Determinants of Bank Lending Behaviour in Ghana

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Abstract
This paper investigates the determinants of bank lending behaviour in Ghana. Using the GMM-System estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998), we find that bank size and capital structure have a statistically significant and positive relationship with bank lending behaviour. We also find evidence of negative and significant impact of some macroeconomic indicators (central bank lending rate and exchange rate) on bank lending behavior. Again, competition in the industry was found to have a positive and significant impact on bank lending behaviour. Finally, relationship banking was found to have a positive correlation with bank lending behaviour in Ghana. Thus, policies aimed at maintaining stable macroeconomic fundamentals would greatly accelerate bank lending decision.
Keywords: Banks, lending behaviour, Ghana

1. Introduction

The banking industry is one critical component of the financial system in developing countries capable of facilitating capital accumulation and economic processes. This is possible through efficient financial intermediation. The banks mobilize funds from the surplus spending units in order to bring financial costs down. Banks mostly transform liquid assets like deposits into illiquid assets like loans (Diamond and Rajan, 1998). This transformational process of banks' activity is at best influenced by a host of factors, namely, macroeconomic, bank level (Peek and Rosengreen, 1995) and industry level characteristics (Boot and Thakor, 2000). Boot and Thakor (2000) indicate that the level of banking industry competition greatly influences bank lending strategy positively. Again, Kashyap and Stein (2000), find a strong case that in situations where a bank is handicapped in terms of credit, it will only take the bank capital to measure its ability of lending.

Ghana's rapid economic growth in the past was supported by the good performance of its financial institutions. Indeed Ghana's macroeconomic performance has been very significant with major indices enjoying relative stability. The national output grew at an annual average of about 6.3%. Although macroeconomic stability is highly regarded as a major condition for sectorial credit flow, gross credit to the private sector has remained relatively stagnant and difficult to access (World Bank, 2008). Credit to the Agriculture sector actually declined by about 3% with total flow to the manufacturing subsector of the industrial sector remaining relatively low. A total of ¢25,197.6 billion credit facility was allotted to the private and the public sectors by the deposit money banks representing a growth rate of 40.5% in the year 2006. Overall, total credit increased by 27.1% in real terms by the end of 2006 as against a 21.9% in 2005 (Bank of Ghana, 2006). The banking industry in Africa and Ghana in particular forms a strategic hub of the financial system. Lending decisions by banks cannot be overlooked as they are the principal providers of funds to governments, corporate bodies and individuals as a whole (stock markets are just recent developments in the financial system). Existing literature provides paucity of empirical evidence on bank lending behaviour in emerging markets like Ghana. In a developing economy like Thailand, Suwanaporn (2003) provides that banks consider risk and relationship factors in their bank lending decisions. This work tries to fill this gap and find evidence of the determinants of bank lending behaviour in Ghana. Specifically, we investigate the effect of bank specific, macroeconomic factors and industry characteristics on bank lending behaviour.

The rest of this paper is organized as follows: section two discusses existing bank-lending behaviour literature. Section three focuses on methodology and the estimation approach while section four discusses the results, provides conclusions and policy implications of the study.

2. Review of Literature

The fundamental role of a bank is intermediation by way of collecting savings from depositors and making these savings available as loans to borrowers. Banks are more efficient in the collection of information and loan production to dispel doubt on asymmetric information (Suwanaporn, 2003). Again, banks are in the right position to evaluate the future potentials of good investments as they have much more experience in doing that with similar investments. Notwithstanding, these specialties, banks are more circumspective about their lending decisions. Lending decisions are influenced by a host of factors as explained below.

One of the underlying factors for lending decision is the level of bank capital. The effects of bank capital on

lending behaviour have been widely debated since the 1988 Basel Capital Accord (Gambacorta and Mistrulli, 2004). Diamond and Rajan (1999) also show that there is a positive relationship between loan growth and capital requirements and its regulations. The real impact of bank capital on its lending behaviour has received more attention in the USA banking system. A clear example is Kishan and Opiela (2000). The general conclusion is that there is a connection between bank capital and bank lending behaviour. However, the empirical literature on European countries is rather inconclusive. Ehrmann *et al.* (2003) find that monetary tightening has a severe negative impact on rather undercapitalized banks' lending. Thus, one can conceive that, the precise relationship between bank capital and lending is mixed. Empirical evidence from emerging economies would therefore enrich our understanding of the bank capital-lending nexus.

Bank interest rate spread has also been shown to affect lending behaviour. Monetary policy, through a prime rate (Central Bank's rate) has a transmission mechanism on interest rates in the financial market (Borio and Fritz, 1995). Bank lending rates are mostly seen as being rigid for the reason that they do not move in tandem with the markets. A number of explanations have been suggested to account for the rigidity in bank lending rates. In the case of loans, the rigidity has been as a result of the rationing of credit to borrowers owing to the fact that there are problems of asymmetric information (Blinder and Stiglitz, 1983). Indeed, financial markets are not perfect; in the presence of adverse selection and moral hazard issues, banks are more likely to opt for credit rationing than to adjust their lending rates in a situation where there has been an upward adjustment of interest rates by the central bank. It may also be possible that when large banks capture large market share, the impact of tight monetary policy on bank lending will be minimal. However, Berger and Udell (1992) could not find concrete support for the rationing of credit as a reason for the rigidity of lending rate.

Bank size is considered as an important determinant of bank lending decision (Berger and Udell, 2006, Uchida *et al.* 2007). Berger and Udell (2006) provide that large and complex banks tend to lend few loans to small scale firms. Stein (2000) explains that small banks have comparative advantages in producing soft information whereas large banks also have comparative advantages in lending based on hard information. On the other hand, when large and complex banks are able, through technical expertise, to process soft information about small scale firms, then there would be positive relationship between bank size and lending.

Additionally, the macroeconomic environment within which a bank operates matter for its lending decision. For instance, in the period of economic boom, businesses demand for loans to take advantage of expansion and banks investment opportunities equally soar. On the other hand, in periods of economic recession, demand for credit plummets. This provides a pro-cyclical relationship between economic growth and bank lending. Dell'Ariccia and Marquez (2006) find that bank credit expansions tend to be pro-cyclical; that is, high rates of growth in GDP tends to induce a high rate of growth in bank credit. This is because in the period of economic boom, banks relax their criteria and lend to both good and bad projects, then in times of economic recession most loans become non-performing and the source of credit dries up, rationing out even good projects. In Italy, Vazakidis and Adamopoulos (2009) indicated that economic growth had a positive effect on credit market development. Again, the central bank's prime rate serves as an indicator to the movement in key economic variables like inflation which in turn affects interest rates. Through the transmission mechanism, an increase in prime rate negatively affects banks' lending behaviour. Exchange rate fluctuations, specifically currency depreciation in a home country results in banks' assets being valued less in foreign currencies as against their liabilities. Additionally, Lindgren *et al.* (1996) find that fluctuation in exchange rate is a prime cause of poor performance of banks' borrowers, which subsequently affects bank profitability. This situation is more certain in developing economies which are exposed to foreign trade. Excessive exchange rate variation weakens economic and financial growth in a country and is seen to be the most significant cause of the banking crises in a lot of countries (Lindgren *et al.* 1996). In a developing and open economy like Ghana, one expects that exchange rate depreciation will negatively affect bank lending behaviour.

With regards to industry structure, the precise relationship between bank industry structure and lending is moot. From an economic theory perspective, exercise of market power in banking will lead to a higher rate of interest and a lower supply of available credit than in a perfectly competitive market. On the other hand, there seems to be no consensus in literature as to the precise impact of bank market structure on the supply of lendable funds. One school of thought argue that in the presence of market power (high concentration), banks have more incentive to invest in the acquisition of soft information through relationship banking (by establishing close relationships) with borrowers over time thereby, enhancing the supply of credit and consequently reducing firms' financial constraints (Dell´Ariccia and Marquez, 2004). Additionally, Boot (2000) argued that, even though a borrower runs the risk of paying higher interest rates in a context of non-competitive banking markets, the borrower can benefit from a greater availability of finance. Another school of thought posits that in a market characterized by competitive conditions, lending rates are lower hence more financing for firms. In other words, concentration heightens financing obstacles to firms, especially from developing countries like Ghana (Beck *et al.* 2004).

3. Data and Model Specification

The study uses panel data, which involves pooling of seventeen (17) banks over the period 1997 – 2006, and further adopts the model used by Alfaro *et al.* (2003). This model assumes that bank lending behaviour today is explained by past lending experience (lag of the dependent variable), banking industry characteristics, macroeconomic and bank-specific variables. Thus we formulate the model in the following way:

$$y_{it} = \rho y_{it-1} + \beta_1 HHI_t + \sum_{j=1}^{3} \alpha_j BC^i{}_{jit} + \sum_{s=1}^{3} \gamma_s MAC^i{}_{st} + \varepsilon_{it}$$

Where y_{it} represents the log of bank lending behavior proxied by total loan portfolio of bank i at a given period, t. BC is a vector of bank specific variables including size, bank spread and capital structure (measured by total debt over shareholders' funds). HHI represents the industry characteristic which is an index of competition, and MAC is macroeconomic variables including prime rates, the growth rate of real gross domestic product and log of exchange rate. The variables ρ, β_1, α and γ are vectors of estimators or coefficients and ε is an error structure defined below:

$$\varepsilon_{it} = v_i + \mu_{it}$$

ε_{it} is the disturbance with v_i the unobserved bank–specific effect and μ_{it} the idiosyncratic error.

The lag of the dependent variable was included as an independent variable on assumption that for every current loan supply or bank lending, there is a credible past relationship (in other words bank lending will depend on the previous credit relationship) and the bank will re-assess the borrower for the current level of information asymmetry. When the lag of the dependent variable coefficient assumes a value of 1 then the relationship could be termed as good and a value close to zero will represent a fairly good relationship between lenders and borrowers. The size of the bank is measured by the log of total assets or the size of deposits. Size is expected to have a positive influence on bank lending behavior. With regards to Capital structure, it is measured as the debt to capital or equity ratio and it is expected to move in tandem with bank lending behaviour. The bank spread is measured by the net interest margins of the banks as a percentage of the net interest income of every bank. The spread represents a premium charged by the banks as an additional cost to borrowers and the numerous risks levels that are faced by the banks. Therefore, higher spread depicts the volatility among borrowers and that makes it difficult for banks to give out loans to individuals and firms. Hence, banks will only lend if and only if borrowers are willing and able to pay more premium. We also used exchange rate consistent with (Alfaro *et al*. 2003). We measured exchange rate as the Ghanaian Cedi per United States Dollar. The exchange rate is expected to have a negative effect on bank lending behavior, especially on the domestic banks.

We also control for the level of economic activities likely to influence bank lending using the growth rate of real gross domestic product. GDP growth is expected to have a positive impact on bank lending behavior. Bank lending behaviour in response to monetary policy from the central bank was captured using central bank's prime/lending rate. This rate measures how Bank of Ghana loosens and tightens the monetary policy that either eases up credit or tightens up credit. The prime rate in the regression equation is expected to move negatively with bank lending behaviour. The macroeconomic variables were obtained from the Bank of Ghana website whereas bank-specific variables are from the audited financial reports of the banks.

3.1 Estimation Method

The study used Generalized Method of Moments (GMM) estimators, which was propounded by Arellano and Bond (1991), particularly the GMM-System estimator developed by Blundell and Bond (1998). The dynamic model is the most appropriate model specification for the general form of the first-differenced GMM estimation. Several merits inform our choice of dynamic model estimations. It is preferable in situations of omitted variables. In addition, the variables used as instruments permit the estimators to be estimated harmoniously in models that have the problem of endogeneity. Last but not the least is that instruments are able to permit harmonious estimation in times where there might have been some measurement error (Bond *et al*., 2001). The appropriateness of the model is tested using the Sargan and the serial correlation tests. The Sargan test, tests for the over-identifying restrictions. This study tests the sample analog of the moment conditions that were engaged in the process of the estimation to test for the overall validity of the instruments. The test statistic here is a $\chi^2_{(m)}$ distribution where *m* is the number of degrees of freedom obtained from the difference between the number of instruments and regressors. A test for serial correlation is looked at by formulating a null hypothesis that the error term is not serially correlated. The null hypothesis formulated as the error term in the differenced equation shows no second-order serial correlation.

4. Empirical Results

Table 1 provides the results of the dynamic model. The coefficient of the lag variable is statistically significant, positive and less than unity (1). This implies a fairly good relationship among banks and borrowers and could be further reinforced by previous lending relationship, giving high likelihood that banks will lend more in a current

period. The bank size has a positive and statistically significant influence on bank lending. Bigger banks thus lend more than smaller ones. This is consistent with existing studies such as Alfaro *et al*. (2003) that bank size indeed contributes significantly to loan supply.

Table 1: Dynamic Model Result				
Dependent variable:				
Loans and advances		Coef.	Z	P> Z
Llad				
L1.		0.1904	3.46	0.001
Bank characteristics				
Log of Size		0.7031	10.69	0.000
Capital Structure		0.8208	3.06	0.002
Spread		-0.3405	-1.26	0.209
Macroeconomic indicators				
Prime rate		-6.493	-7.10	0.000
Log of Exchange		-0.703	-4.45	0.000
Real GDP growth		-0.7986	-0.15	0.881
Industry characteristic				
HHI		11.0094	3.91	0.000
Cons		6.9929	3.90	0.000
Wald chi2(8) = 5467.56				
Prob > chi2 = 0.0000				

Note: AR(1) is -3.16 and AR(2) is -0.0859 with p-values 0.0016 and 0.9315 respectively. Sargan test $\chi^2(2)$ =9.0117 with p-value 0.7721.

What this means is that if banks are able to raise enough capital from the capital market, it is most likely this will enhance their lending decision and economic development because banks and the stock market play a complementary role in economic growth as has been found by Zukarnain (2008). With regards to the capital structure, the coefficient reports a positive and statistically significant effect on bank lending behaviour. Again, because maturity mismatch has a great negative impact on bank profit as well as capital, if all doors are shut for banks to raise some additional capital, they are forced to reduce lending as regulation requires that bank capital has to be around a certain minimum percentage of loans (Van den Heuvel, 2001). In addition, the study confirms studies done on US banks which suggest that there is an impeccable necessity of bank capital having some sort of relationship with bank lending behaviour (Kishan and Opiela, 2000).

Log of exchange rate and Bank of Ghana prime rate have negative coefficients and are significant in all estimations. As expected, anytime the central bank tightens monetary policy, bank lending is narrowed or reduced. The results suggest that increases in inflation reduces the real return to the banks and hence restrict the amount of money the banks wish to lend. The log of exchange rate with a negative coefficient indicates that depreciation of the domestic currency against a foreign currency tends to reduce the volume of loans banks make. This is because banks tend to invest more in foreign currency if they expect the domestic currency to depreciate hence reducing the amount available for loans and advances. Unexpectedly, the results indicate that real gross domestic product has a negative coefficient and is not significant in all regressions. However, this may suggest that bank lenders' expectations do not depend on the current phase of business activities, which confirms findings of Danilowska (2008). With regards to HHI, the results indicate that the banking industry structure has a positive and significant effect on bank lending behaviour. By implication, a competitive banking environment is likely to enhance bank lending behaviour in Ghana. This confirms a study by Beck *et al*. (2004).

5. Conclusions
The study observes a relationship between bank lending behaviour and a set of macroeconomic indicators, industry and bank level characteristics. Bigger banks seem to be in a better position to lend more than otherwise. This might be due to enough resources they have to cushion lending. Similarly, high level of bank capital is found to support much higher volumes of bank lending. A strong and resilient financial system is necessary for economic growth. It restores confidence and determines the elasticity of the system to shocks as well as enhancing the credibility of the financial institutions in the system. Therefore, the Bank of Ghana recapitalization

policy must be encouraged so as to help the economy prepare against any disastrous macroeconomic shocks. It will also enable well-capitalized financial institutions to respond to increased demand for credit. Moreover, the central bank must adopt a pragmatic approach that would ensure the stability of the local currency against the foreign currencies to enhance bank lending decision in Ghana. However, in as much as tight monetary policy would be considered favorable in certain situations, it has negative implications on bank lending decision. Thus, as a policy guide, the central bank should critically weigh all the outcomes and the trade-off of tight monetary policy so as not to dampen the lending decision of banks to firms since this would have dire consequences on economic development of the nation. Again, a competitive banking industry structure enhances bank lending decision. This might be due to associated low lending rate that characterizes competitive banking systems.

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