

Effects of interest rate on banks dividend in Ghana

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Abstract

The paper tries to figure out what effect the interest rate has on GCB Bank Plc's dividend. For the study, time series data from 2000 to 2020 are put through the Autoregressive Distributed Lag (ARDL) model. ADF and PP was tests to see if the dividend, interest rate, profitability, and inflation rate data set was stationary. The outcome was that the variables were stationary at levels and first differences. In the long run, ARDL tests show that the relationship between a bank's dividend and its interest rate and profitability is negative. In the short run, there is also a relationship between interest rate and dividend that is not positive. However, there is a positive relationship between the bank's profitability and dividend. Finally, an impulse (shock) on interest rate in the short run period had a negative relationship with dividend but the long run period shows a positive relationship among the two variables.

Keywords: interest rate, dividend, GCB Bank PLC

DOI: 10.7176/RJFA/13-20-07

Publication date: October 31st 2022

1. Introduction

A dividend is a pay-out made to a firm's shareholders in exchange for their equity investment in a firm; it often comes from the net profits of the firm. The company keeps most of its profits as retained earnings, which are funds that will be used for the company's current and future business activities. The rest of the money can be given to the shareholders as a dividend (Hayes, 2021). In other words, a dividend is the part of a company's profits and earnings that it gives to its shareholders. When a company makes money and saves it, the money can be put back into the business or given as a dividend to shareholders.

Divide the dividend per share by the price of a share to get the annual dividend yield. Every company is free to decide how much of a dividend to give to ordinary shareholders. But the choice is limited by things like regulatory requirements, debt agreements, and the amount of cash that is available. So, it shouldn't be a surprise that real-world research has found systematic differences in how companies, countries, times, and types of dividends handle dividends (Manos, 2001). A dividend policy sends a message to investors, which makes it easier for businesses to get cheap medium- and long-term capital.

The dividend policy has a wide range of effects on how businesses work, stay in business, and grow. Identifying the factors that affect dividend policy will help companies come up with a good dividend policy (Do et al., 2016). Dividend policy has been one of the most important topics in financial writing. Dividend is important in two ways. First, it is a good way for companies to invest their money. On the one hand, when firms pay out more dividends, they have fewer internal resources to use on investment projects. At the same time, demand for outsourcing will rise, which is a big part of the stock price. On the other hand, a significant number of shareholders need cash dividends (Salehi and Biglar, 2009).

One of the main macroeconomic factors that has a direct effect on economic growth is the interest rate. The vast majority of the time, the interest rate is considered to be the cost of capital. The cost of capital is the price that must be paid in order to make use of money over a period of time. The interest rate can be thought of as the amount of money that the borrower must pay in order to obtain the loan (borrowing rate). When seen from the perspective of the lender, the interest rate can be regarded as the fee that is levied for lending money (lending rate).

Aamd (2015) asserts that one of the most crucial elements in determining stock prices is the time value of money, which can be measured by the interest rate. Every economy is significantly impacted by the price of money, which is a significant macroeconomic element. Therefore, any shift in interest rates could be negative for investors and hurt firm profitability, which could lead to fluctuating stock prices. Both theoretically and practically, researchers have studied the connection between stock values and interest rates. Utilizing both a single factor framework and a multivariate approach, several research, especially those conducted in numerous

nations, demonstrate how changes in interest rates have an impact on stock values.

1.1 Problem statement

Good investors are always drawn to markets that work well. Because they don't trust the market, not many people can make extra money in a market that isn't working well. If investors are smart, when the interest rate that banks pay to depositors goes up, people move their money from the stock market to the bank. This will make less people want to buy shares and lower their price, and vice versa. On the other hand, if the interest rate that banks pay to their depositors goes up, the interest rate that they charge for loans also goes up. This decreases investments, which is another reason why share prices go down, and vice versa. In theory, there is a link between the price of shares and the interest rate that goes in the wrong direction. This paper looks at the link between GCB Bank Plc's interest rate and dividend.

1.2 Objectives of the study

This study's primary purpose is to explore empirically the effects of interest rate volatility on the dividend of GCB Bank Plc. The specific objectives to be achieved are as follows:

1. To investigate how interest rates affect GCB Bank Plc's dividend.
2. To investigate the impact of interest rate shocks (impulses) on dividend.

1.3 Research questions

The study aims to provide answers to the following research questions in order to fulfil the aforementioned study objectives:

1. How does the interest rate affect GCB Bank Plc's dividend?
2. What is the effect impulse (shock) of interest rate on dividend?

2. Literature Review

2.1 Theoretical Literature Review

Researchers have come up with a lot of ideas about how to link macroeconomic variables in general, and the interest rate in particular, with dividends. Fama (1970) semi-strong efficient market hypothesis and Ross's Arbitrage Pricing Theory (APT) are two examples (1976).

Fama (1970) says that a market is efficient when prices always reflect all the information that is known. But security values can be changed by different kinds of information. To determine if there is a positive or negative relationship between stock return and macroeconomic variables, the semi-strong hypothesis is applied. It achieves this by presuming that the stock price accurately reflects all macroeconomic factors. A different method for determining asset prices is the (APT). Ross (1976) proposes a multifactor explanation for how asset prices are determined (APT). According to him, economic factors like (1) unexpected changes in the term structure of interest rates, (2) unexpected changes in risk premiums, (3) unexpected inflation, and (4) unexpected changes in the expected level of industrial production are the main things that have an impact on stock returns. These variables are identified with coefficients that demonstrate how susceptible the assets are to each variable.

2.2 Empirical review

Dividends have been the subject of a lot of study. The goal of these studies was to find out what kinds of things corporations have to deal with to make money.

Interest rate sensitivity, according to Lynge and Zumwalt (1980), differed significantly between short-term and long-term interest rates. They discovered that bank stock returns were more sensitive to changes in the market and in interest rates than non-financial stock returns, but these effects were still difficult to explain. Additionally, they discovered that over time, the sensitivity of the returns on bank stocks had altered.

Flannery and James (1984) dug deeper into the reasons why stock returns are sensitive to interest rates. They wanted to know what about banks caused this sensitivity, and they confirmed that short-term and long-term stock returns and interest rates are linked in a bad way. They said that the age distribution of assets and liabilities was a key part of understanding how sensitive stock returns are to changes in interest rates that were not expected.

Rozeff (1982) looked at dividend policies in the United States and how they relate to things like the interest rate, growth rate, and management ownership ratio. The author obtained information from 1,000 enterprises in 64 different industries using published studies in the field of investment evaluation by the Value Line Institution

from June 1981.. The results showed that the number of dividends paid is inversely related to future sales growth, interest rates, and the percentage of management ownership. Still, the number of dividends paid out is related to the number of shareholders. Also, the results of this study showed that the way a company invests affects the way it handles dividends.

Several studies on dividend policy, interest rates, and the stock market have been done in Ghana. Marfo-Yiadom and Agyei (2011) looked at what affects the dividend policy of banks in Ghana. According to their findings, debt, profitability, dividends, and collateral capacity are statistically significant factors that positively impact Ghanaian banks' dividend policies. A five-year panel of data from 1999 to 2003. Adu, Agana, and Sakyi (2016) examined how the stock market and interest rates relate to one another. They discovered that the stock market capitalisation increases over the long term as interest rates rise, but decreases over the short term.. Ofori-Sasu, Abor, and Osei (2017) looked into how firms' dividend policies and the value of their shares affected the Ghana stock market. Their study shows a link between dividends per share and the value of shareholders. Agyemang, et al. (2021) looked into how interest rates affect the stock market in Ghana. They found that in the short run, consumer price indexes and money supply have a big effect on consumer stock indexes. They looked at panel data from 2000 to 2019. But this study looks at how interest rates affect GCB Bank Plc's dividends using data from 2000 to 2020.

3. Methodology

3.1 Data

The study uses annual data for all the variables under consideration from 2000 to 2020, with a sample size of 21 observations. The study employed yearly data of GCB Bank Plc dividend as the dependent variable with inflation, interest rate, bank's profitability as the explanatory variables. The World Development Indicators (WDI) Database of the World Bank provided information on interest rates and inflation. Dividend and profitability data came from GCB Bank Plc's annual reports. The data covered the years 2000 through 2020. The length was chosen because of the data that was available. To reach the goals, the following hypothesis was put to the test: Ho: Interest rate has no effect on GCB Bank Plc dividend, Ho: There is no link between the interest rate and the dividend paid by GCB Bank Plc in Ghana. and finally, Ho: Interest rate changes (shocks) have no effect on GCB Bank Plc's dividend.

3.2 Data analysis

3.2.1 Estimation procedures and model specification

The linear time-series model developed by Akcay, Alper, and Ozmuur (1996), Cato, and Terrones (2003), was used to figure out the relationship between interest rate and GCB Bank Plc's dividend. They used control variables to look at the relationship between dividends and interest rates. In this study, the model is used and changed. The way the dividend-interest rate model works is described as:

$$DIV_t = \alpha IRT_t + \gamma X_t + U_t$$

Where DIV_t is the dividend in year t , IRT_t is the interest rate in year t , X is a vector of controls (inflation and the bank's profitability), α and γ are parameters, and U_t is the disturbance term. Logarithms are used to change the variables so that the regression coefficients can be expressed in a standard form, such as a percentage, and so that outliers in either the dependent or independent variables have less of an effect.

$$\ln DIV_t = a_0 + a_1 \ln IRT_t + a_2 \ln INF_t + a_3 \ln PROF_t + U_t$$

The Augmented Dickey-Fuller (1979) and Philip-Perron (1988) unit root tests are used to determine whether the variables are stationary. The study employs Pesaran and Shin's (1999) Bounds testing approach or the Autoregressive Distributed Lag (ARDL) method. The dividend, interest rate, inflation, and profitability variables were examined to determine if there was a long-term relationship using the Ordinary Least Squares (OLS) estimation method. An F-test was performed to determine whether the coefficients of the lagged levels of the variables were significant when considered collectively. Information criteria like the Akaike Information Criterion are used to choose the length of the lag (AIC). The AIC criteria are used because they don't require setting any subjective limits. The short-run dynamic parameters were computed by an Error Correction Model (ECM) connected to the long-run estimates. The F-statistic on the explanatory variables displays the short-run causal effect, and the t-statistic on the coefficient of the lagged error-correction component displays the long-run causal relationship (Odhiambo, 2009; Narayan and Smyth, 2006).

By estimating the error correction term, the error correction model was calculated to explain the short-run dynamics coefficients and assess the pace of adjustment. Granger's (1996) causality test was used to look at the

linear causation between the variables to figure out the direction of the relationships. According to Ngozi (2018), if the P-value is less than 0.05 and you perform the Pair Wise Granger causality test, you should reject the null hypothesis. The Engle-Granger causality test was conducted using the VAR framework to examine the link between interest rate and dividend as well as the control variables and to assess how stable the outcomes were. The Impulse Response Function is a powerful new tool for analysing data that was made possible by the VAR method (IRF). IRFs are used to track how the different parts of a system react to shock impulses (Ronayne, 2011). This was used to see how a change in the interest rate would affect the dividend of the bank.

4. Results

4.1 Unit root test results

The results of the Unit Root Tests show that the null hypothesis of variables having a unit root is not supported, as seen by the test statistics for both the ADF and PP tests. The variables LNDIV, LNPROF, and LNINF all fall under this category. It follows that these variables are constant in level I. (0).

Table 1. Displays the findings of the unit root test with intercept and trend (ADF and PP) at level

Variables	ADF				PP			
	t- Statistics	Lag	Prob.	I(d)	t- Statistics	BW	Prob.	I(d)
LNDIV	-4.544331	1	0.0098	I (0)	-5.475104	6	0.0200	I (0)
LNIR	-0.039205	0	0.9922	I (0)	-0.044774	2	0.9921	I (0)
LNPROF	-3.316937	0	0.0921	I (0)	-3.349630	1	0.0870	I (0)
LNINF	-3.574353	1	0.0583	I (0)	-3.573412	2	0.0584	I (0)

Note: D shows the initial distinction, I(d) show the integration order, and BW stands for band width. The author performed all computations (2022).

The null hypothesis that there is no unit root cannot be rejected for the log of interest rate (IR) because both the ADF and PP statistics have p-values that are higher than any of the usual levels of significance (1%, 5%, and 10%). (See Table 1). At the 1% significance level for both the ADF and PP tests done at first difference, all variables were stable. (see Table 2)

Table 2: Results of unit root test with intercept and trend (ADF and PP) at first difference

Variables	ADF				PP			
	t- Statistics	Lag	Prob.	I(d)	t- Statistics	BW	Prob.	I(d)
DLDIV	-4.743478	1	0.0003	I (1)	-5.703622	18	0.0011	I (1)
DLIR	-3.694871	2	0.0001	I (1)	-3.809230	4	0.0001	I (1)
DLPROF	-6.094505	0	0.0005	I (1)	-7.487570	5	0.0000	I (1)
DLINF	-8.684809	0	0.0000	I (1)	-8.684809	0	0.0000	I (1)

Note: D stands for the initial difference, I(d) for integration order, and BW for band width.

Source: Computed by the author (2022).

4.2 Results from Bounds Tests

From Table 3, the F-statistics values for all the variables show that there is a long-term relationship between dividend and its independent variables. This is because the calculated F-statistics values are higher than the upper critical values (4.68), when the variables are integrated of order one (I (1)), and also higher than the lower bound critical values (3.41), when the variables are integrated of order zero (I (0)). With some variables integrated in levels and others in first difference, this means that the null hypothesis of no cointegration among the variables is rejected. This means that there is a long-term relationship between dividend and its determinants.

Table 3. Results from bounds tests

Dependent Variable	SIC Lag Length	F-statistics	I (0)	I (1)	Outcome
DIV	4	15.65783	3.41	4.68	Cointegration

Computed by author (2022).

The study employed the ARDL cointegration framework to assess their long-run coefficients and short-run dynamic relationship because the dividend model demonstrated cointegration. Choosing the right length of the lag is just as important as choosing the variables to be used in a set of equations. The ARDL Bounds Test has a maximum lag length requirement of one (1). The Schwarz (Bayesian) Information Criteria and the Akaike Information Criteria (AIC) are the two most used types of lag structures (SIC). But the Schwarz Bayesian Information Criterion (SIC) was used in this study instead of the AIC because it is a more reliable estimate.

4.3 Results of the long-run relationship (VECM)

The ARDL framework was used to assess the long-term relationship between the variables based on the results of the cointegration study. Table 4 displays the results. The long-run results corroborate the expected sign that interest rates have a positive effect on the bank's dividend, with the coefficient of interest rate (IR) being positive and statistically significant at a 1% significance level.

Table 4. Results of the long-run relationship (VECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF	0.096053	0.377727	0.254291	0.8036
LNIR	-0.073914	0.157654	-0.468835	0.0076
LNPROF	-1.029867	0.680617	-1.513136	0.1561

Computed

by the author (2022).

4.4 Estimated long run analysis

According to the coefficient (0.07), a percentage change in the interest rate will cause a dividend adjustment of about 0.07 percent. Contrary to expectations, inflation has a positive relationship with dividends, but this relationship is not long-term significant. Literature has long proved this. Profitability is unimportant and negatively skewed.

4.5 Short-run analysis

Table 5 shows that the coefficient of the error correction term that is one period behind (CointEq-1) is negative and significant at the 1% level, which means that interest rate, profitability, and inflation are all connected. The absolute value of the coefficient of error correction term ecm (-1) is 1.19. This means that the change from the short run to the long run corrects about 119% of the difference between the long-term inflation rate and what it should be every year. This means that 119 percent of the imbalance caused by inflation in the previous year is fixed in the current year.

Table 5: Estimated short run analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.813220	0.124409	6.536648	0.0000
D(IR)	-0.671677	0.153172	4.385127	0.0009
D(PROF)	8.89E-08	3.01E-07	0.295718	0.7725
CointEq(-1)*	-1.197213	0.179077	-6.685474	0.0000
R-squared	0.755778	Mean dependent var		0.000000
Adjusted R-squared	0.706934	S.D. dependent var		0.193132
S.E. of regression	0.104553	Akaike info criterion		-1.493577
Sum squared resid	0.163971	Schwarz criterion		-1.294748
Log likelihood	18.18899	Hannan-Quinn criter.		-1.459928
F-statistic	15.47318	Durbin-Watson stat		1.832898
Prob(F-statistic)	0.000074			

In its absolute form, the coefficient of the error-correction form suggests that the faster a variable return to its normal state after a shock, the larger the coefficient. Based on the results, the rate of change is very fast. In the short run, the result shows that the interest rate is negative and significant at the 1% level. Still, there is a positive relationship between the bank's profitability and dividends, with a coefficient of 8.89 at a significance level of 1%. This is in line with what would be expected from the start.

4.6 Impulse response function

The impulse response function of VAR is to look at how the system changed when the model got a shock or impulse. Table 6 is estimated to show the effects of a shock on interest to dividend in a way that makes the response function clearer. For the study, 8 years were used. Short-term changes in interest rates had a negative effect on dividends.

Table 6: Results of impulse response function.

Period	
1	- 0.000000
2	-0.072429
3	-0.037784
4	0.021816
5	0.018453
6	0.016543
7	0.006357
8	-0.003853

Source: Computed by the author, 2022

From the fourth to the eighth year, the transition from the short to the long term revealed a favourable relationship between interest rates and dividends. The findings lead us to the conclusion that an interest rate shock has a short-term negative impact on dividends but a long-term negative impact as well.

5. Conclusion and Recommendation

This investigation looked at the connection between dividend and interest rate. Data from each year from 2000 to 2020 was used. Augmented Dickey Fuller and Philip-Perron tests were used to see if the data set was stationary, and the Bound Test was used to find out how the interest rate affected the dividend. Lastly, the impulse response function was estimated to find out how a shock in the interest rate affects dividend. The Augmented Dickey Fuller test and the Philip-Perron test both showed that the first difference between the dividend rate and the interest rate was stable. The findings of the bound test revealed a long-term negative relationship between interest rates and dividends. Last but not least, a shock to the interest rate had a short-term negative impact on dividends but a long-term favourable impact on both variables.

Based on what the study found, it suggests that the causes of Ghana's high interest rate be looked into. Since a high interest rate can make it more expensive to run a business and reduce cash flow and profits, it can make it hard for a bank to pay a higher dividend yield.

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