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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Does corruption grease or sand the wheels of bank profitability in Ghana?

Ibrahim Nandom Yakubu^{1*}

Abstract: This paper investigates the effect of corruption on bank profitability in Ghana using bank-level dataset spanning 2008 to 2017. By employing the system Generalized Method of Moments (GMM) technique, the study finds a significant negative relationship between corruption and bank profitability. This supports the “sand the wheels” view on corruption and controverts the “grease the wheels” view, which hypothesizes that corruption boost firm performance. Controlling for bank-specific and macroeconomic factors, the findings further reveal that, while bank size, capital adequacy, and inflation have a significant positive effect on profitability, management efficiency and monetary policy rate negatively and significantly drive bank profits. The study discusses key implications for policy.

Subjects: Corporate Finance; Banking; Business, Management and Accounting

Keywords: Corruption; Bank profitability; GMM; sand the wheels; grease the wheels

1. Introduction

In both developed and developing countries, corruption is generally recognized as a persistent phenomenon that needs to be eliminated (Aliyev, 2015; Round, Williams, & Rodgers, 2008). High level of corruption is widely believed to have a negative impact on economic growth and countries' development (Li, Xu, & Zou, 2000; Méndez & Sepúlveda, 2006). However, some argue that corruption drives commerce and therefore may have a significant impact on economic development (Becquart-Leclercq, 1989; Huntington, 2006; Méon & Weill, 2010). The spread of corruption across countries may differ significantly. Rock and Bonnett (2004) established that the negative



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PUBLIC INTEREST STATEMENT

Corruption is a pervasive challenge confronting the world more especially developing countries including Ghana. The level of corruption in Ghana over the years has been on the rise despite efforts by the government to combat corruption in the country. This high level of corruption can affect economic activities negatively. Using data from recently recapitalized banks, this study examines the impact of corruption on bank profitability. The study found that corruption is detrimental to bank profitability in Ghana. It is also established that bank size, capital adequacy, and inflation positively enhance bank profitability. Management efficiency and monetary policy rate showed a negative influence on bank profits. To safeguard profitability, the study provided relevant recommendations.

relationship between corruption and investment is prevalent in developing economies, while developed economies show a positive correlation.

Over the years, corruption has been a challenging issue in developing countries including Ghana. Governments and institutions have made tremendous efforts at all levels to combat corruption. In the case of Ghana, for example, the government recently set up a special prosecutor's office in addition to the existing anti-corruption agencies to combat corruption in the country. Despite this, the level of corruption in the country has risen. According to the Transparency International Report, Ghana was ranked 81st at the end of 2017 from 61st in 2014. The country's high level of corruption can have a negative impact on the economy through several channels, including lower investment and deterioration in the quality of financial assets (Mauro, 1995; Park, 2012).

The aim of this paper is to find out whether corruption has a positive or negative effect on the profitability of commercial banks in Ghana. The relationship between bank profitability and corruption is worth examining given the significant role played by the banking sector in enhancing economic growth in Ghana. Thus, the formation of favourable policies and economic conditions are imperative to enable banks to channel funds into viable projects (Bougatef, 2017; Yakubu et al., 2017). However, high levels of corruption can influence the financing decisions of banks, which means that banks may tend to divert their lending funds from normal projects to bad projects which may affect profitability. This potential impact of perceived corruption on banks' profitability provides the motivation for this research.

The paper makes three contributions to literature. First, to the best of the researcher's knowledge, the study presents a pioneering work on the effect of corruption on bank profitability in Ghana. Second, instead of concentrating on one measure of bank profitability as in the case of existing studies (Aburime, 2010; Arshad & Rizvi, 2013; Mongid & Tahir, 2011), this study employed the three key proxies of profitability (ROA, ROE, and NIM) to unearth the effect of corruption on bank profitability. Also, the study applies the system generalized method of moments (GMM) technique which is superior to the bias traditional panel data estimators used in previous studies of corruption-bank profitability relationship. Results from the GMM analysis reveal that there is a significant negative relationship between corruption and bank profitability in Ghana. This evidence supports the "sand the wheels" hypothesis of corruption.

The rest of the paper is as follows: the next section provides a review of literature while section 3 discusses the research methodology. Section 4 presents the empirical findings. Section 5 concludes the study with some implications for policy.

2. Literature review

In this section, the study reviews the relevant literature on corruption and firm performance. The concept and theories of corruption are first explained followed by empirical literature on the relationship between corruption and firm performance as well as bank profitability. Factors influencing bank profitability is also discussed as the study controls for other variables affecting profitability.

2.1. Definition of corruption

In literature, corruption and bribery are being used interchangeably. According to Transparency International (2018a), corruption is defined as "the abuse of entrusted power for private gain". In general, there are three main types of corruption; grand, petty, and political corruption. Grand corruption involves operations at the higher level of government committed to alter policies, aiming to obtain some benefits at the expense of public goods (Boukou, 2017). This type of corruption greatly hurts individuals and society, and the officials involved are usually unpunished. Petty corruption is often refers to as small or low level corruption. The amount involved is quite small in comparison to the overall business activities. It is a daily abuse of entrusted power by public officials with ordinary citizens in their quest to access basic goods and services

(Transparency International, 2018b). Political corruption on the hand is where political decision enactors influence policies, rules, and institutions in resource allocation in order to sustain their power and wealth.

2.2. Theories of corruption

There are different theories underpinning the study of corruption. The “rent-seeking” theory developed by Tollock (1970) is regarded as one of the most compelling theories explaining the activities of corruption. This theory views corruption as a specific rent-seeking activity and argues that bribery is a means by which firms earn preferential treatments from the government (Rose-Ackerman, 1999). Firms decide to pay bribe to government officials when the payment has a positive impact on their growth and performance, and when they realize that without the bribe they may lose production and resources (Boukou, 2017). According to Gao (2010), there is a positive association between the perceived benefits of firms and the attitude they show towards bribe payment. He posits that firms are more inclined to pay bribes as the perceived benefits increase given the cost of bribery.

In support of the “rent-seeking” theory is the “grease the wheels” theory. This theory views bribery as a significant factor influencing commerce. It argues that firms are able to avoid bureaucratic processes and red tapes when they engaged in the payment of bribes. This in a way enhances their performance (Méon & Weill, 2010). This theory suggests, therefore, that corruption improves firm performance rather than harms it.

Contrary to the “rent-seeking” and “grease the wheels” theories, the “sand the wheels” theory argues that corruption is detrimental to investment and economic growth (Tanzi, 1998). It sees bribery to affect firms’ performance negatively resulting from rent-seeking, resource misallocation, and poor investments. This argument is supported by the works of Frye & Shleifer, (1996), Mauro (1995) and Rodrik, Subramanian, and Trebbi (2004).

2.3. Empirical literature

2.3.1. The relationship between corruption and firm performance

There are empirical studies showing the relationship between corruption and firm performance. The results from these empirical findings have been mixed. While some showed a negative relationship, others evidenced a positive association. For instance, Sohail, Arslan, and Zaman (2014) employed the OLS regression method on primary data to assess how corruption affects firm performance in Pakistan. Their findings showed that corruption (measured in terms of more government contracts) and firm performance is negatively related. Using firm-level data spanning 2006–2015 of African countries, Abudu (2017) analyzed the relationship between corruption and firm performance. Applying the GMM estimator, the result established that corruption has a negative effect on firm performance, especially for larger and older firms. In Greece, Athanasouli, Goujard, and Sklias (2012) used firm-level data to assess the relationship between corruption and firm performance. They found that corruption in overall affects firm performance negatively. The study further argued that small and medium-sized firms in Greece are largely involved in corrupt practices. Teal and McArthur (2002) found that firms making payments to corrupt officials have lower output. Similarly, Fisman and Svensson (2007) also argued that an increase in firms’ bribery rate brings about a decrease in firms’ productivity and growth. Gaviria (2002) and Faruq, Webb, and Yi (2013) likewise supported that firms’ performance is affected by corruption negatively.

Notwithstanding the negative relationship, there are some studies also confirming a positive association between corruption and firm performance. For instance, Williams and Kedir (2016) employing the World Bank Enterprise Survey data spanning 2006–2013 investigated the impact of corruption on firm performance in 40 African countries. Evidence from the regression analysis showed that corruption significantly improves firm growth and productivity. Similarly, Boukou (2017) analyzed the effect

of bribe payment on Chinese firms' performance using the World Bank Enterprise Survey data covering 2011–2013. The empirical findings suggested that firms that are perceived to be corrupt achieve superior growth and performance. By using panel data, Vial and Hanoteau (2010) found a positive relationship between corruption and firm output of Indonesian manufacturing firms. Ayaydin and Hayaloglu (2014) also reported that corruption correlates positively with firm growth in Turkey.

2.3.2. *The impact of corruption on bank profitability*

In terms of the impact of corruption on bank profitability, few studies have been carried out on the relationship in both developed and developing countries. Arshad and Rizvi (2013) investigated the effect of corruption on the profitability of Islamic banks in some selected countries using panel data covering 2000–2010. By invoking the least squares regression analysis, the results established that corruption and bank profitability have a significant positive relationship. In his analysis on the impact of corruption on bank profitability, Bougatef (2017) applied the generalized method of moments (GMM) estimator technique on a balanced panel data of commercial banks in Tunisia for the period 2003–2014. The findings showed that corruption and bank profitability (in terms of return on assets) are positively associated. Aburime, (2010) examined the impact of corruption on the profitability of 48 banks in Nigeria from 1996 to 2006. The empirical results from the backward stepwise regression analysis revealed that the level of corruption in Nigeria has a positive significant influence on bank profitability. By investigating the effect of corruption on profitability of banks in selected ASEAN (Association of Southeast Asian Nations) countries, Mongid and Tahir (2011) found that corruption has a positive significant effect on bank profitability.

2.3.3. *Determinants of bank profitability*

In view of the role of the banking sector in boosting economic growth, the determinants of bank profitability have been extensively investigated. These determinants of profitability are classified as internal (banking-specific) and external (macroeconomic or industry) factors. Below are some empirical studies on the determinants of bank profitability.

Flamini, Schumacher, and McDonald (2009) investigated the determinants of bank profitability with a sample of 389 banks in Sub-Sahara Africa. Applying the Ganger-Causality method, the empirical findings showed that diversification, bank size, and private ownership are the main factors explaining banks' profitability.

Al-Tamimi and Hussein (2010) examined the determinants of financial performance in the United Arab Emirates (UAE) for the period 1996–2008. Using Return on Assets (ROA) and Return on Equity (ROE) as bank performance measures, the results obtained indicated that bank performance in the UAE is influenced by liquidity and bank concentration.

By applying the Generalized Methods of Moments (GMM) analytical technique, Dietrich & Wanzenried, (2014) assessed the determinants of bank profitability in Switzerland. Their findings posited that operational efficiency, loan growth, funding cost, the business model, and effective tax rate explain bank profitability.

Using five Central and Eastern Europe countries (Bulgaria, Czech Republic, Hungary, Poland, and Romania), Căpraru and Ichnatov (2014) found that management efficiency, credit risk, bank capital adequacy, and inflation predict bank performance.

Tariq, Usman, Mir, Aman, and Ali (2014) investigated the determinants of commercial banks' profitability in Pakistan using bank-level data spanning 2010–2014. Evidence from the fixed and random effect estimation revealed that asset quality, bank capitalization, and bank size impact on banks' profitability.

Using data from six Central and South American countries (Chile, Colombia, El Salvador, Honduras, Mexico, and Paraguay), Albulescu (2015) examined the impact of financial soundness

variables on bank profitability over the period 2005–2013. He found that bank profitability can be predicted by bank capitalization, liquidity, non-performing loans, non-interest expenses, and interest rate.

Petria, Capraru, and Ihnatov (2015) employed ROA and ROE as bank profitability measures to analyse the factors influencing bank profitability in EU-27 over the period 2004–2011. The results from the regression estimates indicated that bank profitability can be explained by management efficiency, diversification, credit and liquidity risk, economic growth, and competition.

In Ghana, Gyamerah and Amoah (2015) used bank-specific and macro-economic factors to determine the profitability of local and foreign banks. Bank size and credit risk were found to significantly explain profitability. Yakubu (2016) also considered bank-specific and macroeconomic factors in his assessment of the factors influencing commercial banks' profitability in Ghana. Using OLS analytical technique, his findings suggested that bank size, liquidity, and expense management significantly predict commercial banks' profitability in Ghana.

From the literature review, it is worth noting that a relationship exists between bank-specific, macroeconomic, and industry-specific factors and bank profitability. However, the results presented are mixed and inconclusive. This study complements the existing literature by including corruption as a determinant of bank profitability.

3. Research methodology

3.1. Sample and data

The study sample consists of unbalanced panel data of 11 commercial banks in Ghana over the period 2008–2017. These banks were chosen based on data availability for the years considered. A regression analysis of bank profitability is performed on a set of variables, including a measure of corruption, bank-specific and macroeconomic factors. The perceived corruption index was taken from the Transparency International reports. The bank-specific variables were collected from the annual reports of each bank and year available. The study also included monetary policy rate (MPR) and inflation serving as macroeconomic variables, in which data was obtained from the Bank of Ghana.

3.2. Description of variables

3.2.1. Dependent variable

Following previous studies, the most commonly used profitability measures include ROA (Al-Tamimi & Hussein, 2010; Ali, Akhtar, & Ahmed, 2011; Almazari, 2011; Yakubu et. al., 2017a), ROE (Petria et al., 2015; Bougatef, 2017; Yakubu et. al., 2017b), and Net Interest Margin (Al-Hashimi, 2007; Bougatef, 2017). To establish a better understanding of how corruption affects profitability, the study employed ROA, ROE, and NIM as proxies of bank profitability. ROA is defined as net income to total assets. ROE is calculated by dividing net income by shareholders' equity. NIM is the ratio of reported net interest to total assets.

3.2.2. Independent variables

3.2.2.1. Corruption (crp). The study employed the Corruption Perception Index (CPI) of the Transparency International to measure the country's corruption level. It ranks countries on how their people perceive that public sectors are corrupt. Following Park (2012), the study defines the corruption index as $CI = 10 - CPI$. This measurement indicates that high CI means a high level of corruption. The relationship between corruption and bank profitability is not obvious.

3.2.2.2. Bank size (BSize). Bank size is measured by the natural logarithm of total assets. A positive relationship is expected between size and profitability because large banks are more able to diversify their activities and as a consequence increase their revenue (Bougatef, 2017).

3.2.2.3. Capital adequacy (CA_{dq}). This indicates the capital strength of a bank measured by the ratio of equity to total assets. Higher capital adequacy ratio depicts the ability of a bank to finance its activities with less external funding. Capital adequacy ratio and profitability are expected to relate positively (Berger, 1995).

3.2.2.4. Management efficiency (ME_f). This is measured by the cost-to-income ratio calculated by dividing the operating expenses by the operating income generated. The lower the ratio, the higher the bank profitability (Petria et al., 2015). Thus, banks that efficiently manage their operations are able to reduce costs and increase profits.

3.2.2.5. Liquidity (Liq). This is considered as the ratio of loans to total assets of banks. The relationship between liquidity and bank profitability is mixed. Liquidity positively influences profitability for banks with lower bad loans in their portfolio. Banks with high rate of non-performing loans on the other hand, might face lower profits (Garcia & Guerreiro, 2016).

3.2.2.6. Monetary policy rate (MPR). It is the interest rate at which banks can borrow from the central bank. This also influences the rate banks can lend to customers. Higher MPR impacts positively on banks' profitability (Borio, Gambacorta, & Hofmann, 2017). Hence a positive relationship is anticipated.

3.2.2.7. Inflation (Inf). Inflation has a mixed effect on bank profitability. Generally, high inflation signifies domestic macroeconomic instability and may have a negative effect on business profits (Khan & Mitra, 2014). At the same time, a highly inflationary environment indicates economic boom which may increase the demand for bank loans (Garcia & Guerreiro, 2016).

3.3. Model specification

A regression of bank profitability (*Prof*) is performed on the set of independent variables (*Crp*, *BSize*, *CA_{dq}*, *ME_f*, *Liq*, *MPR*, and *Inf*) considered in the study. On the right-hand side of the equation, the lagged of the dependent variable (*Prof*) is introduced in order to consider the time persistence of bank profitability. This method assumes that the current profitability value of banks may be influenced by the previous value. Therefore, the model for this study is specified below:

$$Prof_{it} = \alpha + \gamma Prof_{i,t-1} + \beta' X_{it} + v_i + \varepsilon_{it} \quad (1)$$

where *i* and *t* subscripts denote bank and year, respectively. α is the constant term. $\gamma Prof_{i,t-1}$ refers to the lagged dependent variable. X_{it} is the vector of independent variables (*Crp*, *BSize*, *CA_{dq}*, *ME_f*, *Liq*, *MPR*, and *Inf*). β is the vector of coefficients. v_i represent the unobservable bank characteristics, and ε_{it} indicates the error term.

Equation (1) could thus be restructured and expanded as follows using the three profitability proxies:

$$ROA_{it} = \alpha + \gamma ROA_{i,t-1} + \beta' X_{it} + v_i + \varepsilon_{it} \quad (2)$$

$$ROE_{it} = \alpha + \gamma ROE_{i,t-1} + \beta' X_{it} + v_i + \varepsilon_{it} \quad (3)$$

$$NIM_{it} = \alpha + \gamma NIM_{i,t-1} + \beta' X_{it} + v_i + \varepsilon_{it} \quad (4)$$

3.4. Estimation method

The introduction of a lagged dependent variable in the model renders traditional panel data estimators (Pooled OLS, fixed and random effects) biased. To overcome this problem, the study applies the system Generalized Method of Moments (GMM) dynamic panel data estimator which was first proposed by Arellano and Bond (1991) and further developed by Arellano and Bover (1995) and Blundell and Bond (1998). The System GMM method is superior to the traditional panel data estimators as it constitutes a strong point of empirical investigation. It controls the

endogeneity of explanatory variables, such as the lagged dependent variable included in the model, generating internal instruments (Arellano & Bover, 1995). Also, the study's individual dimension is relatively larger than its temporal dimension ($N > T$). This enables the GMM system estimator to be used (Roodman, 2009).

4. Analysis and results

4.1. Descriptive statistics

The descriptive statistics for all the variables included in the study can be seen in Table 1. It shows the mean, standard deviation, minimum and maximum values of each variable. From the table, bank profitability measures (ROA, ROE, and NIM) have minimum values of -4.7% , -32.0% and 0.3% and maximum values of 9.3% , 49.0% and 16.0% with average values of 4.3% , 22.6% and 8.1% respectively. This implies a negatively skewed distribution of bank profitability for the period considered. The mean values of ROA and ROE are above the 2017 industry averages of 2.8% and 19.7% respectively according to the Ghana Banking Survey (2018). The average of NIM however, is below the industry mean of 9.4% . The average corruption value is 5.73 ranging from a minimum of 5.2 to a maximum of 6.1 . This shows that the level of corruption in Ghana is high. The banks studied on an average are small in size as the mean value of bank size (BSize) is estimated at 14.28% , with maximum and minimum values of 12.07% and 16.08% respectively. The capital adequacy ratio varies from 4.4% to 30.9% with a mean of 14.6% . This signifies that the sampled banks on average have a capital adequacy ratio above the 8% requirement of Basel III and below the industry average of 21.33% . Management efficiency has a minimum of 29.9% and a maximum of 100% with 57.4% average, which is above the industry average of 50% . The high mean value indicates that Ghanaian banks are quite inefficient in cost reduction. Liquidity ratio has a mean value of 0.65 , below the industry average of 0.75 . The average monetary policy rate of the Bank of Ghana is estimated at 18.45% and ranges from 12.5% to 26.0% . Inflation has a mean of 13.65% .

4.2. Correlation analysis

Table 2 shows the correlation between the independent variables, more importantly how corruption is associated with the other independent variables. It can be seen that corruption and management efficiency are positively associated. This relationship implies that corrupt borrowers may offer to pay high commissions in addition to the interest on borrowing in order to obtain more funds from banks. Consequently, bank revenue may decrease and the efficiency ratio rises. There is also a positive correlation between corruption and inflation. Bank size, capital adequacy, liquidity, and monetary policy rate, on the other hand, are negatively associated with corruption. Generally, the correlation coefficients between the independent variables are low. According to Kennedy (2003), a high correlation exists when the correlation coefficient exceeds 0.80 . The low correlation

Table 1. Descriptive statistics

Explanatory Variables	Mean	Std. Dev.	Min.	Max.
ROA	0.043	0.028	-0.047	0.093
ROE	0.226	0.125	-0.320	0.490
NIM	0.081	0.235	0.030	0.160
Crp	5.730	0.339	5.200	6.100
BSize	14.283	0.885	12.070	16.080
CAcq	0.146	0.041	0.044	0.309
MEf	0.574	0.157	0.299	1.000
Liq	0.645	0.262	0.230	1.660
MPR	18.450	4.444	12.500	26.000
Inf	13.647	3.900	7.126	19.251

Table 2. Pairwise correlation matrix

Variables	Crp	BSize	CAdq	MEf	Liq	MPR	Inf
Crp	1.000						
BSize	-0.424	1.000					
CAdq	-0.203	0.003	1.000				
MEf	0.301	-0.322	-0.305	1.000			
Liq	-0.050	-0.321	0.070	0.178	1.000		
MPR	-0.437	0.520	0.049	-0.045	-0.039	1.000	
Inf	0.002	0.033	-0.099	0.122	0.140	0.702	1.000

coefficients for the variables indicate the absence of multicollinearity in the analysis. To justify that there is no multicollinearity, the study further performed the variance inflation factor analysis.

4.3. Test of multicollinearity

As recommended by Gujarati (2003), the Variance Inflation Factor (VIF) analysis was carried out to test for multicollinearity. There is a possibility of multicollinearity when the VIF is above 10 and the tolerance value is below 0.10. Table 3 results however, show the absence of multicollinearity among the variables. The values of VIF are all below 10 and the tolerance values are above 0.10.

4.4. Discussion of regression results

The study used the system GMM estimator to examine the impact of corruption, bank-specific and macroeconomic variables on profitability. The system GMM technique has the ability to produce unbiased findings. To achieve valid results, the Sargan test of validity was conducted. The Blundell and Bond (1998) test was also carried out to evaluate the existence of first-order and second-order autocorrelations in the first differential errors. As shown in Table 4, the results of the Sargan tests suggest that the null hypothesis, which states that the over-identification restrictions are valid cannot be rejected for Model 1 and Model 3 at 5% significance level, suggesting that the instruments used in this study are appropriate in these models. There is no autocorrelation in all the models as evidenced by the AR (1) and AR (2) test (Arellano and Bond (1991)). The Wald test estimates also indicate that the explanatory variables are jointly significant.

From Table 4, the coefficients of $Prof_{t-1}$ (ROA, ROE, and NIM) are insignificant indicating that the lagged profitability has no self-reinforcing effect. Corruption has a negative and statistically significant impact on all the profitability measures. Thus, corruption reduces bank profitability in Ghana. The negative relationship also implies that banks in Ghana do not take advantage of the high level of corruption in the country. However, the significant value of corruption depicts that it is a substantial factor for bank profitability, and banks in Ghana are capable of benefiting from the

Table 3. Tolerance value and variance inflation factor

Variables	Collinearity statistics	
	VIF	Tolerance
MPR	5.54	0.1805
Inf	3.70	0.2706
BSize	2.38	0.4201
Crp	1.84	0.5430
MEf	1.39	0.7193
Liq	1.24	0.8056
CAdq	1.21	0.8232
Mean VIF	2.47	

Table 4. System GMM regression results

Variables	Model 1 (ROA)	Model 2 (ROE)	Model 3 (NIM)
Prof _{t-1}	0.0412 (0.0855)	-0.0127 (0.1029)	0.0400 (0.1250)
Corp	-0.0113** (0.0051)	-0.0745** (0.0358)	-0.0148** (0.0059)
BSize	0.0063* (0.0037)	0.0241 (0.0259)	-0.0062 (0.0050)
CAdq	0.1290** (0.0513)	-0.0559 (0.3751)	0.1202* (0.0628)
MEf	-0.1430*** (0.0150)	-0.5892*** (0.1067)	-0.0363* (0.0190)
Liq	-0.0161 (0.0113)	0.0204 (0.0811)	-0.0090 (0.0141)
MPR	-0.0023*** (0.0008)	-0.0112** (0.0055)	0.0013 (0.0010)
Inf	0.0014** (0.0006)	0.0047 (0.0046)	-0.0003 (0.0008)
Constant	0.1132* (0.0598)	0.7768* (0.4319)	0.2423*** (0.0780)
Sargan test, χ^2 (Prob.> χ^2)	39.279 (0.284)	59.926 (0.005)	48.809 (0.061)
AR (1) z (Prob.> z)	-0.647 (0.518)	-1.361 (0.174)	-0.570 (0.569)
AR (2) z (Prob.> z)	0.005 (0.996)	0.749 (0.454)	-0.104 (0.917)
Wald-test χ^2 (8) (Pro.> χ^2)	231.02 (0.000)	96.96 (0.000)	48.85 (0.000)
Observations	88	88	88
Number of Banks	11	11	11

*** p < 0.01, ** p < 0.05, * p < 0.1 Standard errors in parentheses

high level of corruption in the country. This finding contradicts previous results (Aburime, 2010; Arshad & Rizvi, 2013; Bougatef, 2017; Mongid & Tahir, 2011).

Regarding the bank-specific variables, bank size has a positive significant impact on bank profitability (in terms of ROA). This suggests that banks especially larger ones are more profitability when they are able to diversify their portfolio or expand their activities. Large banks are also able to undertake extensive research and development enabling them to offer unique products and services to their clients, thereby increasing profits. The result syncs with the finding of Yakubu (2016). Though bank size is positively related to ROE, the effect is insignificant. On the other hand, a negative insignificant effect of bank size on NIM is established.

The results show a positive and significant effect of capital adequacy on profitability when measured by ROA and NIM. This depicts that the sampled banks are well-capitalized and can easily translate their funds into profits. The finding also suggests that highly capitalized banks have enough funds to engage in more lending activities accompanied by higher lending rates which contribute significantly to profits. The result confirms the finding of Căpraru and Ihnatov (2014). In contrast, capital adequacy and ROE are negatively and insignificantly associated.

As expected, management efficiency (measured by cost-to-income ratio) has a negative significant effect on bank profitability (ROA, ROE, and NIM). This implies that the management of the sampled commercial banks are more prudent in reducing cost leading to higher profitability. The result is consistent with prior empirical studies (Capraru & Ihnatov, 2014; Petria et al., 2015).

Liquidity has a negative insignificant influence on profitability (measured by ROA and NIM) and a positive insignificant effect on ROE. This finding implies that liquidity does not matter for bank profitability given the no statistical significance in all cases.

The monetary policy rate imposed by the central bank has a negative significant effect on profitability (when measured by ROA and ROE). That is, increasing monetary policy rate leads to lower profitability of banks. This is because an increase in monetary policy rate by the central bank allows commercial banks to also increase the lending rate on loans which may deter customers from taking loans from the banks. Hence, banks' profitability is affected negatively. Contrary, a positive insignificant relationship is realized between MPR and NIM.

Regarding inflation, a positive significant impact is found on ROA, indicating that inflation is relevant for bank profitability. The relationship is however, insignificant for ROE and NIM.

5. Conclusion and recommendations

This paper investigates the effect of corruption on bank profitability in Ghana. Results from the system GMM reveal that corruption impacts profitability negatively. Consequently, this evidence is not in agreement with previous empirical works which have concluded that corruption is positively related to bank profitability, but in line with the “sand the wheels” view of corruption. The findings also disclosed that bank profitability in Ghana may be attributed to bank size, capital adequacy, management efficiency, monetary policy rate, and inflation.

The study has presented some recommendations for policy. First, to minimize bribery and corruption which firms and individuals engage in when accessing loans, there is the need for banks to reduce nonprice restrictions (for example collateral conditions) to allow easy access to credits. Banks are advised to implement efficient whistleblowing policies where bank staff must be quick to report any corrupt financial transactions in the course of work. Furthermore, regulatory authorities should implement stringent punishments to discourage banks from engaging in corrupt practices. For further studies, a more broadened sample covering several countries will provide a more comprehensive analysis on the relationship between corruption and bank profitability.

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