

MACROECONOMIC AND MARKET DETERMINANTS OF INTEREST RATE SPREAD: EVIDENCE FROM ALBANIA

Brunilda NELI

University of Tirana, Faculty of Economics, Albania, brunildaneli@feut.edu.al

***Abstract:** The banking system, as the most important component of the financial system in Albania, plays a crucial role in economic development. Measuring the efficiency of the intermediation system requires special attention because of its implications on the level of investments, savings, resource allocation etc. The most common indicator for the efficiency of the banking system is the cost of intermediation, measured by the spread of interest rates (the difference between the average lending rate and the average deposit rate). The study aims to analyze the trend of interest rate spread (IRS) in Albania for the period 2005-2014 based on a comparative analysis with other countries and to identify the factors with significant impact on the level of IRS in the local currency. It is based on the empirical analysis of several macroeconomic and market factors that determine IRS, used in previous studies in this field, but also incorporating other elements that are associated with the characteristics of the Albanian system. Albania has experienced high IRS during the last decade, with large fluctuations, especially in the local currency. The results of the study based on quarterly panel data for the period 2005-2014 show that IRS in Albania is negatively affected by the level of development of the banking sector and the discount rate, while inflation, deficit rate and monetary supply put positive pressure on this indicator.*

***Key words:** Interest rate spread; banking efficiency; macroeconomic and market factors.*

JEL Classification Codes: E4, G21

1. INTRODUCTION

The level of development of the financial system is a key pillar for economic growth, especially in developing countries which are characterized by fragmented and undeveloped capital markets (McKinnon and Shaw, 1973). Financial institutions are the main intermediaries in the financial system, responsible for savings mobilization, risk management and diversification, fund allocation etc. The process of transferring and altering savings flows into productive investments is certainly an essential requirement for policies undertaken in scope of a sustainable economic growth. The success of such policies depends on the level of development of financial institutions and the ability to generate the necessary resources in the appropriate quantity and quality. In this context, the role of the financial system has a double significance: first, on transferring capital from savers to investors and, second, on shifting funds towards productive and profitable investments and promoting growth through risk transfer and transactions' facilitation.

In most of the developing countries, the financial system is dominated by the banking sector which comprises the largest share of the system. In Albania, the total assets of banking sector accounted for nearly 90.4% of the financial system assets and about 91.7% of the GDP by the end of 2014 (Bank of Albania, Financial Stability Report, pg. 46, 2014). The capital market does not exist, while other non-banking financial institutions are not developed.

An efficient banking system is important for the economic development as it is translated into larger benefits to the economy, resulting in higher expected returns for savers and lower borrowing costs for investors (Quaden, 2004). The cost of intermediation is the main indicator of the efficiency of the banking system and it is mainly measured by the interest rate spread (IRS).

High spread of interest rates does not encourage potential savers due to low returns on deposits, thereby limiting the financing of potential borrowers (Ndung'u and Ngugi, 2000). Due to the high cost of intermediation between savers and borrowers, only a small portion of the savings mobilized by banks is turned into feasible investment (Valverde et al, 2004).

The weak performance of many banks in transition economies can be attributed to a low degree of efficiency and non-competitive market conditions on the one hand, or to the shortcomings in the regulatory banking environment and a high degree of information asymmetry on the other hand (Pyle, 2002).

It is generally argued that developing countries are characterized by higher spreads than the developed countries (Turtelboom, 1991). Based on this argument, we have developed an analysis of the behavior of the IRS in Albania and empirically assessed the key driving factors that influence spread for the period 2005-2014. The main objective is to determine whether the differences between lending and deposit rates are caused by macroeconomic factors or rather by industry/market factors.

The paper is structured as follows. In section 2 it is reviewed the literature. Section 3 briefly describes the developments in the Albanian banking sector and the behavior of IRS over the past years. Section 4 contains an explanation of the data and the methodology used, while Section 5 presents the empirical results. Section 6 presents the results and recommendations.

2. LITERATURE REVIEW

Due to its economic implications, especially regarding the measurement of the efficiency of the banking system, IRS has been widely studied by many researchers. There are two methods for measuring IRS: ex-ante and ex-post. According to the first one, IRS is calculated as the difference between the contractual interest rates for deposits and loans. As for the second method, the variable can be measured as the difference between banks' interest income and interest expenses for the period taken into consideration, data that may be extracted from the financial statements.

The literature classifies the factors determining IRS in three main categories: specific banking factors, macroeconomic factors and market/industry factors. Most of the studies combine the three categories and give a general view of IRS composition. Other studies, especially those related to the developing countries where bank specific data are difficult to be accessed, concentrate only on market and macroeconomic factors.

The basic model used in literature is that of Ho T. and Saunders A. (1981), who used two stage procedures based on panel data in determining the IRS. The authors argue that the mark up the banks put over the market interest rates for deposits and loans depends on four factors: risk aversion, banking market structure, the average size of bank transactions and interest rate volatility. This model has been lately improved by Saunders and Schumacher (2000) who studied interest spreads in six European countries and the US over the period 1988-95. They concluded the degree of bank capitalization, bank market structure, and the volatility of interest rates are the key factors that determine spread.

The study conducted by Hanson and Rocha (1986) is one of the earliest in determining the factors affecting spread. They analyzed aggregated data from 29 countries for a eight years period (1975-1983) and concluded that the reason for high IRS was attributed to factors such as: high financial costs, economic slowdown, lack of competition and high inflation.

Demirgüç-Kunt and Huizinga (1999) use bank-level data for 80 developed and developing countries over the period 1988-95 and their evidence suggested a large number of indicators next to bank-specific variables, such as macroeconomic conditions, bank taxation, deposit insurance regulation, overall financial structure, and several legal and institutional indicators.

Brock and Suarez (2000) report that bank spreads in seven countries in Latin America in the 1990s were influenced by liquidity and capital risk at the micro level, and by interest rate volatility, inflation and GDP growth at the macroeconomic level, although the results differ across countries.

Some researchers conclude that individual characteristics of banks are not closely related to spread, therefore they cannot be used as relevant determinant factors (Brock and Franken, 2002). They argue that spread is determined at industry level, not bank level, thus specific bank factors can be better used to explain other variables, such as profitability etc. As a result, several studies have been conducted taking into consideration only macroeconomic and market factors.

Tennant and Folawewo (2008) used panel data econometric techniques to determine specific market and macroeconomic factors most likely to impact spreads in 33 low-middle income countries in Asia, Europe, Latin America and Africa for the period 1988-2005. The results of the study indicate that many of the factors commonly believed to be critical determinants of interest rate spreads may not be in fact relevant to the size of the banking sector spreads in developing countries.

According to Chirwa and Mlachila (2004), high interest rate spreads in developing countries will persist if financial sector reforms do not significantly alter the structure within which banks operate. This structure refers to the market/industry and macroeconomic environment in developing countries. The industry factors mostly identified in literature to determine spread are: the degree of development of the banking sector, the level of bank concentration, required reserve level, competition, foreign or domestic capital etc.

Macroeconomic factors such as inflation, GDP growth, exchange rates, interest rates on alternative financial instruments, are used as control variables in most of the studies. Brock and Franken (2003) quote the Moody's report, according to which "the macroeconomic factors are among the most influential sources of spread fluctuations." Chirwa and Mlachila (2004) argue that the uncertain macroeconomic and political environment has a major impact on the behavior of commercial banks in determining the interest rates. In empirical terms, the macroeconomic factors that have been proven to increase the IRS are: high inflation and high real rates of interest (Demirguc-Kunt and Huizinga, 1998); volatility of interest rates, as measured by the volatility of inter-bank rates (Brock and Franken, 2002); increased fiscal deficit (Crowley, 2007); volatility of exchange rates (Randall, 1998) etc.

3. A BRIEF REVIEW ON THE BANKING SECTOR DEVELOPMENT AND IRS BEHAVIOR IN ALBANIA

The banking system in Albania faced many difficulties in the 1990s, similar to those of other countries who shifted from a communist to open market economy regime. The reformation and re-organization process of the system took several years and only after 2004 Albania reached to have a well organized, private and competitive banking system. After 2004 the system is

characterized by stability and continuous consolidation. The financial system is dominated by the banking sector which comprises the largest share of the system. In Albania, the total assets of banking sector accounted for nearly 90.4% of the financial system assets and about 91.7% of the GDP by the end of 2014 (Bank of Albania, Financial Stability Report, pg. 46, 2014). The capital market does not exist, while other non-banking financial institutions are not developed. The largest five banks hold about three-quarters of system assets and deposits.

In our country, the Central Bank is the supervisory authority of the banking institutions and the single responsible authority for the conception, design, approval and implementation of the monetary policy. As such, it is responsible for determining the base interest rate, which is the rate of reverse repurchase agreements (R/Repo). The change of the base rate has direct impact on loan and deposit rate set by commercial banks and consequently on the liquidity level in the economy.

The financial system is one the most important sources of finance in the economy. Consequently, the price of financing through bank loans (i.e. lending rates) and the efficiency of the banking system (as measured by interest rate spreads) are essential for the possibility of allocation additional financial potential in the economy, and thus for the acceleration or sustainability of economic growth.

Below we provide graphical evidence for the behavior of IRS in Albania for the period 2005-2014.

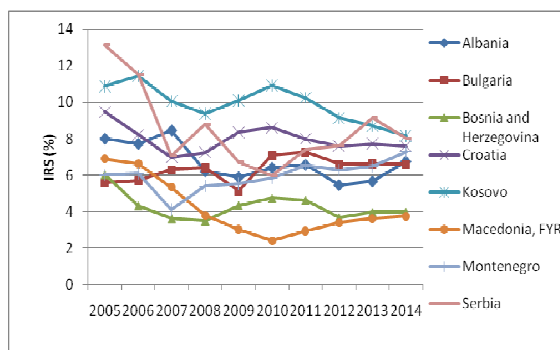


Figure 1: IRS in Balkan countries

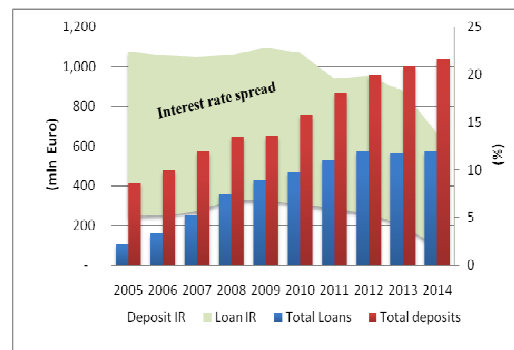


Figure 2: Deposits, loans and IRS behavior in Albania

In Figure 1 we compare the IRS of some of the countries in the Balkans based on data from the World Bank accessed on September 2015. As it can be seen, the highest IRSs are experienced in Kosovo, Serbia and Croatia, while the lowest ones in Bosnia and Herzegovina and Macedonia (2008-2014). Albania has an average IRS level compared to other countries, but it is considered high when taking into account the level of development of the country. Albania has been classified as lower middle income country during the given period, except of the last years when it is classified an upper middle income country.

Figure no.2 presents the trend of loan and deposit rate and the behavior of the loan and deposit amounts granted in Albania from 2005 to 2014. Data is obtained from the Bank of Albania, accessed on September 2015. Albania has very low deposits rates and, as it can be noted in the above figure, it has a downward trend among years. Meanwhile, the cost of lending from banks (loan rates) remains high although the downward trend, causing relatively high spreads of interest rates. The graph shows that the widest difference between the two rates, thus the highest IRS, is experienced during the period 2005-2008, when the results of the systems' reforms and structural changes undertaken before 2005 had not given their impact yet. The

fluctuations of IRS between 6% to 17% during the last decade are mostly linked to the volatility of the loan rates in short-term, while the deposit rates have been almost constant. The level of credit inserted in the economy has been generally low, even though the trend is positive.

Other factors which explain the relatively high IRS are the NPL ratio, which has increased from 3.4% in 2005 to more than 24% in 2014 (Bank of Albania) and the high level of concentration in the four largest banks out of 16 banks operating in Albania.

After the financial crisis of 2008, both lending and deposit rates have decreased and the pace of deposits and loans growth has been slowed down. Banks are trying to maintain control over their operational cost in order to be profitable.

4. METHODOLOGY

This paper analyzes the factors that impact the size of the spread of interest rates in the Albanian banking system. Due to the lack of detailed data at commercial banks level, the study is focused only on the market and macroeconomic factors that determine the spread. The paper is based on secondary data, obtained from various sources. The main references used are: Bank of Albania and National Institute of Statistics (INSTAT), and also the Ministry of Finance, the Financial Supervisory Authority and the Banking Association in our country. The studied period covers years from 2005 to 2014, which are characterized by a stable development, increased competition and improved efficiency in the intermediation process. We use quarterly panel data (40 observations in total) which are processed using SPSS.

The study is conducted by using the model developed by Tennant & Folawewo (2008), who studied the macroeconomic and market factors that determine the interest spread in 33 countries with low and middle income in Asia, Europe, Latin America and Africa for the period 1988-2005. This model is generally used in literature, especially in cases when data at individual banks level are not easily accessible.

Below are described the variables of the model as per the authors' determinations and the adaption as per our country's case:

The dependent variable used in the study is the spread of interest rate, calculated as the difference between the weighted average loan rate and the weighted average deposit rate. Thus, the spread is calculated using the following formula (1):

$$\text{Interest rate spread (IRS)} = \text{Weighted average loan rate} - \text{Weighted average deposit rate} \quad (1)$$

For the purposes of this study, we have considered only the average rates of new loans and deposits in ALL with one year maturity. This approach includes the ex - ante method of spread calculation as we have included the interest rates stated and published by the Bank of Albania. All the independent variables are summarized in the following table:

Table 1: Explanation of model's variables

	<i>Variable index</i>	<i>Description</i>	<i>Calculation</i>	<i>Expected impact</i>
Market variables	BNKDEV	The level of development of the banking system	Total assets/Nominal GDP	Negative
	RESREQ	Required reserve	Required reserve/Total reserves in the system	Positive
	SCALE	Economies of scale	Number of population	Negative

Macroeconomic variables	RGDPpc	GDP per capita	GDP/Population	Negative
	INFL	Inflation	Consumer price index	Positive
	XRATVOL	Exchange rates volatility	Standard deviation of the percentage change in the exchange rate Euro/ALL for the three preceding months	Positive
	CROWD	Crowding out	Public sector borrowing/ Total loans	Positive
	DISRATE	Discount rate	REPO rate	Positive
	DEFGDP	Budget deficit ratio	Government deficit/GDP	Positive
	M2GDP	Broad money supply ratio	M2 supply/Nominal GDP	Positive

Thus, the relation between IRS and the market and macroeconomic variables is expressed as follows (2):

$$IRS_t = a_0 + a_1BANKDEV_t + a_2RGDPpc_t + a_3RES_t + a_4SCALE_t + a_5INFL_t + a_6XTRAVOL_t + a_7CROWD_t + a_8DISRATE_t + a_9DEFGDP_t + a_{10}M2GDP_t + e \quad (2)$$

Limitations of the study

The study is based on data at banking system level and does not include individual bank data for the range of indicators that, in literature, explain the spread. Although there are different views on the significance level of individual characteristics of banks compared to the characteristics of the whole system in spread, the lack of secondary data at this level represent a limitation of the research results.

The period covered by the study (2005-2012 with quarterly data), restricted by the availability of data, is statistically acceptable to draw valid conclusions. However, since the research takes into consideration the macroeconomic and market factors, a longer period would bring more valuable outcomes in economic terms.

5. EMPIRICAL RESULTS

We have tested the correlation between the variables of the model in order to understand the relation between the dependent variable and the independent ones and the strengthening of the relation (if any).

Figure 3: The correlation matrix

	IRS	BANKDEV	RGDPpc	RESREQ	SCALE	INFL	XRATVOL	CROWD	DISRATE	TBILL	DEFGDP	M2GDP
IRS	1.00											
BANKDEV	-0.81	1.00										
RGDPpc	-0.73	0.89	1.00									
RESREQ*	0.00	0.00	0.00	1.00								
SCALE	0.74	-0.92	-0.84	0.00	1.00							
INFL	-0.29	0.19	0.20	0.00	-0.13	1.00						
XRATVOL	-0.24	0.14	0.20	0.00	-0.08	-0.14	1.00					
CROWD	-0.43	0.37	0.48	0.00	-0.47	0.33	0.29	1.00				
DISRATE	-0.13	-0.26	-0.26	0.00	0.42	0.32	0.10	0.05	1.00			
TBILL	-0.56	0.44	0.43	0.00	-0.39	0.25	0.39	0.65	0.49	1.00		
DEFGDP	0.43	-0.46	-0.52	0.00	0.39	0.03	-0.41	-0.51	0.17	-0.35	1.00	
M2GDP	0.33	-0.19	-0.14	0.00	0.38	-0.30	0.14	-0.31	-0.17	-0.32	-0.31	1.00

As it can be noted by the above Figure, BNKDEV has the highest correlation with IRS (80%) and the relation between them is negative, meaning that a developed banking system results in lower interest spreads. Also indicators such as RGDPpc and SCALE are highly correlated with IRS (above 50%), but their relation with IRS is different: RGDPpc is correlated Negatively, while SCALE has a positive correlation with IRS. All other indicators do not have such a strong relation with the dependent variable (the correlation is below 50%). INFL, XRATVOL, CROWD, DISRATE are not strongly negatively correlated with spread. RESREQ, because of the complete dependency on the banking system deposit's level, do not have any relation with IRS. The correlation of DEFGDP and M2GDP with IRS is positive, indicating that any possible growth in these two variables may result in increase of the difference between the short term loan rate and deposit rate. The lowest correlated variables with IRS are DISRATE and XRATVOL.

In order to determine which variables that will be included in the model, we have performed several statistical tests and analysis. First, we have analyzed the distribution (the relation) between each dependent variable with the independent one and found out the relationship is almost linear. We have used One- Sample Kolmogorov - Smirnov test for testing the distribution of the dependent variable. The test confirmed that IRS is almost normally distributed, so we could perform in our empirical analysis all the statistical procedures, which necessarily require the dependent variables to have normal distribution. There was no need for further transformation of the variables.

The variables of the model have also been tested for multicollinearity and serial correlation. There is a very high correlation among the three independent variables (BNKDEV, RGDPpc and SCALE). This result restricts the involvement of the three variables in the model, although they have a very strong relation with the dependent variable. Therefore, we have included in the model only BNKDEV, being the variable with the highest correlation with IRS, but also as it represents the most significant indicator of market factors associated with the banking system. Regarding macroeconomic variables, XRATVOL and CROWD, they have been excluded due to the very low values they take, including zero values in certain periods.

As a result of the above explanation, the model of Tennat and Folawewo (2008) will be adapted by considering the impact of these variables: BNKDEV, INFL, DISRATE, DEFGDP and M2GDP on the spread of short-term interest rates in ALL. We have concluded in a multiple linear regression model with the following parameters:

Table 2: Regression parameters

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					Sig. Change	F Square Change	F Change	df1	df2
1	.904	0.817	0.782	0.7642486	0.817	23.270	5	26	0.0

a. Predictors: (Constant), M2GDP, DISRATE, DEFGDP, INFL, BANKDEV

b. Dependent Variable: (IRS) spread

The correlation between the projected values of the model and the actual values of the dependent variable of the study is very high (0.9), which indicates a strong relationship between them. Hence, the dependent variable variation percentage, stated by the regression model (about 82%), stresses the adequacy of the model.

Data analysis of variance (ANOVA) shows that the variables involved in modeling of the dependent variable make a good explanation of the variation of the dependent variable.

Table 3: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	67.958	5	13.592	23.270	.000(a)
	Residual	15.186	26	0.584		
	Total	83.144	31			

a. Predictors: (Constant), M2GDP, DISRATE, DEFGDP, INFL, BANKDEV

b. Dependent Variable: spread

Based on the SPSS processing of data, the relation between the dependent variables on IRS for our country is expressed by the following equation (3):

$$IRS = 13.64 - 13.77 * BNKDEV + 0.02 * INFL - 0.91 * DISRATE + 3.65 * DEFGDP + 23.3 * M2GDP + e \quad (3)$$

The variables with positive relationship with IRS are the inflation, government deficit and money supply, while the level of development of the banking system and the discount rate put negative pressure to IRS. The explanations of the model outcomes are given in the section below.

6. CONCLUSIONS

The cost of financial intermediation, expressed by the IRS, is an important determinant of total financing costs. According to the literature there is a strong connection between the degree and cost of financial intermediation and economic growth, as funding costs have a significant impact on the investment level and capital allocation, and thus in turn on growth potential and the direction of economic activity.

We identified that Albania has suffered relatively high IRSs during the period 2005-2012 and we empirically tested the macroeconomic and industry factors that have caused this. We concluded that the inflation, government deficit and money supply are positively related with IRS, while the level of development of the banking system and the discount rate have a negative relationship with IRS. The most influential parameters are the BNKDEV and M2GDP.

The impact of each variable on the spread of short-term interest rate in the banking system of Albania is almost as theoretically expected. The only exception with the theory is related to the rate of reverse repurchased agreements (discount rate), which theoretically should have a positive relation with the interest spread, but referring to our country it is negatively correlated with it.

The negative relation that exists between the level of development of the banking system and the spread is consistent with the fact that developed and competitive banking systems exert less pressure to interest rates and, consequently, to spread. After the continuous reformation, the banking system of Albania is characterized by stable development which has increased the efficiency of the system.

The macroeconomic indicators such as inflation, Repo's rate and the ratio of money supply to GDP also result in different conclusion from the reference model (Tennat and Folawewo, 2008). The most surprising result is related to the impact of the variable DISRATE, measured by

the rate of Repo-s in our model. It was expected that an increase in the base rate, would bring a larger difference between lending and deposit rates, but it seems that this is not happening in our country: the increase in the rate of Repo decreases the interest spread. This result can be explained by the fact that the Repo's rate is more correlated with the deposit rate itself, rather than the loan rate. Thus, an increase in the base rate increases the deposit rate more than the rate of the loan, and, consequently reduces the spread.

The identification of factors that have influence on the cost of intermediation is an important issue for every country. The policymakers should not only understand them, but also should be more careful in undertaking the appropriate policies related to these factors, which directly or indirectly cause interest rate spread fluctuations.

REFERENCES

1. Afanasieff, T.; Lhacer, P.M.; Nakane, M., The Determinants of Bank Interest Spread in Brazil. Banco Central do Brazil, Working Paper Serie, no.46, 2002
2. Bank of Albania, Annual Reports 2005- 2014
3. Bank of Albania, Financial Stability Reports 2005 - 2014
4. Bank of Albania, Annual Supervision Reports 2005-2014, Analiza e ecurisë dhe rreziqeve në sistemin bankar dhe institucionet financiare jobanka;
5. Barajas, A.; Steiner, R.; Salazar, N., Interest Spreads in Banking in Colombia 1974–96. IMF Staff Papers, Vol. 46, No. 2, 1999
6. Brock, P.; Suarez, L., Understanding the behavior of bank spreads in Latin America. Journal of Development Economics Vol. 63/113–134, 2000
7. Čihák, M., The determinants of lending rates and domestic spreads in Croatia. IMF Country Report No. 04/251, 2004
8. Crowley, J., Interest Rate Spreads in English-Speaking African Countries. IMF Working Paper, Wp/07/101, 2007;
9. Georgievska, L.; Kabashi, R.; Manova, N.; Mitreska, A.; Vaskov, M., Determinants of lending interest rates and interest rate spread. Special Conference Paper, Bank of Greece, 2011
10. Hanson, J.; Rocha, R., High Interest Rates, Spreads, and the Costs of Intermediation. Two Studies. Industry and Finance series. Vol. no. 18, 1986
11. Ho, T. and Saunders, A., The Determinants of Bank Interest Margins: Theory and Empirical Evidence. Journal of Financial and Quantitative Analyses, 16, pg. 581-600, 1981
12. International Monetary Fund, International Financial Statistics, Economic Indicators, 2005-2014;
13. Kalluci, I., Një analizë e rrezikut dhe kthimit për sistemin bankar shqiptar. Studime e artikuj, Buletini i Bankës së Shqipërisë, 6M-1, 2010
14. Kalluci, I., Përcaktuesit e Marzhit Neto të Interesave në Sistemin Bankar Shqiptar, Discussion Paper, Bank of Albania, pg. 8-30, 2010
15. Kristo, S., Konkurrenca, efienca dhe stabiliteti në tregun bankar shqiptar (Analizë mbi zhvillimin, tendencat dhe lidhjet midis tyre)", Dissertation, 2011
16. Mlachila, M.; Chirwa, E., Financial reforms and interest rate spreads in the commercial banking system in Malawi. IMF Working Paper WP/02/6, 2002
17. Saunders, A. and Schumacher, L., The Determinants of Bank Interest Rate Margins: An International Study. Journal of International Money and Finance, 19, pg. 813-832, 2000
18. Tennant, D.; Folawewo, A., Macroeconomic and market determinants of banking sector interest rate spreads: Empirical evidence from low and middle income countries. Annual African Econometrics Society Conference, pg. 2-30, 2008
19. World Bank Database – Data by Topics/Countries, 2000 – 2010.