



BANK FINANCIAL ACCELERATOR AND MITIGATION OF TRANSIENT ASYMMETRY OF SHOCKS IN THE WAEMU

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ABSTRACT This paper provides a re-examination of the role of monetary policy in stabilizing asymmetric shocks. It seeks to test the hypothesis that the single monetary policy can, through a bank financial accelerator mechanism, mitigate the asymmetry of the transient shocks within the WAEMU. The analysis covers seven WAEMU countries over the period 1990-2015. Using an empirical model coupled with SURE (Seemingly Unrelated Regression Equation) estimator, the study shows that, apart from the BCEAO's policy interest rate, banking indicators (own funds and credit) are the main variables for mitigating the asymmetry of transient demand shocks, whereas, the liquidity and credit reduce the asymmetry of transient supply shocks in the WAEMU countries.

KEYWORDS : Transient asymmetry of shocks; Bank financial accelerator; Seemingly Unrelated Regression Equation; WAEMU

1-Introduction

Can monetary policy effectively affect asymmetric shocks? If so, which of the asymmetric shocks (transient and permanent) is likely to be mitigated? These are some of the unclear concerns in the literature that highlights the scope of a single monetary policy within a monetary union. The theoretical basis for such concerns goes back to Mundell-Fleming's rule of economic policy allocation. Under this rule, monetary policy is effective in stabilizing symmetric shocks in monetary union while fiscal policies of the countries will best mitigate asymmetric shocks (Benassy-Quéré et al., 2010). Although this assignment rule has received favorable echo in the literature, it has been re-evaluated in a recent literature which indicated a unique monetary policy role in mitigating asymmetric shocks (Wiskens, 2010). However, opinions are divided on the shocks horizon (permanent or transient) likely to be affected by it (Kébabdjian, 2008; Drumetz and Pfliter, 2010). Clearly, the results of this literature review the Mundell-Fleming assignment rule. In conjunction with this rule, many factors have been highlighted in the literature in an attempt to stabilize asymmetric shocks within a monetary union such as the West African Economic and Monetary Union (WAEMU).

Empirical studies emphasize both market and non-market mechanisms that have shown their limit in terms of adjustment policy (Tapsoba, 2009; Ganem, 2014), as well as on the role of the financial accelerator of firms or banks (Jebli, 2012). This channel of bank financial accelerator refers to the mechanism whereby any shock from asset prices affects the net wealth of banks and makes their balance sheet positions fragile (Meh and Moran, 2010). These act on their capacity to offer credit into the economy and, by the way, cause fluctuations in macroeconomic variables. The more sharp and homogeneous the indicators of banking capital within the monetary union are, the less will be the asymmetric reaction of economies to shocks. Thus, this channel is used to evaluate the behavior of the monetary authorities to mitigate the asymmetry of transient shocks (Badarau, 2009). In the specific case of WAEMU countries, two cross-sectional studies are to be highlighted. These are the studies by Ouédraogo (2011) on the impact of bank balance sheets on the effectiveness of the monetary policy of BCEAO (Central Bank of West African States) and that of Fall (2016) on the impact of the financial accelerator on macroeconomic fluctuations in the WAEMU. These studies have not sought to highlight the scope of the bank financial accelerator in mitigating the transient asymmetry of shocks within the WAEMU. In a direct continuity to Fall (2016), this paper aims to empirically investigate whether the single monetary policy can, through the bank financial accelerator mechanism, mitigate the transient asymmetry of supply and demand shocks within WAEMU countries. In this paper asymmetric shock means the different reactions following a shock or the one that affect countries differently. The monetary policy refers to the policy interest rate of BCEAO and the mechanism of the bank financial accelerator.

The rest of the paper is structured as follows. Section 2 provides a synthetic review of the literature. Section 3 presents the methodology. Section 4 provides the results and discussion. The paper ends with a conclusion in Section 5.

2- Literature review

Concerning the financial accelerator mechanism and its effect on the transmission of monetary policy shocks, several channels have been demonstrated in the literature (Bernanke, Gertler and Gilchrist, 1999; Meh and Moran, 2010; Gertler Kyotaki and Queralto 2011). This mechanism affects the stabilization of asymmetric shocks through the firms' balance sheet (demand side) and that of banking capital (supply side) developed by Meh and Moran (2010). The underlying idea behind this channel (bank balance sheet) is that the financing constraints faced by banks in the presence of information asymmetry, depending on their financial position (degraded or not), affect the amount of credit injected into the economy. This mechanism implies that degraded balance sheets are sources of unfavorable shocks amplification on firms' investment and therefore likely to generate macroeconomic fluctuations (Jebli, 2012). When one looks at its effect within a monetary union, it appears that any dissimilarity in the indicators of banking capital is a channel of asymmetric propagation of a common shock of monetary policy. On the other hand, if the indicators of banking capital between countries within a monetary union were of good quality and homogeneous, then the banks' financial accelerator increases not only the degree of transmission of shocks but also the degree of responses symmetry of the economies (Chèze, 2003). Hence, the interest of being able to test empirically whether or not the bank financial accelerator mitigates the asymmetry of the various transient shocks which affect the WAEMU countries. This requires strengthening the theoretical conclusions using empirical results.

Empirical literature highlighting the role of the banking accelerator in mitigating asymmetric shocks has been the subject of many studies in developed countries. These studies include, but are not limited to, those of Badarau (2009); Rannenberg (2012); Jebli (2012) and N'Diaye (2009). Using a Dynamic Stochastic General Equilibrium (DSGE) model, Badarau (2009) studies the role of the bank financial accelerator in the transmission of monetary policy effects within the Euro zone. He shows that the asymmetry of the banking balance channel plays an important role within the zone. However, the effect of this channel appears rather low in countries like France and Spain, whereas it would be rather large in Germany or Italy. In this line, Rannenberg (2012) showed that a capital shock reduces GDP, and generates macroeconomic fluctuations. In addition, it reduces loans supply by banks and increases the cost of external financing for enterprises. Looking at the balance sheet of firms, a study by Jebli (2012) showed that small firms are very sensitive to their financial situations which amplifies the investment shocks that remain asymmetric. While these studies have shown the effect of the bank financial accelerator on the spread of shocks within a monetary union, they do not examine the role of the economic cycle and banking regulation in this relationship. The study by N'Diaye (2009) has shown that increased demands on regulatory capital during periods of economic expansion may hamper the effectiveness of the bank's financial accelerator mechanism in its function of mitigating asymmetry shocks within the Euro zone.

Ouédraogo (2011) assessed the effect of bank balance sheets on the transmission of monetary policy within the WAEMU, and revealed

that the lending activity of small banks, least liquid banks and banks with less equity is more affected by the monetary policy. This result supports the idea that the transmission of monetary policy is conditioned by the size, capitalization and liquidity of banks. In the same way, Fall (2016) shows that the presence of financial rigidities (through the external financing premium and the collateral constraint) results in a loss of the monetary policy effectiveness. His study revealed that these financial rigidities play a significant role as factors explaining about 15% of the fluctuations in the WAEMU's GDP. Overall, while these studies are remarkably far-reaching, they do not highlight the scope of the bank financial accelerator as an implicit mechanism for coordinating the economies of the zone. While strengthening the findings of these baseline studies in this area, a study focusing on WAEMU countries will help to understand the scope of the bank financial accelerator mechanism to mitigate the asymmetry of transient shocks.

3- Methodological Approach

A shock is any non-endogenous, unpredictable, unanticipated and unobservable event that an economy undergoes. It aims to distance actual production from potential production (Lemoine et al., 2007). In this paper, I evaluate the series of asymmetric shocks (supply and demand) by multiplying the series trend deviation (GDP and consumption ratio) by the coefficient of asymmetry of shocks proposed by Cariolle (2012). From these series, the transient part of the asymmetric shocks is obtained through the Hodrick-Prescott filter. These transient asymmetric shocks were used in the estimation seeking to understand the scope of the banks' financial accelerator in mitigating WAEMU economies shocks. Indeed, as suggested in the literature, several indicators have been highlighted to evaluate this scope as a mechanism to mitigate or not the asymmetry of transient shocks (Badarau, 2009). These indicators of banks' financial accelerator (Banks capital measure) are subject to a principal component analysis.

3-1- Empirical model

The empirical model is presented as follows:

$$C_{it} = \alpha_i + a.R_{it} + F_{it}.\beta + X_{it}\theta + \varepsilon_{it} \quad (1)$$

- C_{it} denotes the series of the transient asymmetric shock of country i at period t ;
- F_{it} , and R_{it} represent variables vector of bank financial accelerator and BCEAO policy rate respectively of country i at period t ;
- X_{it} is a control variable vector of country i at period t ;
- α_i is a coefficient capturing the fixed effects and ε_{it} is the error term.

Equation (1) was estimated by country using the SURE (Seemingly Unrelated Regression Equation) estimator by Zellner (1962) which allow to take into account the interdependencies existing between countries. Such approach permits to obtain an estimate of the individual coefficients and to assess subsequently the joint linearity of the parameters and the homogeneity (or heterogeneity) of the banking capital indicators in order to assess the homogeneous (or heterogeneous) character of the exogenous variables of interests. Thus, when the hypothesis H_0 (homogeneous bank financial accelerator indicator) is accepted, or once the joint linearity test reveals that the estimated coefficients are not different, it is deduced therefore that this contributes to attenuating the asymmetry of the transient shocks. Otherwise, it amplifies it.

3-2-Data source and description of the variables

The banking data are aggregated by country in default of data on individual banks. They cover the period from 1990 to 2015 for the (07) seven countries of the WAEMU zone with the exception of Guinea-Bissau. Also, the necessary variables for the evaluation of the vector of bank financial accelerator are available over the same period. These include: (i) the policy rate of BCEAO Captured by the rate on the interbank market at one week which is the most active compartment driven by the BCEAO through its open market operations (Dembo Toe, 2012); (ii) banking variables capturing the financial accelerator: (a) banking capital (own funds / total assets); (b) -profitability (banking profit / total assets); (c) - cost of banking resources (interest paid / credits granted); (d) lending rate to non-financial agents; (e) Interbank deposits / liabilities; (f) - banking liquidity (cash and interbank deposits); (g) -credit / GDP; (iii) GDP, terms of trade, inflation rate (GDP deflator), real growth rate of GDP per capita, ratio of foreign direct investment to GDP and ratio of final consumption to GDP. These variables were obtained from the World Bank's WDI

database. All variables included in equation (1) have been taken in natural logarithm.

4-Results and discussion

The pre-estimate tests of the panel with the SURE (the stationarity test of Pesaran; the cointegration test of Johansen; and the Poolability test of Hsiao (2003)) were conclusive. This allows to proceed with the estimations.

The results reveal that, apart from the BCEAO's policy interest rate, banking indicators (own funds and credit) are the main variables for mitigating the asymmetry of transient demand shocks, while, the liquidity and credit facilities reduce the asymmetry of the transient supply shocks within the WAEMU countries. These results suggest that banks within WAEMU zone are comfortably capitalized. Because of their availability of sufficient resources, they have the necessary reserves to cope with the economy financing through credits granting. Thus, in the context of a relatively high ratio of own funds to assets, the shocks are amplified through the balance sheet. Overall, these different results remain valid when considering the analysis by country. The results of the joint linearity test of the parameters and those of homogeneity tests (annex) show that the ratios credit to GDP and capital to assets are not different (at 5%) from each other within of the WAEMU countries. The two tests show that the ratios remain globally homogeneous within the WAEMU zone.

Overall, the empirical examination of the sensitivity of economies in the context of the bank financial accelerator mechanism certifies the importance of the particularities of the banking sectors in each country, in mitigating the transient asymmetry of shocks (especially demand shocks) within WAEMU. The more sharp and homogeneous these indicators, the less will be the asymmetric response of WAEMU economies to the shocks. Therefore, in the presence of transient asymmetric demand shocks, co-ordination of economic policies in the sense of cooperation would be an effective mechanism for its stabilization (Dèdèhouanou, 2009). The findings of this study highlighting the effect of banking balance within a monetary union on the spread of shocks are in line with those found by Badarau (2009) and Ouedraogo (2011).

Table 1 : Synthesis of the estimation results by the SURE estimator

Variables	Transient asymmetric shocks	
	Demand	Supply
Policy interest rate	-0.01 (0.04) **	0.25 (0.03) **
R1 (Own funds / Assets)	-0.01 (0.031) **	0.33 (0.79)
R2 (banking liquidity)	0.31 (0.56)	-0.04 (0.08) *
R7 (credit / GDP)	-0.03 (0.021) **	-0.29 (0.018) **
Control Variables	0.12 (0.07) *	-----
Inflation	-----	-0.65 (0.035) **
Terms of trade	-----	-----
Foreign Direct Investment / GDP	-----	0.02 (0.076) *
Growth rate of GDP per capita	-0.02 (0.88)	-----
Number of parameters	06	06
(Prob)	0.013	0.027
R2 (adjusted)	0.17	0.22

Note: Values in parentheses are p-values: ** Significant at 5%; * Significant at 10%; (Prob) in the table denotes the probability of rejecting the null hypothesis of fallacious regression.

Over 9 ratios subjected to factor analysis, only 3 ratios (R1 R2 and R7) explain 72% of the external financing premiums for all WAEMU countries.

5-Conclusion

This paper has tested the hypothesis that the single monetary policy can, through a mechanism of bank financial accelerator, mitigate the asymmetry of the transient shocks within the WAEMU zone. Based on an empirical model associated with the SURE estimator, the study shows that the bank financial accelerator contributes to mitigate the asymmetry of transient shocks (especially demand shocks). In terms of economic policy implications, this study suggests: adopting a new monetary policy instrument (a cyclical stabilization fund) with the task of providing additional resources to countries in need to implement expansive fiscal policies to stabilize the shocks. Also, the promotion of measures to increase the ratio of own funds to assets in the WAEMU

zone should be encouraged. Finally, the regional stock exchange should be popularized as an alternative of financing or diversification of funding sources for the economic agents. These different measures increasing the degree of symmetry of the responses of the economies are a sine qua non condition for a more sensitive mitigation of the asymmetry of the transient shocks within the WAEMU countries. This will reinforce the optimal character of the monetary union.

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