



## EFFECT OF BANKING CONCENTRATION ON MONETARY POLICY TRANSMISSION MECHANISM IN CAMEROON



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### ABSTRACT

#### Article History

Received: 24 December 2019

Revised: 28 January 2020

Accepted: 2 March 2020

Published: 1 April 2020

#### Keywords

Banking concentration

BEAC

CEMAC

DOLS

Lending channel

Monetary policy.

#### JEL Classification:

E50, E51, E52, E58.

The aim of this paper is to evaluate the effect of banking concentration on the monetary policy transmission mechanism in Cameroon. To conduct our study, we focus our attention on the bank lending channel. Using bank-level data of 6 commercial banks from 2006-2016 collected from National Credit Council, we estimate our model using the Dynamic Ordinary Least Square (DOLS) method. We find that, banking channel exist in Cameroon. Moreover, it appears that banking concentration weakens bank lending channel of monetary policy transmission in Cameroon. But, its impact is not significant. It also appears that banking concentration negatively and significantly affect credit supply in Cameroon. Therefore, we recommend to the Central Bank authority to reduce the amount of regulatory capital to a reasonable level in order to facilitate the entry of new banks into the sector. This should ultimately lead to the migration of concentrated structure to competitive structure more able to convey monetary policy decisions.

**Contribution/ Originality:** This study contributes to the existing literature on monetary policy transmission mechanism in Cameroon by taking into account the effect of banking concentration on credit channel of monetary policy.

## 1. INTRODUCTION

The financial system of the Economic Community of Central African States (CEMAC: Cameroon, Congo, Gabon, Equatorial Guinea, Central African Republic and Chad) is dominated by the banking system. This sector alone holds nearly 85% of financial assets and liabilities therefore, the bank lending channel seems to be the main channel of BEAC (Bank of Central African States) monetary policy transmission (Bikai & Kenkouo, 2015). However, the distribution of bank credit appears very concentrated in the various Central African countries. According to the 2012 COBAC (Central African Banking Commission) report, the value of the Herfindahl - Hirschmann index on the redeemable credits granted is higher than the threshold of 0.18, thus reflecting a high concentration of banks. For example, in Gabon, 65% and 45% of loans were granted by a single bank respectively in 2009 and 2010. In Equatorial Guinea, only one bank accounted for more than 60 % of loans granted in 2009. But the following year, a total of 76% credit was granted by two largest banks in Equatorial Guinea in 2010. In Cameroon two

banks have granted 55% of credits in 2009. This share will increase in 2010 to 61%. As a result, the CEMAC banking market is highly concentrated and divided into countries with different levels of concentration.

In addition, they register in Cameroon a decreasing evolution of BEAC's main interest rate. The Interest Rate on Tenders (TIAO) decreased from 8.4% in 1994 to 6.5% in 2002; then it falls to 2.45% in 2016 (Credit National Council Report of Cameroon, 2016). This downward trend in the TIAO would have led to an increase in the supply of bank credit (Jimenez, Steven, Jose, & Jesus, 2008). Paradoxically, the evolution of growth rate of the supply of bank credit in Cameroon does not verify this logic of the credit channel. The growth rate of gross credit declined from 28.71% in 2002 to 15.15% in 2016 (Credit National Council Report, 2016). Over the same period, for a TIAO decline of around 62.08% the real GDP<sup>1</sup> growth rate rose from 4.01% to only 4.5% (World Bank, 2016). This set of facts raises questions about the effect of the TIAO on the supply of credit and consequently the transmission of monetary policy in the context of a concentrated banking system of Cameroon.

Several authors showed emphatically that, the level of banks' sensitivity to monetary policy shocks depends on the degree of concentration of the banking market (Adams & Amel, 2005; Civelek & Al-Alami, 1991; Vanhoose, 1983). According to Lensink and Sterken (2002) if the level of competition amongst financial institutions is low, then the transmission of monetary policy is likely to be less effective than under a more competitive structure. Moreover, according to the Structure-Conduct-Performance hypothesis (SCP), low competition means high concentration. Concentration stems from the fact that some banks have market power in a given banking system (Claessens & Laeven, 2004). For Civelek and Al-Alami (1991) in a concentrated banking sector, there is a high credit costs. This leads to reduce credit demand and delays economic growth. This theory reflects the context of the CEMAC countries. In Cameroon, the average real costs of bank credits (TEG: Global effective rate) incurred in the first half of 2014 by individuals, large companies and Small and Medium-sized Enterprises (SMEs) were 14.72%, 5.8% and 12.5% respectively (Credit National Council Report of Cameroon, 2014).

Due to the prevailing banking concentration in Cameroon, the question of the effect of banking concentration on the transmission of BEAC monetary policy is returned to central stage. The aim of this research is to empirically verify if the level of banking concentration reduces the effect of monetary policy change on the bank credit supply. In other words, this research paper tries to verify if the banking concentration negatively affects the BEAC monetary policy transmission. In order to take into account the heterogeneity of CEMAC countries in terms of banking concentration, we have limited our study area in Cameroon. It is important to note that Cameroon in the CEMAC zone alone accounted for about 44% of banking activity in 2006 and 34.55% in 2014 in terms of total banking assets (Credit National Council Report, 2014).

The rest of this paper is organized into four parts. They include literature review, methodology, results, and conclusion.

## 2. CRITICAL LITERATURE REVIEW

In this section, we present the theoretical and empirical literature review.

### 2.1. Theoretical Literature Review

The theoretical basis of the analysis of the bank credit channel is based on the simplified IS-LM model developed by Bernanke and Blinder (1988). These authors have shown that there is a relationship between the Central Bank interest rate and bank lending justifying the existence of the bank credit channel. Although many authors have made investigations about the identification of the bank lending channel, the recent research works particularly focus on the determination of the factors likely to influence this channel. According to Kashyap and Stein (2000); Kashyap and Stein (2000); Adams and Amel (2005) size, liquidity, capital and banking concentration

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<sup>1</sup> GDP : Gross domestic product.

are some of those factors. Thus, works are being conducted on the impact of the characteristics of bank balance sheets, financial innovation, the independence of the central bank and the banking concentration on the effectiveness of monetary policy. Due to the context presented above, we will focus our attention on the last factor for the case of Cameroon.

Indeed, according to [Olivero, Li, and Jeon \(2011a\)](#) the degree of banking concentration affects the transmission of monetary policy through the credit channel in several ways: first, if the increase in bank concentration is due to an increase in the market share of the big banks, then the monetary policy shocks will have a smaller effect on the available funds of the big banks and the efficiency of the credit channel will decrease. Second, if competition in the bank financing is sensitive to the change in the cost of capital, monetary policy shocks will be transmitted through the credit channel and will lead to the effectiveness of monetary policy.

[Cottarelli and Kourelis \(1994\)](#) were interested in the structure of the banking market and, find that barriers to the entry of the banking market reduce the speed of transmission of monetary policy. According to [Khemraj \(2008\)](#) the effectiveness of monetary policy increases with the number of firms in the banking sector. This means that a competitive banking structure is more likely to convey monetary policy than an oligopolistic structure.

In order to explain the effects of the structure of the banking markets on the transmission of monetary policy, we used the SCP (Structure-Conduct-Performance) model. According to this model, in concentrated markets, some banks are able to extract monopoly rents. Large banks with market power can absorb changes in monetary policy to protect their profitability. As a result, a monetary shock has little impact on interest rates and credit levels in concentrated markets than in a competitive environment ([Adams & Amel, 2005](#)). Some empirical checks are made in the literature.

## 2.2. Empirical Literature Review

In this section, we are particularly interested in the presentation of the empirical work on the bank credit channel. We emphasize on the relationship between the structure of the banking market and the transmission of monetary policy. In this way, [Adams and Amel \(2005\)](#) in their research have examined the importance of the transmission mechanisms of monetary policy and the effect of the structure of the banking market on this transmission. Based on the annual data of the Community Reinvestment Act for the period 1996-2002, they estimated the reduced form of the credit supply model using the Ordinary Least Squares (OLS) estimator. They found that, the credit channel exist in the United States. However, an increase in the level of bank concentration leads to a reduction in the sensitivity of the bank credit supply to monetary policy change.

In addition, in order to draw the attention of the monetary authorities to the heterogeneity of the countries of the European Monetary Union in terms of banking competition, [Brämer, Gischer, Richter, and Weiß \(2013\)](#) conducted an investigation on a sample of 12 countries taken individually. With data within the period 2003-2009, they estimated their model using the ordinary least squares method. The result reveals that a variation in the degree of concentration of the banking industry significantly affects credit conditions between countries and therefore prevents the homogeneous transmission of the ECB's monetary policy between those countries. The market power is measured in their work by the modified Lerner index.

[Fung, Solanko, and Weill \(2013\)](#) in a paper have attempted to answer the following question: Does the banking competition affect the bank credit channel in the Euro zone? From a large panel made up of banks from 12 countries, they analyzed the behavior of credit supply following policy shocks over the period 2002-2010. The results obtained by the Generalized Method of Moments (GMM) reveals that competitive banking affects the transmission of monetary policy and by the same means the effectiveness of monetary policy. They, at the end conclude that monetary policy is less effective on banks with greater market power and more effective on banks with weak market power. Banking competition is measured here by the Lerner index. The results of this study corroborate those of [Adams and Amel \(2005\)](#) but contrast with those of [Vanhoose \(1983\)](#) and [Olivero. and Jeon](#)

(2011b). For the latter, a reduction in the level of competition amplifies the transmission of monetary policy. According to Khemraj (2008) there is an inverse relationship between competition and banking concentration. Therefore, a reduction in the level of competition results in an increase in the degree of concentration that would magnify the transmission of monetary policy. This last result highlights the controversy surrounding the effect of bank concentration on the transmission of monetary policy.

### 3. METHODOLOGY

This section presents the econometric model and the estimation procedure.

#### 3.1. Econometric Model

In order to test the effect of bank competition on monetary policy transmission, we have formulated a credit supply function inspired by the work of Adams and Amel (2005). To take into account the influence of past values on current credit supply, we have estimated a dynamic model. Deposits being introduced in the model to take into account the main source of bank financing. Thus, the model is written as:

$$\log L_{it} = \alpha_i + \beta_1 \log L_{it-1} + \beta_2 \text{INF}_t + \beta_3 \log \text{DEP}_{it} + \beta_4 \text{TIAO}_t + \beta_5 \text{TIAO} * \text{RC}_m + \varepsilon_{it} \quad (1)$$

With  $\log L_{it}$ : represent the volume of credit supply from bank  $i$  at time  $t$ ;  $\text{INF}$ : the rate of inflation;  $\log \text{DEP}$ : deposits;  $\text{RC}_m$ : the  $m$  banks concentration ratio;  $\text{TIAO}$ : the main interest rate of the BEAC;  $\text{TIAO} * \text{RC}_m$ : the multiplicative variable for capturing the interaction between market structure and monetary policy;  $t$ : the time;  $i$  individuals made up of 6 banks;  $\beta$  the parameters.

#### 3.2. Estimation Procedure

We used macro and micro secondary data in this work. The macroeconomic data are composed of the rate of inflation, the interest rate on tenders and the concentration ratio of  $m$  banks ( $\text{RC}_m$ ).  $\text{RC}_m$  is calculated by the author using the CNC (Credit National Council) data. According to the 2014 CNC report, the  $\text{RC}_m$  is computed on the basis of the 4 largest banks in terms of total deposits. It is the sum of the market shares of these banks. With regard to the microeconomic data, we have deposits and bank credit. Our study period is 2006-2016. We perform here an empirical investigation in panel data. To ensure the validity of the results, we conducted several tests. The Fisher test shows that the panel is heterogeneous, therefore, we have adopted in this work a disaggregated data approach.

Im, Pesaran and Shin (IPS) stationarity test shows that all the variables are stationary at first order. The Kao cointegration test reveals the existence of a long run relationship between the variables. Breusch-Pagan test shows the presence of heteroskedasticity. Fisher test reveals that the panel is heterogeneous. Given the results of these preliminaries tests and the size of the panel ( $N=6$  less than  $T=11$ ), we should choose between two estimation methods: the FMOLS (Fully Modified Ordinary Least Square) and the DOLS (Dynamic Ordinary Least Square). FMOLS automatically correct the problems of autocorrelation, heteroskedasticity, and endogeneity. In practice, FMOLS estimator's are unbiased when the individual dimension is less than the temporal dimension in a homogeneous panel, but biased in a heterogeneous panel (Kao & Chiang, 2000). Kao and Chiang (2000) performed a comparative analysis of the estimators obtained by the FMOLS and the DOLS, to test their robustness in homogeneous, and heterogeneous panel. From the Monté Carlo simulations, they showed that DOLS are more efficient than FMOLS in the case of a homogeneous or heterogeneous panel, both in large or small samples. Since the panel is heterogeneous, we chose the Dynamic Ordinary Least Square for robustness purposes. Moreover, the Wald test used to evaluate the global signification of the model shows that the model is globally significant.

#### 4. RESULTS AND INTERPRETATION

The Table 1 gives the results of the estimated coefficients obtained by the DOLS method.

Table-1. Estimations results.

Variables	Model 1	Model 2
LOGCRED(-1)	-0.016 184(0.013 023)	-0.004 614(0.017 114)
LOGDEP	0.492 025***(0.005 977)	0.483 908***(0.007 056)
INF	3.966 810(2.430 815)	1.674 355(2.564 660)
TIAO	-11.44 486***(5.287 632)	
TIAO*RCm		2.763 681(16.82 772)
RCm	-1.880 313*(1.118 348)	
R-squared	0.706 667	0.708 017

Source: Estimates generated using Eviews 9. The values into brackets are standard deviations. \*\*\*, \*\* and \* mean significant at 1%, 5% and 10% respectively.

The results of this study are based on the interpretation of the multiplicative variable coefficient. Therefore, its coefficient is expected to be positive and significant. According to Adams and Amel (2005) the positive sign of this coefficient reflects the fact that, credit supply in a highly concentrated banking market is less sensitive to restrictive monetary policy shocks than under a competitive structure.

Let's consider model 1 in the table above. One can see that, the effect of credit supply of the previous period on current period lending is non significant. Deposits affect positively and significantly the bank credit supply in Cameroon. This result is justified by the fact that, bank deposits is the main source of bank credit financing in this country since the financial market of CEMAC is not developed. In addition, we found that the m bank concentration ratio (RCm) has a negative and significant impact on the credit supply in Cameroon. This is explained by the fact that concentration can lead to an agreement between firms. Thus, these firms will set high interest rate on lending. This practice tends to reduce demand and credit supply. Moreover, an interpretation of the models indicates a positive and non significant effect of inflation on credit supply in Cameroon, both in Models 1 and 2. This means that inflation is not contributive to the explanation of credit supply in this country.

Base on Kashyap and Stein (1995); Kashyap. and Stein (2000); Ehrmann, Gambacorta, Martinez-Pages, Sevestre, and Worms (2001); Birendra (2013) one can say that the bank credit channel is operational or exist in Cameroon because, the interest rate coefficient is negative and significant. In fact, an increase in BEAC's interest rate leads to an increase in the refinancing cost of commercial banks. Therefore, they will reduce their credit supply. This result is in accordance with the credit view of monetary policy transmission mechanism and corroborates with that of Bikai and Kenkouo (2015).

If we consider model 2 in the table above, the first observation is that the results respect the expected signs. The positive sign of multiplicative variable coefficient (TIAO \* RCm) reveals that, the level of banking concentration reduces the negative impact of TIAO on credit supply. This sign is justified by the fact that banks holding a large market share can easily constitute excess reserves. Thus, following a restrictive monetary policy shock aimed at reducing the credit supply, these banks will use their excess reserves to continue to grant loans. Moreover, according to SCP model, in concentrated markets, some banks extract monopoly profits. So, large banks with market power will absorb changes in monetary policy to protect their profitability. Therefore, a monetary shock has little impact on interest rates and credit in concentrated markets than in a competitive environment. This result in accordance with that found by Adams and Amel (2005) is not significant in Cameroon.

#### 5. CONCLUSION AND RECOMMENDATION

This paper has evaluated the effect of banking concentration on the monetary policy transmission in Cameroon, with a particular attention on bank lending channel. Using the DOLS estimator, we found that banking concentration negatively and significantly affect credit supply in Cameroon. This reduces the bank credit sensitivity

to the restrictive monetary policy change and at the same time weakens monetary policy transmission. This last result is not significant. On the basis of these results, we recommend to the Central Bank authority to reduce the amount of regulatory capital to a reasonable level in order to facilitate the entry of new banks into the sector. This should ultimately lead to the migration of concentrated structure to competitive structure more able to convey monetary policy decisions.

**Funding:** This study received no specific financial support.

**Competing Interests:** The authors declare that they have no competing interests.

**Acknowledgement:** All authors contributed equally to the conception and design of the study.

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