to reduce the frequency and severity of financial crises.

This hypothesis is opposite to those of the "credibility paradox of Central Banks" and the "new environment". Indeed, the occurrence of financial crises recurrent and more or less severe in a contemporary world where Central Banks (CBs) fight more effectively against inflation led Goodfriend (2001) to issue an explicit assumption on the existence of a credibility paradox of CBs since the end of the 1990s. According to this author, a CB can be fooled by its own credibility for low inflation into being insufficiently preemptive in a business expansion. The "paradox" comes from the fact that a credible monetary policy (price stability oriented) - tends to generate the risks against which it is supposed to protect economic agents (financial instability). In fact, a lower inflation could lead people to run massively into debt: the price and interest rates decrease (*Fisher effect*) related to an optimistic environment fosters euphoria and speculation which may lead to financial crises with international scale disaster like those of 1987, 1997/1998 and 2001. This topic is closely related to the "*debt-deflation*" (Fisher 1933), the "*financial instability hypothesis*" (Minsky 1982), the "*myopia disaster*" (Guttentag & Herring, 1986) and the "*this-time-is-different syndrome*" (Reinhart & Rogoff 2009)<sup>9</sup>. Borio & Lowe (2002) have particularly associated moderate inflation epochs with times of markets liberalization and the New Technologies expansion which feature the "*new environment*" of industrialized countries since the end of the 1980s. These elements encouraged a dropping risk aversion (credit boom) – what Borio & Zhu (2008) term the "*Risk Taking Channel*" -. Their analyses have been put back by the current financial events in the world dominated by the Great Recession which followed the Subprime crisis of 2007.

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This opposition between the Schwartz hypothesis and the credibility paradox of CBs/ new environment hypotheses<sup>10</sup> seems to concern mainly the countries of Western Europe and the United States where the credibility of the monetary authority - the commitment to the fight against inflation - is generally accepted. In fact, this debate is nonetheless relevant to analyze financial and banking crises across other parts of the Globe.

Indeed, among the major financial crises the world financial history is littered with, one of them requires special attention: the Asian crisis of 1997/1998. This crisis was preceded by exceptional macroeconomic performance experienced by countries in South-East Asia until the early 1990s. Thus the "myth of Asia's miracle" has led to an influx of foreign capital willing to take advantage of new investment opportunities (Krugman 1994). This was accompanied by an increase in private sector debt (credit boom), and was exacerbated by the short-sightedness of investors. Self-sustaining real estate and land speculation increased the fragility of the financial system of the countries of this region. In fact, the crisis that began in Thailand in 1997 has long been regarded as the most severe crisis the world has ever seen since the Great Depression of the 1930s, in its scope and the number of affected countries (Kaminsky & Reinhart 1999).

Following the same thought, it should be noted some similarities with the situation of the CEMAC Zone. Indeed, the current relative stability has not always prevailed in the BEAC Area. This Area was swept by a severe financial (bank) crisis in 1986-1987, principally caused by non-respect of prudential standards and generous credits concession politics. There is almost unanimous consensus about the issue that the malfunctions that characterized the financial system of this Zone were hidden - or exacerbated - by "oil euphoria" (Hugon, 1997). Thus, because of the decline in raw materials in general, and the price of oil barrel in particular, the average real growth rate of all of these countries has dropped from 5.6% between 1980 and 1985, to -1.3% between 1986 and 1989. The main consequence was the weakening of the banking system (Bekolo Ebe, 2001). Among the 40 banks that were in the BEAC Area, 9 had ceased their operations in the early 1990s. Of the remaining 31, one only met the regulatory standards, 20 were in a precarious balance, and 10 were insolvent.

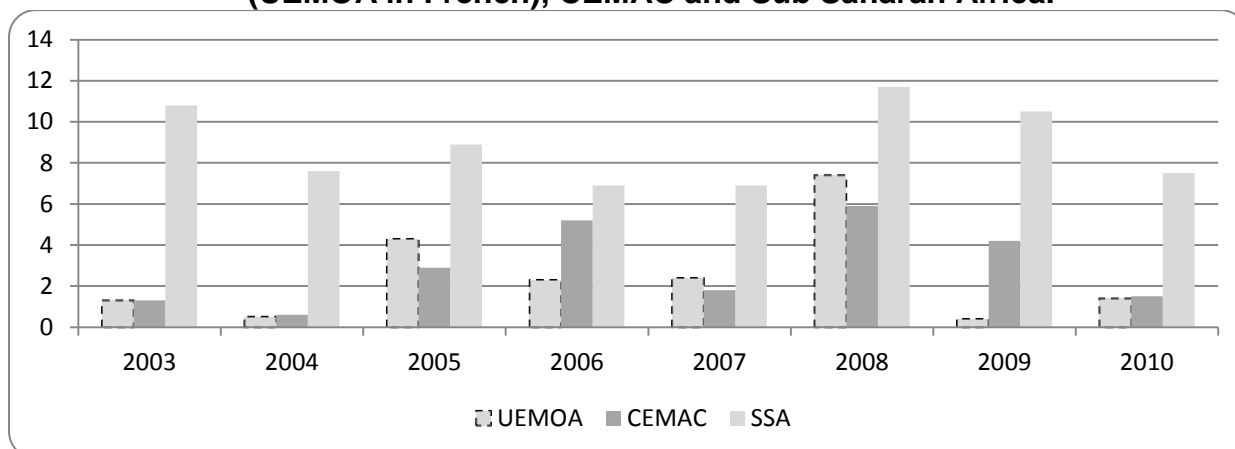
In consequence of the economic disaster which followed, the HIPC program was initiated<sup>11</sup> after the structural adjustment programs of the 1990s. Such a matter not only reminds us of the current Greek government-debt crisis but draws our attention to the current increase in oil price. As a matter of fact, in 2006 and 2009, oil industry represented respectively 80% and 83% of exports revenues of CEMAC.

Furthermore, the countries served by the BEAC have registered on average good inflation statistics these last years and many reports comply with some facts, especially a more serene financial environment and particularly persistent bank liquidity excess (see figs. 1 and 2). However as we previously said, we should remember that financial fragility is more important when the probability of a disaster (bankruptcy) seems non-existent. This may explain why swindles and fraud flower during the "*overtrading*" periods (Smith (1759), Kindleberger (2000)). As a matter of fact in 2009, media talked about a toxic investment of CFA 328 billion<sup>12</sup> (about Euros 500 millions) of BEAC confided to *Société Générale* (one of the biggest banks in France)<sup>13</sup>, despising its status which forbid this Central Bank (CB) to invest in assets on financial markets. Such a "*financial pornography*" was unimaginable in CEMAC a few years earlier because of the new regulation after the 1980s crisis. Indeed, the inference from the historical record of financial crises by Kindleberger & Aliber (2005)

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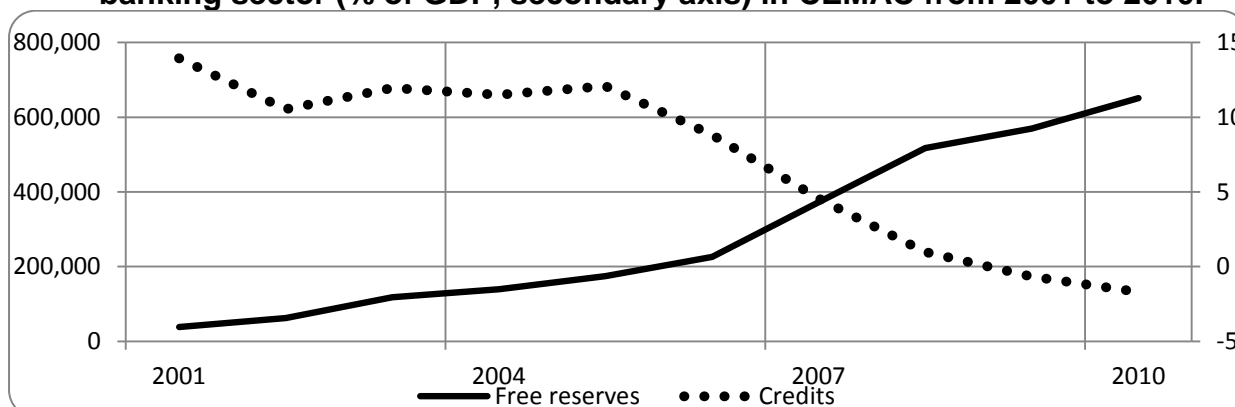
is that swindles - and what Akerlof & Shiller (2009) call the “*animal spirits*” - are a response to the greedy appetite for wealth stimulated by the boom.

**Figure 1: Consumer Price Index in the West African Economic and Monetary Union (UEMOA in French), CEMAC and Sub Saharan Africa.**



Source: zone franc secretarial works (bank of france 2010).

**Figure 2: Overliquidity (banks free reserves)<sup>14</sup> and domestic credit provided by banking sector (% of GDP, secondary axis) in CEMAC from 2001 to 2010.**



Source: Author's construction

Therefore, it may seem surprising that there is no explicit reference to the financial crisis which swept the BEAC Area in the 1980s, despite its unprecedented nature in official documents addressed to the general public<sup>15</sup>. The risk here is not to learn lessons from the past and to sink into what Reinhart & Rogoff (2009) term the “*this time is different syndrome*”<sup>16</sup>. It should consequently be interesting to know whether these behaviors (“*financial pornography*”, macro financial euphoria) which undermine financial relations, might be exacerbated or not by inflation statistics with empirical elements within the BEAC Area. Indeed by way of illustration, a recent study by Bittencourt (2007) suggests that inflation presented deleterious effects on financial development in Brazil.

Let us now consider our methodological approach (econometric model) before discussing the results of this research.

### 3. The Methodology and Model

By analysing the link between price stability and financial (in)stability in CEMAC, this paper investigates whether this apparent financial stability can be related to an improving monetary policy or whether the same worst-scenario observed in the developed countries (1987, 2001 and 2007 crises) can occur in the BEAC Area.

In other words does lower inflation lead people to run massively into debt in CEMAC (moral hazard) or not? Between the traditional view and the credibility paradox of CBs hypothesis, which of them is most relevant for the CEMAC economies?

It is obvious our research can improve monetary policies in the BEAC Area. In fact beyond a theoretical debate, the financial crises problem is one of the dominant macroeconomic features of our age. This theme seems more interesting because of many reports on an increasing price of oil on world financial markets. We recall such a *mania*<sup>17</sup> was observed in the BEAC Area just before the 1980s financial crisis.

This paper aims precisely to assess the nature and intensity of the relationship between price stability and financial stability in the countries of the BEAC Zone. Our ultimate goal is to establish the correlation - not the direction of causality - between price stability [credibility of monetary policy] and financial (in)stability [macro financial exuberance] in the CEMAC Zone. It might seem important to know or predict when the next financial crisis in the BEAC Zone should occur? But this is another matter, and that is not our purpose. We insist on the pioneering and prescient - and not necessarily predictive – character of our research, on behalf of the precautionary principle. In fact, the question about the nature and the intensity of the relationship between price stability and financial stability in the countries of CEMAC Zone answers another related important question: *is bank pro-cyclical activity influenced by monetary policy in CEMAC?*

For that purpose, we use a simple regression model specified in time series. The evaluation of the relationship between inflation and risk taking consists in testing indifferently one of the two (2) following relations:

$$\begin{cases} EXUB_t = a_0 + a_1 INFL_t + \varepsilon_t & (1) \\ or \\ INFL_t = a'_0 + a'_1 EXUB_t + \varepsilon'_t & (2) \end{cases}$$

**EXUB** = forward-looking indicator of macro financial exuberance = euphoria and risk taking indicator in CEMAC. Its construction is inspired by Borio & Lowe's (2002) approach. Ours is nonetheless different: in fact, Borio & al. (2002, 2003) consider that credits, assets and housing prices can be considered like "*forward-looking indicators*" of financial crises (banking distresses). Yet, it is widely admitted that financial markets are not developed in Sub-Saharan Africa except the South African Republic.

Hence in order to be coherent, our macro financial exuberance indicator will be measured by two (2) variables:

- Domestic credit provided by banking sector (% of GDP);
- Foreign direct investment, net inflows (BoP current USD).

**INFL**= Inflation, the credibility of monetary policy indicator. This will be measured by the annual growth rate of the GDP implicit deflator, which shows the rate of price change in

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the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.

$a_0, a_1; a'_0$  and  $a'_1$  = model parameters which we do not estimate (*cf. infra*)  
 $\varepsilon_t$  et  $\varepsilon'_t$  = error terms.

The above modeling is consistent with the purpose of our research for many reasons. It is first necessary to remember our ultimate goal is to establish the correlation - not the direction of causality – between price stability (**INFL**) and financial (in)stability (**EXUB**). As a matter of fact, on one hand - as we have been saying -, the widespread view (the Schwartz hypothesis) is that price stability and financial stability tend to mutually reinforce each other in the long term. On the other, most of the authors focus their analysis on the role of monetary policy in the "aggravation" rather than the "genesis" of macro financial imbalances, namely excessive debt fed by an untrue risk perception (the "new environment" and the credibility paradox of CBs hypotheses). This way, we are likely to know which of these hypotheses is most relevant for BEAC Area. At the same time, our approach prevents from including positions that may seem inappropriate and risky at this stage of the research on the direction of causality between the two above-mentioned variables.

This approach also presents similarities with the *events* method which confirms that credit boom precede most of the financial crises<sup>18</sup>. As for the foreign direct investment, it has been identified by Kindleberger (2000) as object of speculation. Anyway, our methodology which combines econometrics, historical and graphical approaches, offers a simple and unique style of interpreting graphs to explain the results.

It should be noted the two (2) specifications above are not equivalent. In the first model, **INFL** is the cause of **EXUB**; while in the second, **EXUB** is the cause of **INFL**. However for each of these models, we know how to calculate the *Karl Pearson's coefficient of correlation* (or simple correlation) which is the most widely used method of measuring the degree of relationship between two (2) variables<sup>19</sup>. Its formula is written as:

$$r_{(INFL,EXUB)} = \frac{\sum(INFL_t - \overline{INFL})(EXUB_t - \overline{EXUB})}{\sqrt{\sum(INFL_t - \overline{INFL})^2 \cdot \sum(EXUB_t - \overline{EXUB})^2}} = \frac{Cov(INFL,EXUB)}{\sigma_{INFL} \cdot \sigma_{EXUB}}$$

Now  $a_1$  and  $a'_1$  coefficients can be estimated using the Ordinary Least Squares (OLS) method which consists in minimizing the square of the distance between each observation and the trend line. These estimators are respectively given by:

$$\left\{ \begin{array}{l} \widehat{a}_1 = \frac{\sum(INFL_t - \overline{INFL})(EXUB_t - \overline{EXUB})}{\sum(INFL_t - \overline{INFL})^2} = \frac{Cov(INFL,EXUB)}{\sigma_{INFL}^2} \\ \widehat{a}'_1 = \frac{\sum(EXUB_t - \overline{EXUB})(INFL_t - \overline{INFL})}{\sum(EXUB_t - \overline{EXUB})^2} = \frac{Cov(INFL,EXUB)}{\sigma_{EXUB}^2} \end{array} \right.$$

$r_{(INFL,EXUB)}$  and  $Cov(INFL,EXUB)$  are respectively the correlation coefficient and covariance between **INFL** and **EXUB**; whereas  $\sigma$  is the standard deviation.



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It is easily shown that if  $(\sigma_{INFL} \cdot \sigma_{EXUB}) \neq 0$ , then

$$\widehat{a}_1^* \widehat{a}_1' = \frac{Cov^2(INFL, EXUB)}{\sigma_{INFL}^2 \cdot \sigma_{EXUB}^2} = r_{(INFL, EXUB)}^2 = R^2$$

This way, our model has two advantages: testing the correlation coefficient significance allows us to test indiscriminately the significance of the relationship between inflation (**INFL**) and macro financial exuberance (**EXUB**) described by (1) and (2). In such a situation the hypotheses may be stated as under:

$$\begin{cases} \text{Null Hypothesis } H_0 : r_{(INFL, EXUB)} = 0 \\ \text{Alternative Hypothesis } H_1 : r_{(INFL, EXUB)} \neq 0 \end{cases}$$

We know under  $H_0$  that the ratio  $t^* = \frac{|\widehat{\rho}_{(INFL, EXUB)}|}{\sqrt{\frac{(1 - \widehat{\rho}^2_{(INFL, EXUB)})}{n-2}}}$  follows a Student's  $t$

distribution with  $(n - 2)$  degrees of freedom, wherein  $\widehat{\rho}_{x,y}$  is the empirical linear coefficient of correlation:

- (i) If  $t^* < t_{n-2}^{\alpha/2}$  read in the Student's  $t$  table at the level of significance  $\alpha=5\%$  with  $(n - 2)$  degrees of freedom, we accept  $H_0$ : there is no association between price stability and financial stability in CEMAC.
- (ii) If  $t^* > t_{n-2}^{\alpha/2}$  read in the Student's  $t$  table at the level of significance  $\alpha=5\%$  with  $(n - 2)$  degrees of freedom, we reject  $H_0$ . The correlation coefficient is significantly different from zero. This way, we can have two (2) scenarios:
  - $r_{(INFL, EXUB)} > 0$   $\Rightarrow$  Inflation statistics and risk taking are positively correlated: we validate the Monetarist view: a credible monetary policy (price stability) is consistent with financial stability in CEMAC Zone.
  - $r_{(INFL, EXUB)} < 0$   $\Rightarrow$  there is a reverse relationship between inflation and macro financial exuberance in CEMAC: we validate the credibility paradox hypothesis.

We propose to measure macro financial euphoria in function of a credibility of monetary policy indicator (inflation in CEMAC Zone). Data availability permits us to cover the period from the 1970s to 2010. All these data were obtained from International Monetary Fund (IMF), Franc Zone Secretarial Works (Bank of France), COBAC (Banking Commission of Central Africa) and World Bank (IBRD) statistics.

### 4. The Findings

Graphics showing the simultaneous evolution of euphoria indicators (domestic credit provided by banking sector and foreign direct investment) and inflation (GDP implicit deflator) do not globally give any clue about the existence (or not) of a conflict between financial stability and price stability in CEMAC Zone<sup>20</sup>.

- Indeed, Bordo & Wheelock (1998) suggest that the form and possibly the severity of financial instability associated with either a real or inflation shock will be affected by a

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country's institutional environment. Likewise, price variability could potentially lead to mismanagement. Given that the financial instability of the 1980s coincided with inflationary pressures (Bekolo Ebe, 2001) and resulted in a currency crisis (devaluation of the BEAC Franc relative to the French Franc), we might well have expected the Schwartz hypothesis to be corroborated in CEMAC.

Nevertheless, the Graphics do not confirm the traditional view according to which a lower inflation rate also will tend to limit financial instability, apart from CMR, CAF (fig.3) and COG (fig.4).

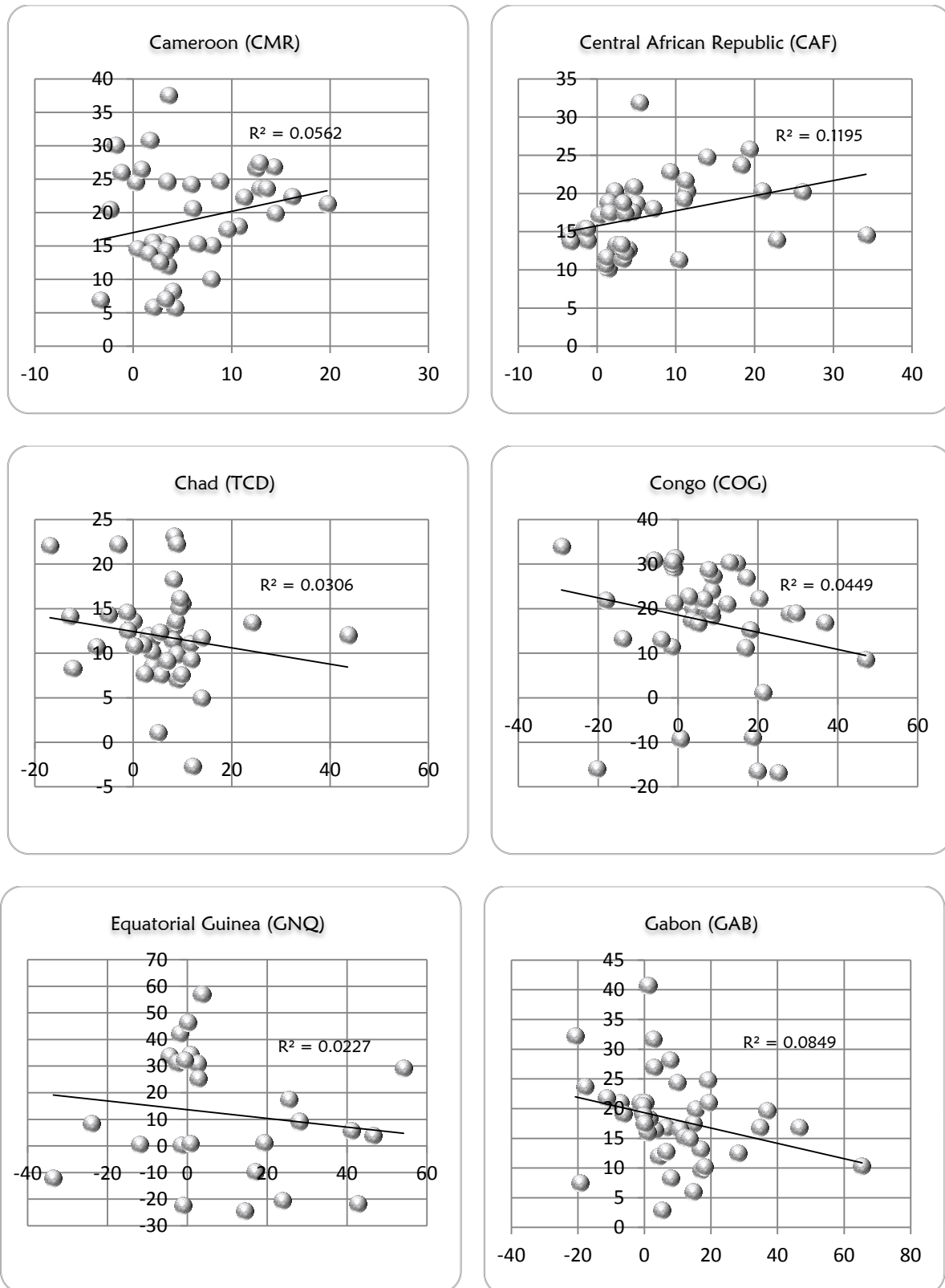
However, it should be stressed that there is something astonishing about this result. Indeed, according to COBAC (2008), the balance sheet of Cameroonian banks represents 41.12% of the CEMAC, contrary to the CAF banking system which represents only 1.93% of the total balance sheet of banks in the CEMAC, reflecting the under-capitalization of banks in this country. Furthermore, CAF is the only country in the BEAC Area to be constantly in a situation of political instability, contrary to CMR.

It may therefore be surprising that the correlation is statistically nil for all the CEMAC countries, except for the Central African Republic. Nonetheless, since we consider what indicated above and given the fact that BEAC is the Central Bank of the community (not only the one of CAF), it will not be illogical to suppose this positive correlation between euphoria and inflation in CAF has little or nothing to do with monetary policy performances: we can therefore assume that the Schwartz hypothesis is not relevant for CEMAC Zone.

- In fact, if the correlation between these 2 variables seems generally negative, the model is not significant apart from CAF (fig.3, *cf. supra*): the weakness of  $R^2$  implies a low Pearson's coefficient of correlation between macro financial exuberance or euphoria (**INFL**) and inflation (**EXUB**), which shows a scattered cloud of points ( $R^2$  is the coefficient of determination. It gives indications on the model adjustment whereas  $|r_{x,y}| = \sqrt{R^2}$  is the linear coefficient of correlation between any two variables **x** and **y**). Indeed, as fig.3 shows, the trend curves aspect is perplexing concerning the sense of correlation between **EXUB** and **INFL**, because the lines rather tend to be horizontal. Concerning fig.4, we can note a falling  $R^2$ : the relationship between foreign direct investment and the monetary policy performance is less significant than the one of fig.3 (except for GNQ at  $\alpha=10\%$ ), and that seems intuitively paradoxical.

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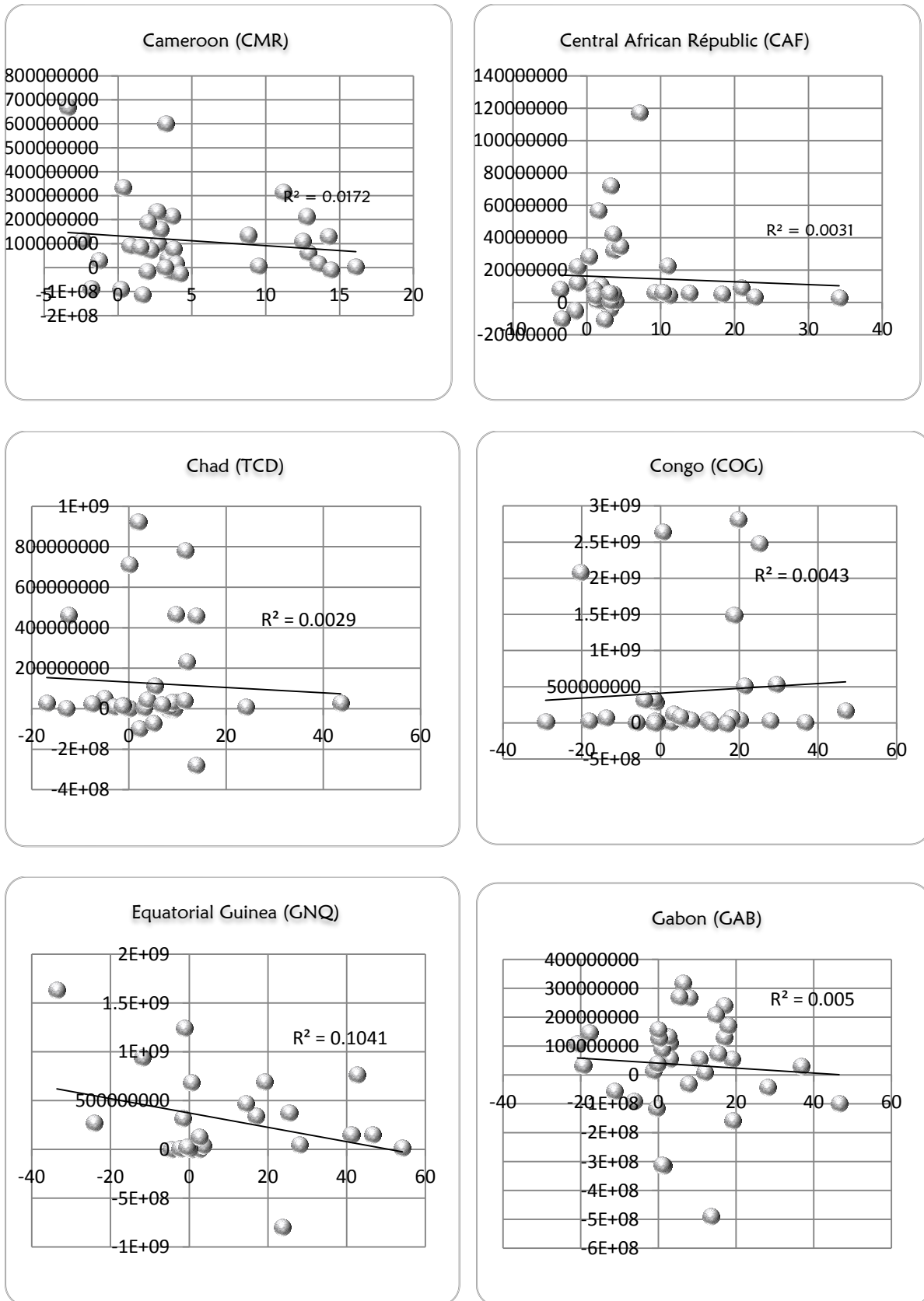
**Figure 3: Domestic credit provided by banking sector (% of GDP) in function of credibility (inflation) in the six (6) countries of CEMAC, from 1970 to 2010. Cloud of points: x axis = inflation; y axis = credits. Linear trend curves.**



Source: Author's construction.

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**Figure 4: Foreign direct investment, net inflows (FDI) in function of inflation in CEMAC – from 1978 to 2010 – Y axis = FDI. X axis = inflation. Linear trend curves.**

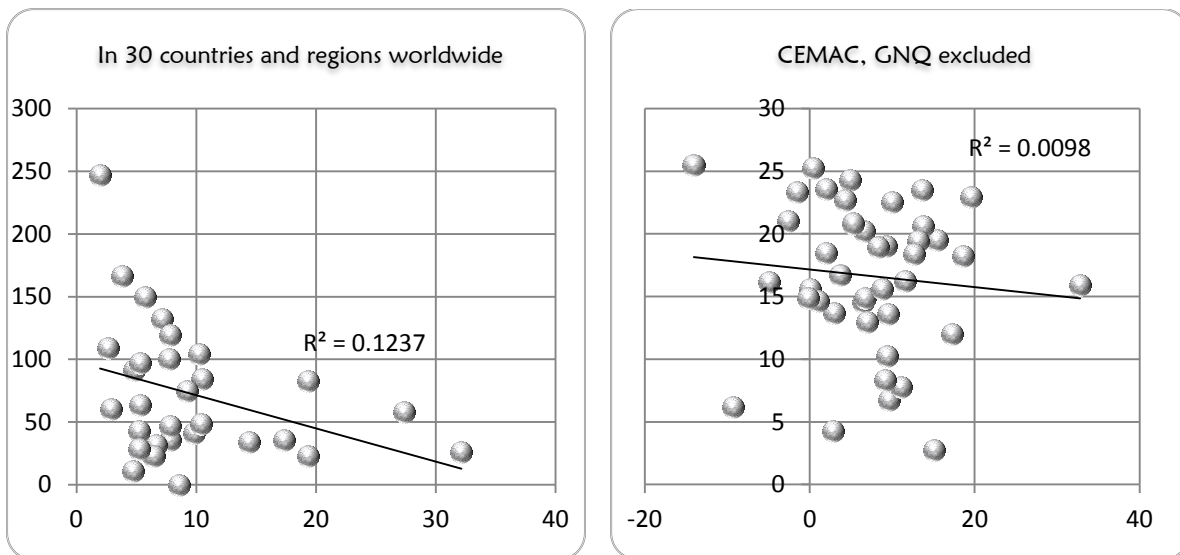


Source: Author's construction.

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As a matter of fact, a reverse relationship between foreign investment and price stability has been put back in the Asian crisis of 1997-98 (Krugman 2009, Henner 1999). Furthermore, an improving macro financial environment (after the 1980s crisis) must have made the banks of the BEAC Area more sensible to inflation statistics. In other words, it must have been observed (even in smaller scale), the same events which took place in OECD Zone just before the 2001 and 2007 crisis (Borio & Shim (2007). For the latter, lower interest rates – so does risk – (co)related with (lower) inflation (*Fisher effect*) misled people to run massively into debt (increasing macro financial exuberance).

**Fig.5. Domestic credit provided by banking sector (% of GDP) in function of credibility (inflation) in CEMAC and 30 countries/regions worldwide, from 1971 to 2011: Arab world, OECD members, World, Burkina Faso, Costa Rica, Côte d'Ivoire, Denmark, Egypt, Finland, Germany, Ghana, Iceland, India, Indonesia, Italy, Japan, Kenya, Korea Republic, Mali, Morocco, Mexico, Nigeria, Pakistan, Portugal, Saudi Arabia, Senegal, Singapore, Spain, Sweden, USA.**



Source: Author's construction.

Eventually, fig.7 shows an anomaly that can be subject to controversy. To make it plain, we must remind that in periods of euphoria, banks have a tendency not to respect prudential standards because of financial innovation: an improving monetary policy must have implied falling liquidity ratios. It even seems that behavior which was responsible for financial distress in the 1980s (Fouda 1996) is not actually observed in CEMAC: since 1994, bank liquidity ratios have been around 150%, well above the regulatory minimum of 100% (COBAC 2008). Fig.7 shows that excess liquidity (apprehended by the amount of free reserves of banks) has been multiplied by 6 from 2002 to 2009. We consider bank liquidity ratios well above the regulatory minimum and the rising amount of bank free reserves imply a situation of *overliquidity* in CEMAC.

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**Table 1: Student's  $t$  empirical ratios:** Credits in function of inflation (table 1.1.) - Foreign direct investment in function of inflation (table 1.2). One and two asterisks indicate significance levels of 10 and 5 percent respectively.

**Table 1.1: (Fig.3 summary)**

Country	R <sup>2</sup>	$ \hat{\rho}_{x,y} $	$t^*$
CMR	0,056	0,24	1,52
CAF	0,119	0,34	2,30 <sup>(**)</sup>
COG	0,044	0,21	1,34
GAB	0,084	0,29	1,89 <sup>(*)</sup>
GNQ	0,022	0,15	0,94
TCD	0,03	0,17	1,10

**Table 1.2: (Fig.4 summary)**

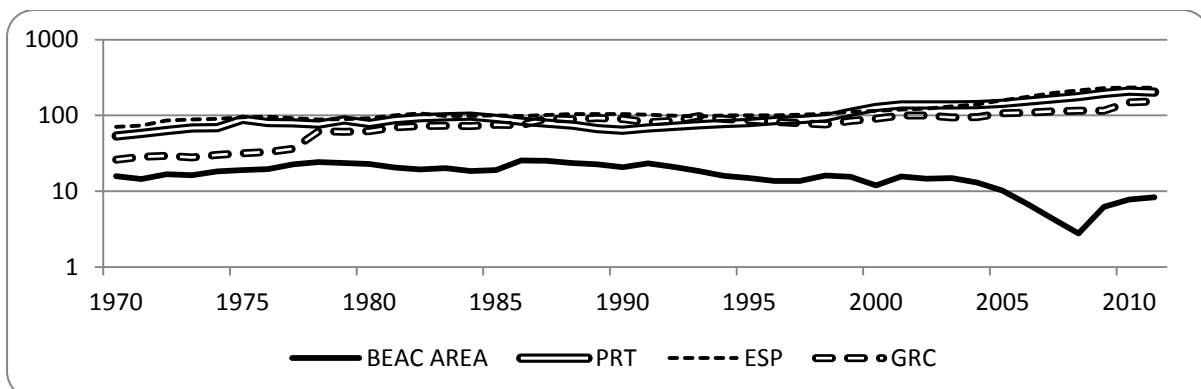
Country	R <sup>2</sup>	$ \hat{\rho}_{x,y} $	$t^*$
CMR	0,017	0,13	0,73
CAF	0,003	0,05	0,31
COG	0,004	0,06	0,35
GAB	0,005	0,07	0,39
GNQ	0,104	0,32	1,90 <sup>(*)</sup>
TCD	0,002	0,04	0,25

Source: Author's construction.

These findings have huge implications in terms of monetary policies in CEMAC since they enable us to give an empirical explanation of *the overliquidity* paradox in BEAC Area at the same time they enable us to reveal an anomaly which can be stated as follows: *monetary policy performances do not have any (or have a very little) influence on pro cyclical activities of banks in CEMAC.*

Figs. 5, 6 and 7 summarize what is commonly called the "paradox of *overliquidity*" in the BEAC Area. This paradox is manifested by the concomitance between a persistent excess liquidity and a lack of financing the real sector. In fact, excess liquidity is a common phenomenon to several countries around the world. It occurs when the sum of the current account and free reserves of credit institutions at the Central Bank persistently exceeds the level of reserve requirements. As a matter of fact, Artus & al. (2008) consider the liquidity excess at the international level as one of the factors behind the financial crisis of 2007. Indeed (*cf. supra*) ample liquidity leads to lower bond yields and a general reduction of risk premiums, as markets integrate the effectiveness of anti-inflationary policies of central banks.

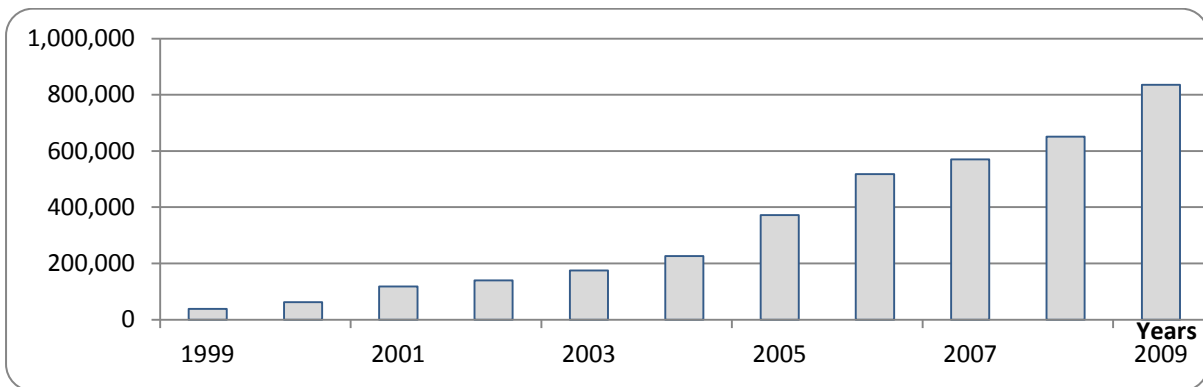
**Figure 6: Evolution of domestic credit provided by banking sector (% of GDP) in CEMAC (GNQ excluded), Portugal, Spain and Greece. Logarithmic scale.**



Source: Author's construction.

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**Figure 7: Free reserves of banks in CEMAC (in CFA millions).**



Source: Author's construction.

Many arguments were put forward to explain bank *overliquidity* in CEMAC. However, our view - which must be seen as a complementary, rather than alternative explanation - is that most of the literature related to this problematic in CEMAC are not only more on the conceptual side, but these arguments ignore a fundamental aspect: the holding of surplus cash by banks and their "aversion to credit", are rooted in an environment marked by a tendentially declining inflation since many decades. It seems like CEMAC is struck by a more severe recession than the one currently affecting Greece, Portugal or Spain, as shown in fig.6. Furthermore, domestic credit in the CEMAC Zone has been declining, and its level is lower than before the crisis of the 1980s.

## 4. Summary and Conclusions

This paper aimed to assess the correlation between price stability and financial stability in CEMAC. Indeed, the lack of consensus - on the definition of the concept of financial instability depending on the phase of the economic cycle (euphoria or panic episodes) -, has renewed the debate on the effects of price stability on financial (in)stability. As a matter of fact, the traditional view - according to which a monetary regime that limits fluctuations in the inflation rate will also tend to limit financial instability - is controversial in regard to financial distresses of these latest years.

From our historical and graphical approach based on the examination of simultaneous evolution of domestic credit provided by banking sector/foreign direct investment (net inflows) and inflation from the 1970s to 2010, we draw the following conclusion: the link between the selected forward-looking indicators of macro financial exuberance and inflation is not obvious in CEMAC:

- The credibility paradox of Central Banks hypothesis is not relevant for the BEAC Area. The case of Cameroon (CMR) and the Central African Republic (CAF) is particularly surprising: these two countries have in common they are the only countries of CEMAC whose indicator of financial stability is positively correlated with inflation statistics. This observation would corroborate the Schwartz hypothesis for these two countries. However there is a significant difference between these two countries: the former concentrates more than 40% of total balance sheet of banks in CEMAC, while the later concentrates less than 2% of the CEMAC total assets. Even more surprising is the fact that the correlation is not statistically different from zero for the Central African

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Republic, the only country in the sub-region to be constantly in a situation of political instability. This is therefore an atypical case.

It would not be illogical to conclude that neither the credibility paradox of CBs hypothesis nor the Schwartz hypothesis is globally relevant for the BEAC Area.

- If many arguments were put forward to explain bank *overliquidity* in CEMAC, our view is that these arguments ignore a fundamental aspect: the holding of surplus cash by banks and their “aversion to credit”, are rooted in an environment marked by a tendentiously declining inflation since many decades. The *overliquidity* paradox in CEMAC seems indeed partly justified because the banks in CEMAC are indifferent to monetary policy performances.

The consequences of this situation are multifaceted for the countries of CEMAC. Indeed, to cope with the rationing of bank credit, economic agents are increasingly turning to microfinance institutions whose number is increasing in the CEMAC. This situation not only increases “*animal spirits*” and “*financial pornography*” behaviors in a sector characterized by low regulation, but at the same time it is an obstacle to development. Indeed, if microfinance is a vector of development, it is too focused on the fight against poverty to boost a high growth which the CEMAC countries need in order to become emergent. Indeed, we believe this is what they need to catch up with the rest of the world.

Besides, given that pegging to the Euro provides some credibility to the CFA Franc (CEMAC currency) - since we know that CFA Franc is (theoretically) guaranteed by the French Public Treasury with a fixed exchange rate with Euro -, failing to talk clearly about an imported credibility, we might wonder whether the decline in inflation can be more associated with “Good Luck” than “Good Policy” hypothesis.

Eventually, the *overliquidity* does not only exacerbate the risk exposure. A non-existent relation between financial stability/fragility and monetary policy performance amputate CEMAC of a recovery and stabilizing instrument. It even poses the fundamental problem of the utility of monetary policy in CEMAC; it could be the purpose of a next paper to investigate the transmission mechanisms based on interest rates in the BEAC Area. Anyway indeed, banks excess liquidity in a credit rationing environment is obviously detrimental to a good functioning money market in CEMAC.

## Endnotes

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<sup>1</sup> CEMAC - from its name in French, *Communauté Économique et Monétaire de l'Afrique Centrale* -, is made of countries which are served by the Bank of Central African States – BEAC).

<sup>2</sup> The Bank of Central African States (or BEAC from its name in French, *Banque Centrale des Etats de l'Afrique Centrale*) was instituted in 1959.

<sup>3</sup> See Bank of France (2011).

<sup>4</sup> Franc Zone is a monetary, economic and cultural area including France and 15 African states in four (4) groups: the Union of Comoros, 3 French Pacific territories, the West African Economic and Monetary Union and the countries of the Economic and Monetary Community of Central Africa (CEMAC). Currencies of these countries have a fixed parity with the Euro.

<sup>5</sup> See COBAC (2008).

<sup>6</sup> Among the reasons usually put forward to explain this excess liquidity in the CEMAC, there is especially: recycling the surpluses of oil resources and the risk posed by lending for banks (due to legal difficulties involved in the effective recovery of claims in case of default), the lack of competition between banks at the regional level and the weakness of credit demand by the big usual borrowers concentrated within the export-oriented sector.



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<sup>7</sup> See Ntonga Efoua (2014) for a deeper analysis regarding the financial history of the BEAC Area.

<sup>8</sup> See Bordo & Wheelock (1998) and Mésonnier (2004).

<sup>9</sup> The "*this-time-is-different*" syndrome is rooted in the firmly held belief that financial crises are things that happen to other people in other countries at other times. Most of us are convinced we have learned from past mistakes.

<sup>10</sup> See Ntonga Efoua (*op.cit.*) for a comparison between Goofriend's and Borio & al.'s approaches.

<sup>11</sup> The Heavily Indebted Poor Countries (HIPC) program was initiated by the International Monetary Fund and the World Bank in 1996. It provides debt relief and low-interest loans to cancel or reduce external debt repayments to sustainable levels. As of December 2011, 36 countries have received full or partial debt relief (31 of which are in Sub-Saharan Africa, 4 are BEAC Area).

<sup>12</sup> The CFA Franc is the name of two currencies used in Africa which are guaranteed by the French Treasury. The two CFA Franc currencies are the West African CFA Franc (ISO currency code XOF) and the Central African CFA Franc (ISO currency code XAF). Although theoretically separated, the two CFA Franc currencies are interchangeable. Both of them have a fixed exchange rate to the Euro: 1 Euro = 655.957 CFA Francs.

<sup>13</sup> See the website of the weekly *Jeune Afrique* 2009, 'Les dessous de l'affaire BEAC', viewed 2 October 2009, <<http://www.jeuneafrique.com/Article/ARTJAJA2509p057-059.xml0/banque-crise-financiere-beac-philibert-andzembeles-dessous-de-l-affaire-beac.html>>.

([www.jeuneafrique.com](http://www.jeuneafrique.com), visited in October 2, 2009).

<sup>14</sup> Ntonga Efoua (*op.cit.*) gives many bank *overliquidity* indicators in CEMAC including the liquidity ratios and the coverage rate of gross domestic credit by deposits which are well above the requirements.

<sup>15</sup> This observation is based on the consultation of the BEAC website and Briefing Notes on the financial history of the Franc Zone (Bank of France, 2011).

<sup>16</sup> The "*this-time-is-different syndrome*" and what Akerlof and Shiller (2009) – sharing Keynes' view – called "the animal spirits": fraud, scam, corruption, the propensity to swindle and so on are related to speculative episodes. We find many examples of such irrational behaviors in the recent history. Remember Enron in 2002, the Madoff scandal in 2008/2009, the Libor (London Interbank Offered Rate) scandal in 2012, etc.

<sup>17</sup> Kindleberger (2000) uses this Greek world to talk about euphoria. It also suggests a loss of touch with rationality, something close to mass hysteria, according to Kindleberger & Aliber (2005).

<sup>18</sup> See Eichengreen, Rose & Wyplosz (1995); Kaminsky & Reinhart (1999) and Minsky (1982).

<sup>19</sup> See Pearson (1957) and Kothari (2004).

<sup>20</sup> Exceptionally, Equatorial Guinea data are available from 1986 to 2010. Anyway it doesn't change the general result.

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