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**Article**

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## GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

# Dividend policy and performance of listed firms on Ghana stock exchange

Ahmed Bossman<sup>1\*</sup>, Samuel Kwaku Agyei<sup>1</sup>, Oliver Asiamah<sup>1</sup>, Ellen Animah Agyei<sup>2</sup>, Emmanuel Yaw Arhin<sup>3</sup> and Edward Marfo-Yiadom<sup>3</sup>

**Abstract:** We examined the dividend policy and financial performance nexus among listed firms in Ghana, having controlled for firm age, size, capital structure, governance, and financial sector clean-up. We employed the system dynamic general method of moments (GMM) estimation technique with data from 2015 to 2019. In addition to dividend payout, new proxies of dividend policy (dividend capacity and free cash flow savings) were employed to ascertain their impact on firm performance in a period filled with financial sector reforms and clean-ups. We found a significant effect of dividend capacity on Return on Assets and Return on Equity. Free cash flow savings was found to have a direct and significant effect on Return on Assets and Return on Equity but an indirect relationship with both Tobin's Q and stock price. Our findings indicate that while dividend capacity and free cash flow savings are positively connected with firm performance, dividend payout detrimentally affects owners' wealth during crisis periods. The findings divulged a detrimental effect of financial sector clean-ups on the performance of non-financial firms only. It is recommended that corporations maintain a balance between dividend payout and free cash flow savings to attract all classes of investors. Governments and market regulators alike must take practical steps to roll out policies on financial sector reforms and/or clean-ups to mitigate the detrimental impacts of inadvertent reforms and/or clean-ups on other sectors of the economy. Investors, market regulators, and governments seek to benefit from the findings of our study.

**Subjects:** Population Health; Global Health; Health Informatics and Statistics

**Keywords:** dividend policy; free cash flow; firm value; firm performance; financial sector clean-up; Ghana stock exchange; GMM

**JEL:** G1; G34; G35

## 1. Introduction

The policies employed by corporations regarding dividends present an issue of concern in corporate finance. Dividend decision is relevant to corporations because it signals the performance of firms as well as their future growth prospects (Ali, 2022; Olayiwola & Ajide, 2019; Shehata, 2022).

Several theoretical and empirical foundations have been advanced on the dividend policy and firm performance nexus. The Miller and Modigliani (1961) "perfect world" scenario stipulates that dividend policy is indirectly related to the value of a firm. They indicate that the growth prospect (future earnings) and the risk associated with investment influence the value of firms. Black (1976) has contended the feasibility of the "perfect world" scenario postulated by Miller and Modigliani.

The works of several researchers (see, e.g., Hasan et al., 2021; Hauser & Thornton Jr, 2017; Murtaza et al., 2020; Ofori-Sasu et al., 2017; Olayiwola & Ajide, 2019; Tran, 2021), having relaxed the assumptions of Miller and Modigliani on perfect markets, have been in line with Black's argument. The dealings of the present-day world do not reflect a perfect world (Dang et al., 2021; Hauser & Thornton Jr, 2017). Black points out that dividends, when compared to stock repurchases, are tax disadvantaged and for that matter should have no direct influence on firm value. Thus, Black (1976) presents a "puzzle" of dividend policy among firms and contends that the puzzle is embodied by the pervasiveness or commonness of dividend-paying firms. The dividend puzzle has been a topical issue in corporate finance (Hasan et al., 2021; Tran, 2021) and has seen explanations from several theoretical dimensions.

Based on many practical or real-world imperfections, theories such as information asymmetry, signaling, and the agency theory have been developed to offer explanations for the dividend policy and firm performance puzzle as revealed by Black (1976). Notwithstanding, international empirical investigations have either focused on other dimensions. For instance, recent works have directed attention towards investigating market differentials and dividend policy (Tekin & Polat, 2021), the impact of novel corporate governance factors on dividend policy (Ain et al., 2021; Bae et al., 2021; Hasan et al., 2021; Olayiwola & Ajide, 2019; Shehata, 2022; Thompson & Adasi Manu, 2020), the effect of corrupt practices on dividend decisions (Tran, 2021), and the impact of pandemics on corporate dividend decisions (Ali, 2022). While these studies help substantiate relevant determining factors or drivers of dividend policy, their contribution to solving the dividend puzzle is incomplete until the link between dividend policy and firm performance is empirically examined.

It is worthily noting that earlier works have consistently yielded mixed results. Having investigated the effect of dividend policy on the value of firms in the financial service sector, Sondakh (2019) revealed a negative relationship between dividend policy and firm value. On the contrary, Hauser and Thornton Jr (2017) and Dang et al. (2021) found a positive relationship between dividend policy and corporate valuation. In Ghana, Ofori-Sasu et al. (2017) reported a negative relationship between dividend yield and shareholder wealth using data from the Ghana Stock Exchange. Their findings were contrary to those of Oppong Fosu (2015) who examined dividend policy and the performance of listed banks in Ghana. These studies largely measured dividend policy using dividend payout ratio or dividend yield and did not consider other measures like free cash flow savings and dividend capacity which have been theorized by Jensen (1986) and recently highlighted by Dang et al. (2021) who indicated that corporate value is significantly influenced by the size of the dividend offered by corporations. Therefore, it stands to reason that a corporation's capacity to pay dividends would influence its capitalization. Hence, we argue that firms' dividend capacity, which results from free cash flows, can be a significant determinant of the policy they uphold in terms of dividend payment. Since dividend capacity is a measure of a firm's free cash flows, we propose the application of dividend capacity and free cash flow savings in addition to dividend payout, as proxies for dividend policy.

Furthermore, existing studies have largely employed static models in examining the nexus between dividend policy and corporate value. Although Olayiwola and Ajide's (2019) study employed a dynamic estimator, their strand of work falls within those that examine the drivers of dividend policy, focusing on external factors' influence on dividend policy. As pointed out, the contribution of such strands of work towards solving the dividend puzzle is incomplete until the link between dividend policy and firm performance is empirically examined in a period full of financial market and policy uncertainties (Ali, 2022).

One emerging economy whose financial sector has undergone recurring reforms and clean-ups is Ghana. These reforms and clean-ups were targeted at reviving the financial sector and boosting corporate performance. However, since the implementation of such reforms and clean-ups, there has not been any empirical assessment of the impact of the reforms and clean-ups on the free cash flow position of corporations in the economy, how their dividend capacity has been affected, and the

resulting impact of changes in the dividend capacity of firms on their financial performance. This presents a fitting case to examine the impact of dividend policy on corporate performance.

We contribute to the strands of works that seek to ascertain empirical evidence in fixing the dividend puzzle. Specifically, we contribute to the strand of literature that assesses the impact of dividend policy on firm value by focusing on an emerging economy that has undergone several financial sector reforms and clean-ups in recent periods. Our study offers the following main contributions to the body of knowledge.

First, we propose new and direct proxies for dividend policy by quantifying dividend capacity and free cash flow savings. Dividend capacity directly emerges from the free cash flow position of a corporation. Intuitively, a larger dividend capacity is expected to result in higher dividend payments, all things being equal (Dang et al., 2021). Similarly, if firms have a high savings of free cash flow, a direct impact on the dividend payout ratio could be expected. Hence, a firm's decision to pay high or low dividends could be significantly influenced by its free cash flow position, as indicated by the free cash flow theory (Jensen, 1986). Therefore, in addition to dividend payout, we proxy the dividend policy of firms with dividend capacity (i.e. the gross-free cash flow available to a firm) and free cash flow savings. The application of these additional proxies is novel to the literature on dividend policy.

Second, we focus on an emerging economy that has recently undergone several reforms and clean-ups in pursuit of strengthening the financial sector to boost corporate performance. Considering the various forms of clean-ups that have taken place in Ghana's financial sector between 2015 and 2019, we seek to ascertain whether or not amid such turbulent times dividend policy influences shareholder value/wealth. Ali (2022) recently ascertained the determinants of dividend policy during systemic crises, but evidence of the impact of dividend policy on corporate value amid idiosyncratic stressed conditions is unknown to the literature. We provide evidence from an emerging economy.

Methodically, we employ a dynamic estimator, the system dynamic general methods of moments (GMM). There is a need for novel literature on dividend policy to employ a dynamic estimator in modeling the dividend policy and firm performance nexus. By its application, the dynamic model would seem more appropriate than the static model since the dependent variable is dynamic and independent variables may not be strictly exogenous such that they are likely to be correlated with past and possibly current error terms. Moreover, unlike a static model, employing a dynamic estimation technique for a study on this subject would correct for omitted variable bias, control for the endogeneity problem of the lagged dependent variable, and also control for differences across panels. Additionally, a dynamic model would use more observations and, therefore, make it more efficient relative to a static model. These are all factors that are well handled by the system GMM approach.

Furthermore, recent literature (Al-Kayed, 2017; Baker et al., 2019; Dewasiri et al., 2019) proves that previous (lagged) dividends, free cash flow, investment opportunity, leverage, size, and growth influence payout ratio and that dividend payout influence performance. Therefore, suffice to say that previous performance can influence current performance. These key firm performance conditioning factors have been ignored in previous firm performance studies in Ghana but are catered for in our analysis. We expect that current performance levels are significantly predicted by their previous levels.

We measure dividend policy on three levels viz. free cash flows, dividend payout, and free cash flow savings to ascertain their relationship with the financial performance of listed firms, given the financial constraint imposed by the financial sector clean-up, within a system dynamic panel framework.

Our findings divulged that while dividend capacity and free cash flow savings are positively connected with firm performance, dividend payout detrimentally affects owners' wealth during crisis periods. Meanwhile, backed by the signaling and free cash flow theories, Tobin's Q and stock price have favorable connections with dividend payout during financial sector reforms and clean-ups. Notwithstanding, between financial and nonfinancial firms, our findings evidenced that financial sector clean-ups have a detrimental effect on the performance of non-financial firms in particular. The collapse of some financial institutions causes households and firms to lose trust in the financial sector and the ripple effect is manifested when investors begin to disinvest.

The remainder of the paper is structured under Sections 2 to 5. In Section 2, a review of empirical works is presented; the methodology employed is presented in Section 3; Section 4 discusses the empirical results; Section 5 presents a summary and conclusions to the study.

## **2. Literature review**

### **2.1. Theoretical framework**

There have been several contentions as to whether or not dividends are relevant in predicting or determining the value of corporations (Tran, 2021). Many theories are employed in explaining the relevancy or otherwise of dividends. Dewasiri et al. (2019) argue that a single theory is insufficient to offer explanations in support of either dividend relevancy or irrelevancy position. Theories such as dividend irrelevancy, agency theory, bird-in-hand theory, free cash flow theory, and pecking order theory are upheld by this study.

In a tax-free economy, dividend irrelevancy theory, as propounded by Miller and Modigliani (1961) and stressed by Amidu and Abor (2006) and Ofori-Sasu et al. (2017), holds that shareholders tend to be indifferent to preferences for dividend and capital gains. As indicated by Miller and Modigliani, the premise for the dividend irrelevancy theory is that there is in existence a perfect capital market. Investors usually may prefer explicit returns on their capital. In line with the bird-in-hand theory, corporations that pay dividends look much attractive in the eyes of investors (Juhandi et al., 2019) because any dividend paid by corporations is considered to induce or attract investors to the company. Many investors would be attracted to invest in the company's stock, and this would force prices to increase and thereby boosting the company's value.

In contention with Miller and Modigliani's irrelevancy argument, the agency theory of dividends was advanced by Easterbrook (1984), proposing that the agency costs borne by firms are inversely related to dividends and that dividends may contribute to the sustainability of firms in the capital market (Ain et al., 2021; Ali, 2022; Hasan et al., 2021; Tekin & Polat, 2021). This is in line with Jensen's (1986) free cash flow theory, which holds that since free cash flows represent the surplus cash flow after all lucrative and positive-yielding investment opportunities have been funded, paying a portion of such free cash flows is a way of extenuating agency conflicts and cutting down agency costs (Bae et al., 2021; Hasan et al., 2021; Tran, 2021).

Also, in line with the dividend relevancy theories, Myers (1984) pecking order theory of dividends posits that the first point of reference for cash to fund investments for a company is its retained earnings followed by risky or somewhat secured debt and then equity. Although no direct implication for dividends is accounted for by the pecking order theory, Fama and French (2002) and Dewasiri et al. (2019) are of the view that the theory is applicable when there is a need for reconciling dividends and investment.

### **2.2. Dividend policy and performance**

The wealth of owners would not be maximized if corporations do not venture into positive-yielding investments (Sondakh, 2019; Suteja et al., 2020; Thompson & Adasi Manu, 2020). Lucrative investments yield excess returns for firms. If companies pay dividends, the proportion of funds available for investment will be cut short. This would impact the growth prospect of the firm and

hence negatively impact its value. Should there be insufficient funds, profitable investments would be left untaken and this would have negative consequences on the firm.

However, should firms consistently refuse to pay a dividend from returns made, a bad signal is sent to existing and prospective investors such that the value of the firm (the price of the firm's stock) would react to this signaling and would begin to fall (Ali, 2022; Hasan et al., 2021; Thompson & Adasi Manu, 2020). Following this, is it relevant for firms to pay dividends? This confirms the fact that the maneuvering effect dividend policy has on firm performance is a puzzle (Marfo-Yiadom & Agyei, 2011).

Hauser and Thornton Jr (2017) argue that firms that do not pay dividends tend to have higher market-to-book ratios than those that pay dividends. In line with this, DeAngelo et al. (2006) report that the median market-to-book ratio of firms that do not pay dividends is greater than those that pay dividends. Farrukh et al. (2017) advance that the "information content of dividends" of Miller and Modigliani connote that the future profitability of corporations is predicted by rises in the prices of their stocks.

The aforementioned theories have been well articulated and employed in the literature to explain the internal and external drivers of dividend policy in recent periods. Hence, their application in examining the impact of dividend policy on corporate performance in a period filled with financial sector clean-ups and reforms in Ghana is appropriate. Hinged on the theoretical positions, the following hypotheses were maintained by the study:

$H_1$ : there is no significant relationship between dividend capacity and financial performance of firms on the Ghana Stock Exchange

$H_2$ : there is no significant relationship between dividend payout and financial performance of firms on the Ghana Stock Exchange

$H_3$ : there is no significant relationship between free cash flow savings and financial performance of firms on the Ghana Stock Exchange

On the issue of dividend policy and corporate performance, empirical results have failed to be commensurate with each other in both advanced and frontier economies. Osamwonyi and Lola-Ebueku (2016) investigated how the earnings of Nigerian firms are influenced by dividend policy and revealed that whereas current dividend payout had a direct and significant influence on earnings, one lagged dividend had a statistically nonsignificant direct effect on firm earnings. These findings were similar to Ozuomba et al.'s (2016) study that investigated the influence dividend policy has on the wealth of public limited companies' owners in Nigeria. A positive relationship between dividend payout and share price was revealed by Shah and Mehta (2016) when they investigated the impact of dividend announcements in corporations on the share prices of firms quoted on the stock market of India. Moreover, Juhandi et al. (2019) used 5-year data from 31 firms that were purposively sampled to study how dividend policy is affected by dividend policy, size, and liquidity of firms in Indonesia. Outputs of their multiple regression indicated that dividend policy, size, and liquidity can boost corporate value. Dang et al.'s (2021) study on dividend policy's effect on corporate value in Vietnam suggested that corporate value is significantly influenced by the size of the dividend offered by corporations. These findings are contrary to those of other studies.

Khan et al. (2016), in their study on the influence dividend policy has on the performance of corporations in Pakistan, share the view that dividend policy has a significant inverse relationship with the return on equity of firms. Lumapow and Tumiwa (2017) studied the influence posed on firm value by dividend policy, firm size, and productivity of manufacturing corporations in Indonesia.



Employing the random effect model on the panel data that spanned from 2008 to 2014, Lumapow and Tumiwa found a negative and substantial effect of dividend policy on corporate value. In determining the determinants of dividend policy of Romanian listed corporations, Cristea and Cristea (2017) reported that dividend policy is inversely related to leverage, firm growth and size, and the prevailing economic condition. Sukmawardini and Ardiansari's (2018) study which revealed that dividend payout ratio had no impact on firm value covered 14 purposively sampled companies with data covering 2012 to 2016 and analysis was done using multiple regression.

Similarly, Sondakh (2019) examined the relationship between dividend policy and the value of financial corporations in Indonesia. Other variables of interest to Sondakh's study were firm size, liquidity, and profitability. Using multiple linear regression, the study revealed a significant negative relationship between dividend policy and corporate value. In line with these findings, Nguyen et al. (2019) reported a negative and significant relationship between dividend payout and stock price volatility in Vietnam when they sampled 141 quoted non-financial firms with data from 2011 to 2016. They analyzed the data under the fixed effect model. A similar observation was made by Ahmad et al. (2018), whose study was focused on corporations in the Amman stock market and used a panel GMM estimation technique. In a more recent study in Pakistan, Murtaza et al. (2020) studied ownership concentration together with dividend policy to determine their effect on firm performance. The study covered 26 firms from the stock market of Karachi with data from 2012 to 2017. Using the generalized least squares regression, they disclosed that dividend policy is significantly and directly related to return on assets.

Driven by stressed conditions in the global economy, the focus of recent strands of empirical works has been shifted to dividend policy determinants. Tekin and Polat (2021) investigated the effect of market differentials on dividend policy; the impact of corporate governance variables on dividend policy was investigated by Olayiwola and Ajide (2019), Thompson and Adasi Manu (2020), Ain et al. (2021), Bae et al. (2021), Hasan et al. (2021), and Shehata (2022); the effects of corrupt practices on dividend decisions were examined by Tran (2021), and the impact of pandemics on corporate dividend decisions has been recently investigated by Ali (2022). Although the contribution of these works towards solving the dividend puzzle can in no way be overlooked, completing the puzzle warrants that the link between dividend policy and corporate performance is also examined. Recent developments in the world economy as well as those internal to national economies present a good opportunity to reexamine the topical issues surrounding the dividend puzzle. While Ali's (2022) study provides sufficient evidence in terms of global systemic crises and their impact on dividend policy, the link between dividend policy and firm performance amid internally driven financial crises is yet to be established particularly in the case of an emerging market like Ghana, which undertook several reforms and clean-ups of its financial sector between the period 2015–2019.

However, aside from not covering a period like this, in the Ghanaian context, studies that focus on dividend policy and corporate performance have also yielded varying results, as in the case of developed economies. Oppong Fosu (2015) used the ordinary least squares regression to analyze dividend policy and the performance of seven quoted banks in Ghana and found a positive connection between return on equity and dividend payout as a measure of performance. Similar observations were reported by Amidu (2007) and Ofori-Sasu et al. (2017) who also employed the same approach as Oppong Fosu (2015). On the contrary, Onanjiri and Korankye (2014) employed panel regression to examine the impact of dividend payout on the performance of manufacturing corporations quoted on the Ghanaian stock market and reported a significant but negative effect of dividend payout on the financial performance of quoted manufacturing firms.

In the period of financial sector clean-ups and reforms, knowledge about how dividend policy impacts firm performance in emerging economies is unknown. Since the size of a company's dividend positively affects its value, the impact of corporations' dividend capacity and free cash flow savings, as proxies for dividend policy, is yet to be examined. Thus, together with employing



a dynamic model, we examine the impact of dividend policy on the financial performance of listed companies in Ghana over a period characterized by financial sector reforms and clean-ups by employing two additional proxies that are inferred from the recent findings of Dang et al. (2021). We also examine the impact of financial sector clean-ups and reforms on corporate performance. The relative resilience of a dynamic estimator has been emphasized by Olayiwola and Ajide (2019). Hence, to cater for biases with omitted variables, simultaneity, endogeneity, and heteroscedasticity, associated with static models, we employ the system dynamic GMM approach to achieve the objectives of the study.

### 2.3. Conceptual framework

In line with the reviewed theoretical and empirical literature, the study variables can be conceptualized as shown in Figure 1. In line with the existing literature (see, e.g., Ain et al., 2021; Ali, 2022; Bae et al., 2021; Dang et al., 2021; Hasan et al., 2021; Marfo-Yiadom & Agyei, 2011; Olayiwola & Ajide, 2019; Shehata, 2022; Tekin & Polat, 2021; Thompson & Adasi Manu, 2020; Tran, 2021), we control for essential variables such as capital structure, firm size, firm age, governance, and financial sector clean-up in the modelled relationships between dividend policy and firm performance measures.

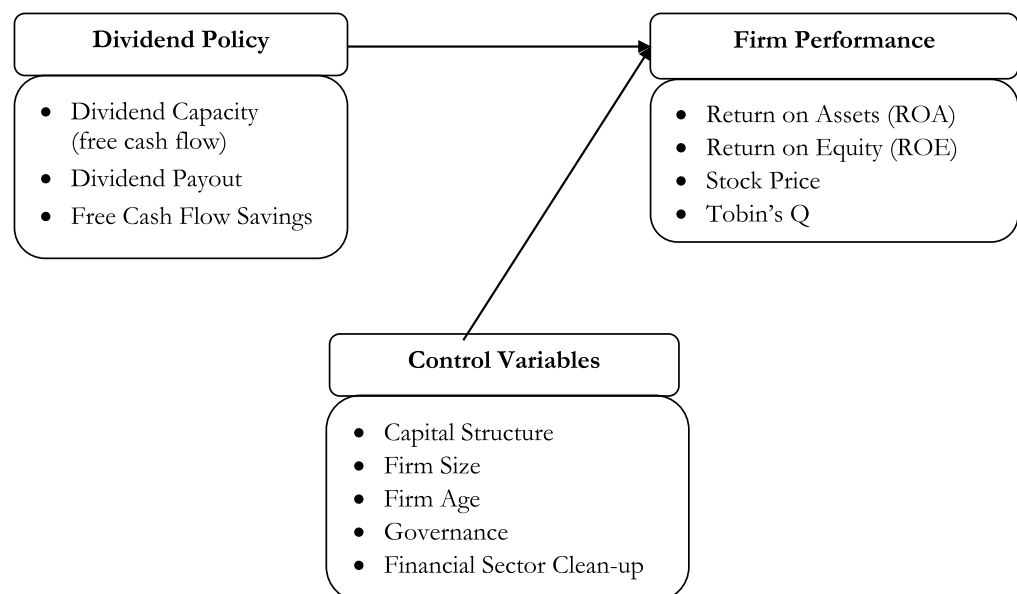
### 3. Methods

Having controlled for firm age, size, capital structure, governance, and financial sector clean-up, this study employed the system dynamic general methods of moments (GMM) estimation to examine the connection between dividend policy and financial performance among listed firms in Ghana. The study encompassed all listed companies on the Ghana Stock Exchange that had sufficient data for the financial years 2015 to 2019. The study period is chosen to cover the period in which the financial sector of Ghana underwent recurring reforms and clean-ups which were targeted at reviving the financial sector and boosting corporate performance. Firms with available data required for the study were used. A total of 29 firms (see Table A1 in the Appendix), made up of 18 non-financial and 11 financial firms, were employed in this study.

Following Olayiwola and Ajide (2019), we specify the basic empirical model as:

$$Y_{it} = \alpha_{it} + \beta X_{it} + \varphi Z_{it} + \varepsilon_{it}, \quad (1)$$

**Figure 1. Dividend policy and financial performance.**



where  $Y$  is the regressand (corporate performance),  $\alpha$  is the intercept,  $X$  denotes a vector of predictor variables,  $Z$  represents a vector of control variables,  $\beta$  and  $\varphi$  are the regression coefficients for a predictor and control variable, respectively, and  $\varepsilon$  is the error term.

From Equation (1) and based on the conceptual framework (Figure 1), the estimated financial performance models for the various performance measures against dividend capacity, dividend payout, and free cash flow savings were given as:

$$\ln ROA_{it} = \beta_1 \ln ROA_{it} + \beta_2 \ln DivCap_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (2)$$

$$\ln ROA_{it} = \beta_1 \ln ROA_{it} + \beta_2 \ln DivPyt_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (3)$$

$$\ln ROA_{it} = \beta_1 \ln ROA_{it} + \beta_2 \ln DivSvn_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (4)$$

$$\ln ROE_{it} = \beta_1 \ln ROE_{it} + \beta_2 \ln DivCap_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (5)$$

$$\ln ROE_{it} = \beta_1 \ln ROE_{it} + \beta_2 \ln DivPyt_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (6)$$

$$\ln ROE_{it} = \beta_1 \ln ROE_{it} + \beta_2 \ln DivSvn_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (7)$$

$$\ln TobsQ_{it} = \beta_1 \ln TobsQ_{it} + \beta_2 \ln DivCap_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (8)$$

$$\ln TobsQ_{it} = \beta_1 \ln TobsQ_{it} + \beta_2 \ln DivPyt_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (9)$$

$$\ln TobsQ_{it} = \beta_1 \ln TobsQ_{it} + \beta_2 \ln DivSvn_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (10)$$

$$\ln StkPx_{it} = \beta_1 \ln StkPx_{it} + \beta_2 \ln DivCap_{it} + \beta_3 \ln FmSize_{it} + \beta_4 \ln CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (11)$$

$$\ln StkPx_{it} = \beta_1 \ln StkPx_{it} + \beta_2 \ln DivPy_{it} + \beta_3 FmSize_{it} + \beta_4 CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (12)$$

$$\ln StkPx_{it} = \beta_1 \ln StkPx_{it} + \beta_2 DivSvn_{it} + \beta_3 FmSize_{it} + \beta_4 CaptStr_{it} + \beta_5 \ln Age_{it} + \beta_6 \ln Gov_{it} + \beta_7 \ln FSCD_{it} + \varepsilon_{it} \quad (13)$$

where the variables and their meanings are presented in Table 1.

Equations (2) to (13) were estimated using Roodman's (2009a, 2009b) estimation technique for system dynamic panel. The use of this technique creates room for the presence of the lag-dependent variable (Agyei et al., 2021 Asiamah et al., 2022) to help assess the autoregressive nature of financial performance measured by ROA, ROE, stock prices, and Tobin's Q. The

**Table 1. Variable names, meaning, and source(s) of data**

Variables	Definition/unit of measurement	Source(s) of data
Financial Performance: <i>lnROA<sub>it</sub></i> <i>lnROE<sub>it</sub></i> <i>lnStkPx<sub>it</sub></i> <i>lnTobsQ<sub>it</sub></i>	Natural logarithm of return on assets, return on equity, the stock price at year-end, and Tobin's Q respectively for a given firm at a given time. They were measured as the ratio of net income to total assets, net income to total equity, stock market data, and market value of shares to total assets, respectively.	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana GHANA STOCK EXCHANGE Daily Shares and ETFs Trades—Ghana Stock Exchange (gse.com.gh)
<i>lnDivCap<sub>it</sub></i>	The natural logarithm of dividend capacity for firm <i>i</i> at time <i>t</i> measured as the firm's free cash flows to profit after tax	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana
<i>lnDivPy<sub>it</sub></i>	The natural logarithm of dividend payout for firm <i>i</i> at time <i>t</i> , measured as the ratio of the amount of dividend paid to profit after tax.	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana
<i>lnFCFSvn<sub>it</sub></i>	The natural logarithm of free cash flow savings for a given firm at a given time. This was measured as the ratio of the savings from free cash flow to profit after tax.	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana
<i>FmSize<sub>it</sub></i>	Size of a given firm at a given time. This was measured as the natural logarithm of total assets.	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana
<i>CapStr<sub>it</sub></i>	The capital structure of a given firm at a given time, and was measured as the ratio of long-term debt to total equity.	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana
<i>lnAe<sub>it</sub></i>	Natural logarithm of the age of a given firm at a given time.	EMIS EMIS—Ghana Emerging markets—Main
<i>lnGov<sub>it</sub></i>	Natural logarithm of the number of females on the board for a given firm at a given time.	ANNUAL REPORTS GHANA GSE—Annual Reports Ghana   Annual Reports Ghana
<i>FSCD<sub>it</sub></i>	Financial sector clean-up dummy defined as 1 in the years in which the financial sector was cleaned up, otherwise, 0.	GhanaWeb Will Ghana's financial sector clean-up build a stronger banking system? (ghanaweb.com)

introduction of biases by way of differencing as propagated by Arellano and Bond (1991) for catering for the issue of endogeneity brought about by the presence of the autoregressive variable is also corrected by Roodman's technique.

Besides, endogeneity is resolved by this technique through the application of the instrumental variable approach and lessens overidentification in the course of accounting for cross-sectional dependence (Agyei et al., 2021). Thus, the system GMM approach by Roodman (2009a, 2009b), popularized by Agyei et al. (2020), Agyei et al. (2021), Boateng et al. (2018), and Love and Zicchino (2006), was found to be appropriate for the study given that the listed firm sample used for estimating each of the models was more than the number of years (5). The general form of the system GMM estimation used is specified in Equations (14) and (15).

$$\ln FP_{it} = \gamma_0 + \gamma_1 \ln FP_{it-\tau} + \sum_{h=1}^5 \gamma_h W_{h,it-\tau} + \theta_i + \mu_t + \varepsilon_{it}, \quad (14)$$

$$\ln FP_{it} - \ln FP_{it-\tau} = \gamma_1 (\ln FP_{it-\tau} - \ln FP_{it-2\tau}) + \sum_{h=1}^5 \gamma_h (W_{h,it-\tau} - W_{h,it-2\tau}) + (\mu_t - \mu_{t-\tau}) + \varepsilon_{it-\tau}, \quad (15)$$

where  $\ln FP_{it}$  represents the various firm performance measures (return on assets and equity, stock price, and Tobin's Q) for a given firm at a given time;  $\gamma_0$  is a constant;  $W$  represents a vector of control variables (firm size, capital structure, governance, firm age, financial sector clean-up dummy);  $\tau$  signifies the autoregression coefficient and equals one (1) for the specification,  $\mu_t$  signifies the constraint related to time,  $\theta_i$  represents the firm-specific effect and  $\varepsilon_{it}$  is the disturbance component.

It is essential to note that the GMM technique may have some drawbacks, as it does not cater for cross-sectional dependence, assumes homogeneity of the panel, and may ruin estimated results upon misspecification of instruments. Fewer observations could also constrain the outputs from GMM estimations owing to issues with instrument specifications. However, these challenges are outweighed by the numerous advantages the technique possesses. The regressor indicators could be classified as supposed endogenous (Agyei et al., 2021, 2020) and only time-invariant variables are regarded as strictly exogenous (Roodman, 2009b). These are backed by the results from Sargan overidentification and the Hansen J tests presented in Tables 6–11. Thus, the availability of diagnostics to assess the robustness of the estimated models means that the drawbacks of the estimation technique could be mitigated. The diagnostics accompanying the results evidenced the appropriateness of the models specified. To ensure rigorous estimations, Stata automatically omits cross-sections with insufficient observations. This ensures that the resultant outputs are representative of the number of firms reported for each model.

## 4. Results

### 4.1. Descriptive statistics

The descriptive statistics of the variables used for the models are summarized in Table 2.

On average, over the period 2015–2019, the proportion of free cash flow paid as dividends by listed firms was recorded at 0.15 with a very high standard deviation of 0.86. This meant that the majority of listed firms were conservative in terms of paying a dividend amid financial sector reforms and clean-ups. About 71% of free cash flow available to listed firms was saved but the high standard deviation (836%) implied that some firms hardly recorded enough free cash flow from their core activities. This observation is not surprising given that the study period covered the era of reforms and clean-ups that detrimentally affected firms' cash

**Table 2. Descriptive statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	144	-.0122363	.3352414	-2.449478	1.591933
ROE	144	.0456018	.6055999	-4.123195	1.644695
TobsQ	141	17.89588	97.37788	.000015	651.8122
StkPx	142	5.035915	8.305937	.02	37
DivCap	144	.8670622	7.685282	-83.14702	14.82955
DivPyt	144	.1545747	.862858	-6.302991	7.383173
FCFSvn	144	.7124875	8.358646	-90.5302	21.13254
FmSze	144	13.04388	3.147028	5.370224	18.6901
CapStr	144	55.3779	377.5452	-3.945086	3823.406
Gov	144	1.631944	1.138927	0	5
Age	145	40.34483	26.19144	2	124

Notes<sup>1</sup>: This table presents the descriptive statistics for all sampled firms ( $n = 29$ ) used in this study covering the period 2015–2019. Differences in observations are attributable to unavailable data for some firms. ROA is the return on assets, ROE represents the return on equity, TobsQ is Tobin's Q, StkPx is Stock Price at the end, DivCap is Dividend Capacity, DivPyt is Dividend Payment, FCFSvn is Free Cash Flow Savings, FmSze is Firm Size, CapStr is Capital Structure, FmGrth is Firm Growth, Gov signifies Governance, and Age is firm age.

positions and saw the collapse of some firms (Oxford Business Group, 2019). The average stock price noted over the period was about GHS5.04 (with a standard deviation of GHS8.31), suggesting wide differences in stock prices among listed firms. On average, listed firms recorded negative returns on equity (−1.2%) although the standard deviation indicated that some firms achieved positive returns on owners' wealth. This implies that during the financial sector reforms and clean-ups, the rate of return achieved on equitable investments in Ghana was detrimental to the average investor. This observation raises issues concerning agency problems and costs and it may also send a bad signal to investors. This preliminary observation further substantiates the need for this study.

Furthermore, the highest female representation on the board of listed firms was 5, whereas some firms had no females on their board. The capital structure measured as total long-term debt to total equity was 55% on average, whereas some firms recorded negative equity balance and so had extreme capital structure (debt-to-equity ratio). Over the sample period, listed firms aged 40 years old on average with a standard deviation of 26 years. The oldest firm over the period was about 124 years. The descriptive statistics representative of financial and non-financial firms are summarized in Tables 3 and 4, respectively.

#### 4.2. Correlation matrix

To evaluate the existence of multicollinearity among the explanatory variables which may impact the reliability of the models, the correlation matrix was employed to ascertain the pairwise correlations between the regressors. The results are presented in Table 5. Going by the rule of thumb of 0.7 as the cut-off point for determining the presence of multicollinearity, the results suggest that the existence of multicollinearity among the explanatory variables is low.

From the correlation matrix in Table 5, the only instances of high correlations between variables were found to be among the regressands, which were the explained variables and, therefore, were not contained in the same model. They rather served as the basis for deducing the models tested in the study. Concerning the explanatory variables, there existed no issue of multicollinearity.

**Table 3. Descriptive statistics—financial firms**

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	55	.0299306	.0255191	−.0370054	.0860946
ROE	55	.1562708	.1181288	−.2372384	.371751
TobsQ	52	.225925	.1675702	.000015	.7122987
StkPx	52	3.956731	5.524298	.08	25.25
DivCap	55	.6365157	11.94632	−83.14702	14.19567
DivPyt	55	.3772812	1.014063	−.394788	7.383173
FCFSvn	55	.2592344	12.89894	−90.5302	14.19567
FmSize	55	14.94221	1.707524	11.72251	18.6901
CapStr	55	.469175	.5326105	0	2.201094
Gov	55	2.036364	.9222283	1	5
Age	55	50.27273	32.17743	7	124

Notes: This table presents the descriptive statistics for the financial firms ( $n = 11$ ) used in this study covering the period 2015–2019. Differences in observations are attributable to unavailable data for some firms.

**Table 4. Descriptive statistics—non-financial firms**

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	89	−.0390502	.4250029	−2.449478	1.591933
ROE	89	−.0242822	.7651318	−4.123195	1.731562
TobsQ	88	399.7713	1763.092	.0346673	9384.447
StkPx	90	5.659444	9.5255	.02	37
DivCap	89	.9485184	2.619954	−6.133709	12.60754
DivPyt	89	.0259446	.7023184	−5.986792	2.172813
FCFSvn	89	.9225738	2.995644	−6.173722	16.19314
FmSize	89	11.01683	2.737644	4.142862	14.91101
CapStr	89	70.66269	371.371	−3.945086	2823.173
Gov	89	1.382022	1.191882	0	5
Age	90	34.27778	19.58504	2	68

Notes: This table presents the descriptive statistics for the non-financial firms ( $n = 18$ ) used in this study covering the period 2015–2019. Differences in observations are attributable to unavailable data for some firms.

**Table 5. Correlation matrix**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) ROA	1.000										
(2) ROE	0.404*	1.000									
(3) TobsQ	−0.077	−0.249*	1.000								
(4) StkPx	0.061	−0.017	0.026	1.000							
(5) DivCap	0.018	0.017	−0.036	0.099	1.000						
(6) DivPyt	0.034	0.050	−0.033	−0.252*	−0.758*	1.000					
(7) FCFSvn	0.013	0.010	−0.030	0.117	0.998*	−0.801*	1.000				
(8) FmSize	0.192*	0.121	−0.215*	0.403*	0.016	0.032	0.011	1.000			
(9) CapStr	−0.013	0.080	0.517*	−0.040	0.003	−0.026	0.005	−0.276*	1.000		
(10) Gov	−0.002	0.059	0.020	0.015	0.015	0.128	0.001	0.187*	−0.006	1.000	
(11) Age	0.081	0.117	−0.123	−0.010	0.005	0.102	−0.006	0.142	−0.084	0.104	1.000

Notes: This table presents the pairwise correlations between the study variables gathered on all sampled firms ( $n = 29$ ) covering the period 2015–2019. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

### 4.3. Discussion of regression results

#### 4.3.1. All firms

The regression outputs of the system GMM estimations are summarized in Tables 6 and 7. Contained in Table 6 are the results for ROA and ROE when dividend capacity, dividend payout, and free cash flow savings, respectively, were used as the main independent variables. Reported in Table 7 are the results for Stock Price and Tobin's Q, using dividend capacity, dividend payout, and free cash flow savings, respectively, as the key explanatory variables. From the tables, the diagnostics in terms of autocorrelation, Sargan, and Hansen J-tests, and the number of instruments vis-à-vis the number of observations and cross-sections suggest that exogenous instruments were used in the study and the models were not constrained by instrument proliferation. As a result, there is an indication that the models were well specified.

The regression results in Tables 6 and 7 suggest that the current levels of ROA, ROE, Tobin's Q, and Stock Price are informed by their previous (lagged) levels. All the lagged ratios of ROA, ROE, Tobin's Q, and Stock Price revealed a positive and significant relationship at a 1% significance level with their respective current values except for dividend payout on ROA, which showed a significant relationship at a 5% significance level. This result implies that financial performance results follow a partial adjustment process but the speed of adjustment is financially performance-dependent. Therefore, managing present financial performance informs their future levels. This finding confirms our initial argument that current performance levels are significantly predicted by their previous levels.

The result showed a positive connection between dividend capacity and financial performance. A unit increase in the free cash flow was associated with a 0.402, 0.0270, and 0.193 unit increase in ROA, ROE, and Tobin's Q, respectively. Thus, firms create additional returns for investors when they have enough free cash flows. With excess free cash flows, corporations can invest in profitable investments (Dang et al., 2021; Sondakh, 2019), which improves ROA and ROE. By creating a good image for investors, the market value of firms appreciates which in turn improves the market-to-book value. However, a mere increase in the level of free cash flows recorded by firms would not significantly translate into an increase in the value of owners' wealth (Farrukh et al., 2017) if some distributions are not made to owners in the form of dividends. Payment of dividends is facilitated by a corporation's dividend capacity. Having enough capacity to pay dividends is a good means of creating a positive signal for investors, and the outcome may be seen through the rush for shares in corporations that have good prospects for dividend payments. More free cash flows will also assure investors of the growth prospects of a firm and when funds are effectively and efficiently managed, owners will realize high returns on their wealth. The findings corroborate the works of Ali (2022) and Dang et al. (2021) and are also supported by the signaling and free cash flow theories. Therefore, we reject hypothesis  $H_1$ , which states that there is no significant relationship between dividend capacity and financial performance of firms on the Ghana Stock Exchange.

However, we found an inverse connection between dividend payout and both ROA and ROE. Specifically, a percentage increase in dividend payout reduced ROA and ROE by 0.404 and 0.437, respectively. The implication is that little or no amount is left with firms for expansion when they pay dividends in periods of financial sector reforms and, hence, the wealth of owners may not realize any substantial appreciation in value in such periods. While this observation contradicts Ali's (2022) finding that firms could maintain or increase their dividend payouts during a systemic risk era, it lends support to the finding of Hasan et al. (2021) who revealed a detrimental impact of financial crises on dividend payout and firm performance. To prevent worsened performance in periods of crisis, firms retain excess returns on owners' wealth (Ofori-Sasu et al., 2017) and pursue expansion in their activities to yield extra funds (ROA). Meanwhile, findings from the study also indicate a direct connection between dividend payout and both Tobin's Q and share price where a unit addition to the amount of dividend



Table 6. Regression outputs with ROA and ROE as dependent variables

Variables	DivCap LnROA	DivPyt LnROA	FCFSvn LnROA	DivCap LnROE	DivPyt LnROE	FCFSvn LnROE
L.InROA	0.510*** (0.148)	0.148** (0.0637)	0.501*** (0.134)			
L.InROE				0.320*** (0.0527)	0.371*** (0.0832)	0.251*** (0.0832)
DivCap	0.0402*** (0.0105)			0.0270** (0.0109)		
DivPyt		-0.404*** (0.0484)			-0.437*** (0.0655)	
FCFSvn			0.0207*** (0.00465)			0.0491*** (0.0107)
FmSze	-0.274*** (0.0722)	-0.371*** (0.0824)	-0.334*** (0.0783)	0.156*** (0.0492)	0.00180 (0.0345)	0.110** (0.0411)
CapStr	0.370 (0.495)	-0.486 (0.360)	0.931* (0.452)	-1.988*** (0.268)	-0.397*** (0.0864)	0.214 (0.195)
Gov	0.215 (0.189)	0.400** (0.142)	0.108 (0.197)	0.141 (0.0982)	0.423*** (0.0728)	-0.157** (0.0636)
LnAge	0.111 (0.114)	0.243 (0.313)	-0.147 (0.293)	-0.0894 (0.0804)	-0.00289 (0.0535)	-0.222 (0.281)
FSCdummy	0.0501 (0.252)	0.190 (0.119)	0.338 (0.248)	0.169** (0.0638)	0.135** (0.0628)	-0.139* (0.0689)
Constant	1.291*** (0.367)	0.912 (0.954)	2.948* (1.599)	-3.021*** (0.767)	-1.849*** (0.458)	-1.748 (1.164)
AR (1) [p-value]	0.217	0.279	0.022	0.230	0.229	0.070
AR (2) [p-value]	0.143	0.177	0.191	0.244	0.120	0.979

(Continued)

Table 6. (Continued)

Variables	DivCap		DivPyt		FCFSvn		DivPyt		FCFSvn	
	lnROA		lnROA		lnROA		lnROE		lnROE	
Sargan OIR	0.078		0.144		0.206		0.124		0.120	
Hansen OIR	0.348		0.760		0.621		0.503		0.233	
DHT for Instruments										
(a)GMM Instruments for levels										
H excluding group	0.607		0.627		0.165		0.298		0.149	
Diff (null, H = exogenous)	0.256		0.677		0.812		0.589		0.326	
(b) IV (years, eq(diff))										
H excluding group	0.286		0.690		0.575		0.449		0.234	
Diff (null, H = exogenous)	0.604		0.670		0.487		0.571		0.245	
Fisher	837.53***		762.94***		389.24***		533.64***		109.85***	
Instruments	18		17		18		22		18	
Observations	71		71		71		75		75	
Number of Firms	22		22		22		23		23	

Notes: This table presents the regression outputs with ROA and ROE as dependent variables for all sampled firms (n = 29) over the period 2015–2019. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 7. Regression outputs with stock price and Tobin's Q as dependent variables

Variables	DivCap StkPx	DivPyt StkPx	FCFSvn StkPx	DivCap TobsQ	DivCap TobsQ	DivCap TobsQ
L.InStkPx	0.913*** (0.0338)	0.947*** (0.0742)	0.835*** (0.106)			
L.InTobsQ				0.695*** (0.144)	0.863*** (0.0482)	0.728*** (0.152)
DivCap	0.0112 (0.0462)			0.193 (0.161)		
DivPyt		0.0453 (0.0371)			0.0528*** (0.0169)	
FCFSvn			-0.180** (0.0730)			-0.192* (0.107)
FmSize	0.0834** (0.0392)	0.0111 (0.0568)	0.127** (0.0471)	-0.329*** (0.0686)	-0.0474 (0.0715)	0.0475 (0.0884)
CapStr	0.000122* (6.56e-05)	-0.0115 (0.299)	8.25e-05 (0.000101)	-0.00231*** (0.000733)	0.00630 (0.172)	-0.000108 (0.000672)
Gov	-0.152 (0.0940)	0.0331 (0.115)	0.537*** (0.144)	0.879** (0.369)	0.0393 (0.0607)	0.310 (0.183)
Age	-0.0767 (0.0943)	0.257 (0.265)	-0.916*** (0.314)	0.221 (0.605)	0.0783 (0.194)	-0.391*** (0.119)
FSCdummy	0.154** (0.0611)	0.270*** (0.0329)	0.283** (0.129)	0.146 (0.221)	0.0714** (0.0311)	-0.219 (0.211)
Constant	-0.602* (0.328)	-1.286 (1.030)	0.695 (1.137)	1.728 (1.570)	-0.0769 (1.210)	0.0397 (0.709)
AR (1) [p-value]	0.083	0.165	0.116	0.457	0.821	0.221
AR (2) [p-value]	0.167	0.111	0.634	0.128	0.242	0.126

(Continued)

Table 7. (Continued)

	DivCap	DivPyt	FCFSvn	DivCap	DivCap	DivCap
Variables	StkPx	StkPx	StkPx	TobsQ	TobsQ	TobsQ
Sargan OIR	0.141	0.063	0.778	0.217	0.167	0.451
Hansen OIR	0.333	0.409	0.414	0.769	0.307	0.531
DHT for Instruments						
(a) GMM Instruments for levels						
H excluding group	0.289	0.389	0.652	0.598	0.901	0.587
Diff (null, H = exogenous)	0.381	0.386	0.283	0.711	0.169	0.430
(b) IV (years, eq(diff))						
H excluding group	0.322	0.268	0.354	0.737	0.298	0.534
Diff (null, H = exogenous)	0.339	1.000	0.659	0.496	0.313	0.313
Fisher	133,345.05***	7413.08***	196,216.80***	28.63***	270,047.78***	165.54***
Instruments	22	17	22	21	17	22
Observations	90	51	86	90	51	86
Number of Firms	29	17	29	29	17	29

Notes: This table presents the regression outputs with stock price and Tobin's Q as dependent variables for all sampled firms (n = 29) over the period 2015–2019. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

paid to shareholders resulted in a 0.0528 unit increase in Tobin's Q. This could happen because investors are moved by positive signals (Farrukh et al., 2017; Hasan et al., 2021; Olayiwola & Ajide, 2019; Tekin & Polat, 2021; Thompson & Adasi Manu, 2020) and the market for stocks responds positively to such signals. Positive financial performance is realized if the market value of firms appreciates in excess of their book values. Despite the mixed results, in terms of the direction of effect, our findings led us to reject hypothesis  $H_2$ , which states that there is no significant relationship between dividend payout and financial performance of firms on the Ghana Stock Exchange.

The results also reveal that in terms of profitability (measured by ROA and ROE), firms are well off when they retain free cash flows (savings). A percentage increase in the savings of firms is associated with a 0.0207 percentage increase in ROA and a 0.0491 increase in ROE. As indicated by Dang et al. (2021) and Sondakh (2019), firms can undertake expansions through the investments they make with the free cash flows they retain. Thus, dividends may not necessarily be relevant if corporations want to improve their profitability. Corporations can improve their long-term financial performance if they concentrate on expanding their operations rather than focusing solely on paying dividends to attract investors in the short term. The findings, however, revealed a negative relationship between savings and both stock price and Tobin's Q but were significant at 5% and 10%, respectively. A percentage increase in savings translated to a 0.180 and a 0.192-unit reduction in stock price and Tobin's Q, respectively. Should firms refuse to distribute some earnings to shareholders, negative impressions (Farrukh et al., 2017) are created by investors concerning their profitability. In effect, firms may be unsuccessful in issuing new stocks as a result of a reduction in their value. Such stocks may be unattractive to investors who prefer dividends over capital appreciation. These findings emphasize the signaling and information content of dividends as established by prior literature (Ali, 2022; Dang et al., 2021; Olayiwola & Ajide, 2019). Hence, it was appropriate to reject hypothesis  $H_3$ , which states that there is no significant relationship between free cash flow savings and financial performance of firms on the Ghana Stock Exchange.

Moreover, concerning the control variables, whereas the study revealed a negative relationship between firm size and both ROA and Tobin's Q, a positive connection was revealed for ROE and stock price. Conventionally, the ROA ratio is expected to reduce if the marginal returns arising from additions to assets are less than the gross marginal amount invested in assets and, hence, there is the need for firms to increase marginal returns in excess of marginal investment in assets. Expansions in firms' activities in respect of investments in assets are expected to increase the wealth of owners (Suteja et al., 2020) and will stimulate the interest of investors in firms.

Again, the study revealed that when the capital structure of firms is characterized by more debt relative to equity, the market value of the firms is negatively affected. Tobin's Q reduces when firms have some free cash flow yet maintain more long-term debt as compared to equity. Investors picture firms with excess debt as potential failures in the long term and thus attach less value to the shares of such firms. On governance, the findings indicated that female representation on the board of listed firms contributes to positive financial performance, although in respect of ROE and free cash flow savings, the relationship was negative.

The connection between firm age and financial performance was non-significant for ROA and ROE, except for Tobin's Q and stock price, which was revealed to be indirect but significant. It could be deduced that ageing firms may be getting closer to their declining stage where they may want to retain the growth and remain relevant in the market. They may, therefore, require a greater proportion of their earnings to finance such growths but are unlikely to receive a positive response from the market since investors may be interested in high-yielding firms whose share prices are priced higher and are deemed to be performing ahead of aged firms in the declining phase of their

life cycle. This finding lends support to that of Marfo-Yiadom and Agyei (2011) and the principles of the life-cycle theory, as applied to corporate firms.

On financial sector clean-ups, the study generally observed a positive connection with performance (except for ROE in terms of free cash flow savings). The implication is that reforms in the financial sector could facilitate better management of firms' finances and translate positively into desired performance. Although ROE was negative in terms of free cash flow savings, it is quite understandable because, in the course of financial sector clean-ups, firms are to effectively utilize existing funds to reposition themselves and attract investors. Thus, if these funds are not used in line with the objective of firms but are made to lie idle by means of just retaining them, it may send a negative signal to investors and this could increase agency costs, as Dewasiri et al. (2019) and Hasan et al. (2021) noted.

#### 4.3.2. *Financial vs. non-financial firms*

To ascertain the differences between the dividend policy and performance nexus among financial and non-financial institutions, separate estimations were additionally generated for these classes of firms. Between financial and non-financial firms, lag-dependent variables of financial performance measures were found to be significant determinants of their present values. Therefore, proper management of present performance would translate positively into the future performance of all firms, both financial and non-financial, on the stock market. The regression results for financial firms are summarized in Tables 8 and 9 with those for non-financial firms in Tables 10 and 11.

The study revealed no significant connection between dividend policy (measured by dividend capacity or gross-free cash flow, dividend payout, and free cash flow savings) and the performance (ROA and ROE only) of financial firms, as presented in Table 8. The results in Table 10, however, reveal that dividend capacity positively and significantly determines the performance (measured by ROA and ROE) of non-financial firms. Non-financial corporations could invest in profitable investments with the free cash flows they generate, which, in turn, improves the returns they earn on such investments and augments owners' wealth (Dang et al., 2021; Sondakh, 2019). Also, dividend payout was found to have a positive effect on both ROA and ROE for non-financial firms, but only that of ROA proved significant. Dividend payout signals good performance and, hence, attracts more investors and expands the customer base of firms. Thus, it follows that distributing a proportion of free cash flows to owners could result in increased returns on investments made by non-financial firms.

Concerning the control variables, the study found that the performance of financial institutions is significantly affected by capital structure only. The connection between firm performance and all other control variables proved non-significant. Except for Tobin's Q (as reported in Table 9), the relationship between the financial sector clean-up dummy and the performance of financial institutions was positive but non-significant. This could mean that the various forms of financial sector reforms over the period had no significant influence on the performance of financial institutions. As already indicated, while this observation is contrary to Ali's (2022) finding that firms could maintain or significantly increase dividend payouts during financial crises, it corroborates the finding of Hasan et al. (2021) who revealed a detrimental impact of financial crises on dividend payout and firm performance.

From Table 10, the findings divulged a direct relationship between free cash flow savings and both ROA and ROE of non-financial firms. Savings from free cash flows enhances the propensity and offers a guarantee that non-financial firms could distribute some funds to owners in the foreseeable future. This finding supports the works of Dang et al. (2021) and Dewasiri et al. (2019). Concerning dividend policy and stock price, the study revealed mixed significant effects among non-financial firms. The results indicate a negative effect of free cash flow savings on the stock price of non-financial firms. This implies that if corporations keep free cash flow without putting

**Table 8. Regression outputs with ROA and ROE as dependent variables—financial firms**

	DivCap	DivPyt	FCFSvn	DivCap	DivPyt	FCFSvn
Variables	ROA	ROA	ROA	ROE	ROE	ROE
L.ROA	0.938**	0.660***	0.605***			
	(0.405)	(0.149)	(0.171)			
L.ROE				0.587**	0.542***	0.519***
				(0.233)	(0.113)	(0.103)
DivCap	−0.000178			−0.00135		
	(0.000249)			(0.00213)		
DivPyt		0.00355			0.0288	
		(0.00609)			(0.0325)	
FCFSvn			−4.44e−05			−0.000938
			(0.000574)			(0.00299)
FmSze	−0.0269	−0.0165	−0.0127	−0.0629	−0.0790	−0.0676
	(0.0244)	(0.0104)	(0.0118)	(0.0703)	(0.0514)	(0.0628)
CapStr	0.0495**	0.0495**	0.0415	0.292*	0.283**	0.227
	(0.0186)	(0.0195)	(0.0263)	(0.145)	(0.116)	(0.145)
Gov	0.0120	0.0125	0.0103	0.0656	0.0816	0.0740
	(0.00950)	(0.00852)	(0.0114)	(0.0397)	(0.0498)	(0.0611)
Age	−0.000890	−0.000193	−0.000105	−0.000108	−0.000642	−0.000736
	(0.00148)	(0.000486)	(0.000474)	(0.00370)	(0.00219)	(0.00221)
FSCdummy	0.0288	0.0131	0.00447	0.0679	0.0786	0.0486
	(0.0373)	(0.0206)	(0.0210)	(0.122)	(0.0873)	(0.0927)
Constant	0.392	0.211	0.165	0.731	0.948	0.851
	(0.401)	(0.142)	(0.151)	(1.081)	(0.717)	(0.825)
AR (1) [p-value]	0.420	0.179	0.148	0.079	0.066	0.057
AR (2) [p-value]	0.712	0.131	0.204	0.223	0.307	0.310
Sargan OIR	0.790	0.742	0.724	0.422	0.491	0.435
Hansen OIR	0.585	0.447	0.318	0.261	0.322	0.220
DHT for Instruments						
IV (years, eq(diff))						
H excluding group	0.806	0.426	0.151	0.611	0.285	0.101
Diff (null, H = exogenous)	0.314	0.323	0.632	0.119	0.289	0.564
Fisher	15.07***	23.46***	20.23***	28.45***	93.75***	112.56***
Instruments	10	10	10	10	10	10
Observations	44	44	44	44	44	44
Number of Firms	11	11	11	11	11	11

Notes: This table presents the regression outputs with ROA and ROE as dependent variables for financial firms ( $n = 11$ ) over the period 2015–2019. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

them into profitable investments, their growth prospect is limited. Investors hardly commit funds to firms with no growth prospect (Sondakh, 2019) and, hence, the value of such firms, evidenced by their share prices, is likely to be negatively affected.

Overall, the results reveal that financial sector clean-ups have a detrimental effect on the performance of non-financial firms. These results were largely significant. The implication is that financial sector clean-ups cause non-financial firms to lose substantial funds which may be attributable to the collapse of some financial institutions and cause investors to lose trust in



**Table 9. Regression outputs with stock price and Tobin's Q as dependent variables—financial firms**

	DivCap	DivPyt	FCFSvn	DivCap	DivPyt	FCFSvn
Variables	StkPx	StkPx	StkPx	TobsQ	TobsQ	TobsQ
L.InStkPx	0.839*** (0.114)	0.885*** (0.0902)	0.842*** (0.112)			
L.InTobsQ				0.833*** (0.117)	0.899*** (0.0983)	0.839*** (0.115)
DivCap	0.00930** (0.00308)			0.0119*** (0.00313)		
DivPyt		−0.108*** (0.0333)			−0.138*** (0.0369)	
FCFSvn			0.00857** (0.00282)			0.0110*** (0.00289)
FmSze	−0.156 (0.152)	−0.205 (0.158)	−0.160 (0.153)	−0.336 (0.310)	−0.311 (0.307)	−0.334 (0.310)
CapStr	−0.586 (0.346)	−0.519 (0.308)	−0.581 (0.343)	−0.697*** (0.168)	−0.612*** (0.161)	−0.690*** (0.168)
Gov	−0.0782 (0.0975)	−0.0825 (0.0957)	−0.0786 (0.0974)	−0.0536 (0.0942)	−0.0750 (0.101)	−0.0553 (0.0947)
Age	0.00879 (0.0143)	0.00838 (0.0138)	0.00876 (0.0143)	0.0120 (0.0221)	0.00889 (0.0214)	0.0118 (0.0221)
FSCdummy	0.182 (0.129)	0.188 (0.127)	0.182 (0.129)	−0.0654 (0.166)	−0.0767 (0.172)	−0.0664 (0.166)
Constant	2.204 (2.508)	2.955 (2.602)	2.264 (2.515)	4.224 (4.134)	4.240 (4.137)	4.224 (4.133)
AR (1) [p-value]	0.179	0.161	0.178	0.162	0.139	0.160
AR (2) [p-value]	0.627	0.729	0.636	0.917	0.945	0.930
Sargan OIR	0.638	0.657	0.640	0.616	0.611	0.616
Hansen OIR	0.319	0.331	0.320	0.230	0.235	0.230
DHT for Instruments						
IV (years, eq(diff))						
H excluding group	0.135	0.141	0.136	0.283	0.293	0.284
Diff (null, H = exogenous)	0.819	0.832	0.820	0.181	0.181	0.181
Fisher	499.03***	474.41***	497.54***	1544.31***	1267.81***	1579.67***
Instruments	10	10	10	10	10	10
Observations	41	41	41	41	41	41
Number of Firms	11	11	11	11	11	11

Notes: This table presents the regression outputs with stock price and Tobin's Q as dependent variables for financial firms ( $n = 11$ ) over the period 2015–2019. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

these firms. The extended effect brought about by these clean-ups is manifested when investors (both individuals and institutions) begin to disinvest their principal as a means of ensuring safety for their principal and securing safe consumption in different states of nature in the future.

## 5. Summary and conclusions

We examined the relationship between dividend policy (measured by new proxies viz. dividend capacity, payout, and free cash flow savings) and financial performance among firms on the Ghana

**Table 10. Regression outputs with ROA and ROE as dependent variables—non-financial firms**

	DivCap	DivPyt	FCFSvn	DivCap	DivPyt	FCFSvn
Variables	ROA	ROA	ROA	ROE	ROE	ROE
L.ROA	0.957*** (0.0551)	0.624*** (0.00895)	0.626*** (0.00927)			
L.ROE				0.567** (0.203)	0.304*** (0.0424)	0.648*** (0.193)
DivCap	0.367*** (0.0670)			0.117** (0.0525)		
DivPyt		0.0791*** (0.0266)			0.0316 (0.0282)	
FCFSvn			0.00673** (0.00261)			0.0866** (0.0407)
FmSze	−0.0882 (0.0526)	0.102*** (0.00703)	0.0945*** (0.0140)	0.162* (0.0852)	0.203*** (0.0303)	0.215** (0.0783)
CapStr	−0.000304** (0.000127)	0.000394*** (3.71e-05)	0.000629 (0.000379)	0.00102** (0.000395)	0.000974*** (0.000101)	0.00122*** (0.000371)
Gov	0.357*** (0.0534)	−0.0823*** (0.0126)	−0.0735** (0.0337)	−0.122 (0.124)	0.293** (0.106)	−0.171 (0.124)
Age	−0.0396*** (0.0123)	−0.00443 (0.00651)	−0.00839** (0.00360)	−0.0108 (0.0152)	−0.00786* (0.00423)	−0.00759 (0.0156)
FSCdummy	−0.422*** (0.0413)	−0.0708*** (0.0217)	−0.0315*** (0.00966)	−0.177* (0.0988)	−0.0967*** (0.0277)	−0.159* (0.0890)
Constant	1.683*** (0.504)	−0.848*** (0.206)	−0.674*** (0.184)	−1.335 (1.302)	−2.435*** (0.445)	−1.951 (1.218)
AR (1) [p-value]	0.031	0.095	0.215	0.163	0.156	0.152
AR (2) [p-value]	0.885	0.328	0.317	0.225	0.754	0.234
Sargan OIR	0.151	0.273	0.504	0.950	0.997	0.945
Hansen OIR	0.427	0.309	0.492	0.368	0.613	0.427
DHT for Instruments						
(a)GMM Instruments for levels						
H excluding group	0.406	0.636	0.294	0.817	0.302	0.869
Diff (null, H = exogenous)	0.397	0.211	0.543	0.226	0.674	0.265
(b) IV (years, eq(diff))						
H excluding group	0.344	0.436	0.517	0.313	0.519	0.357
Diff (null, H = exogenous)	0.708	0.110	0.264	0.509	0.919	0.595
Fisher	3934.01***					
591,924.13***	10,416.99***	5.94e+07***	8.39e+06***	1.56e+08***		
Instruments	17	17	17	17	18	17
Observations	71	71	71	71	71	71
Number of Firms	18	18	18	18	18	18

Notes: This table presents the regression outputs with ROA and ROE as dependent variables for non-financial firms (n = 18) over the period 2015–2019. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 11. Regression outputs with stock price and Tobin's Q—non-financial firms**

	DivCap	DivPyt	FCFSvn	DivCap	DivPyt	FCFSvn
Variables	StkPx	StkPx	StkPx	TobsQ	TobsQ	TobsQ
L.StkPx	0.985*** (0.0656)	0.869*** (0.266)	0.694*** (0.119)			
L.InTobsQ				0.772*** (0.200)	0.742*** (0.0943)	0.811*** (0.0822)
DivCap	−0.0724*** (0.0169)			0.0248 (0.0467)		
DivPyt		0.177 (0.831)			−0.322** (0.117)	
FCFSvn			−0.0957** (0.0352)			−0.0437** (0.0190)
FmSze	−0.942*** (0.103)	−0.547*** (0.163)	−0.532*** (0.133)	0.194* (0.108)	−0.531*** (0.111)	0.101 (0.0755)
CapStr	−0.00288*** −0.000897***	−0.00172***	−0.00121***	−0.00156***		
	(0.000236)	(0.000206)	(0.000125)	(0.000239)	(0.000113)	(0.000110)
Gov	2.499*** (0.311)	2.651*** (0.425)	−0.0274 (0.294)	0.476** (0.219)	−0.651*** (0.224)	0.180 (0.138)
Age	−0.0375 (0.0704)	0.0130 (0.0379)	−0.00563 (0.0168)	−0.0364 (0.0423)	0.0215 (0.0182)	−0.0105 (0.00654)
FSCdummy	0.672* (0.382)	−1.155*** (0.345)	−1.202*** (0.129)	−0.312 (0.399)	−0.600** (0.209)	−0.166 (0.225)
Constant	7.977*** (1.758)	3.473*** (1.191)	8.056*** (0.900)	−1.375 (1.889)	6.490*** (1.399)	−0.789 (0.890)
AR (1) [p-value]	0.103	0.053	0.176	0.010	0.009	0.048
AR (2) [p-value]	0.982	0.695	0.846	0.655	0.769	0.682
Sargan OIR	0.439	0.884	0.220	0.101	0.452	0.174
Hansen OIR	0.454	0.403	0.202	0.686	0.881	0.182
DHT for Instruments						
(a)GMM Instruments for levels						
H excluding group	0.516	0.490	0.873	0.875	0.968	0.225
Diff (null, H = exogenous)	0.379	0.341	0.107	0.521	0.749	0.211
(b) IV (years, eq(diff))						
H excluding group	0.359	0.332	0.185	0.598	0.822	0.230
Diff (null, H = exogenous)	0.929	0.648	0.350	0.838	0.932	0.147
Fisher	2.37e+07*** 270,658.88***	3.05e+07***	1.44e+07***	1516.48***	4.59e+08***	
Instruments	17	18	18	18	18	18
Observations	71	71	71	70	70	70
Number of Firms	18	18	18	18	18	18

Notes: This table presents the regression outputs with stock price and Tobin's Q as dependent variables for non-financial firms ( $n = 18$ ) over the period 2015–2019. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Stock Exchange. We contribute to the strand of works that seek to ascertain empirical evidence in uniquely fixing the dividend puzzle by focusing on an emerging economy that had undertaken several financial sector reforms and clean-ups over the period 2015–2019. Using data from the annual report and financial statements of listed firms, we constructed a panel dataset to test the effect of dividend policy on the financial performance of listed firms. The findings suggested that dividend capacity statistically influences ROA and ROE. The relationship between dividend capacity and both Tobin's Q and Stock Price was revealed to be positive but statistically non-significant. In line with the signaling and bird-in-hand theories, dividend payout was seen to have a significant influence on Tobin's Q. Conversely, we find that ROA and ROE are inversely but significantly related to dividend payout. Free cash flow savings was found to have a direct and significant effect on ROA and ROE but indirect relationships with Tobin's Q and stock price. These findings laid the foundation to reject all the three main hypotheses that were tested in this study.

Between financial and non-financial institutions, the results divulged no significant connection between dividend policy and the performance (in terms of ROA and ROE only) of financial firms, but among non-financial institutions, dividend capacity and dividend payout are significant determinants of ROA and ROE. The findings further suggested a positive connection between dividend capacity and the value (stock price) of financial institutions, but a negative effect was established between dividend capacity and the value of non-financial institutions. Furthermore, concerning financial firms, the findings explicated that enhancements in dividend capacity and dividend savings of financial institutions would improve their value. Also, financial sector clean-ups were found to be significantly detrimental to the performance of non-financial firms, whereas no significant influence was revealed for financial firms. The study, thus, found support for the dividend irrelevancy theory, agency, signaling, bird-in-hand, and free cash flow theories.

We conclude that the policies adopted by corporations in relation to dividends influence their financial performance. While positive signals could be created to attract investors through the accumulation of high dividend capacity and free cash flow savings, payment of dividends in periods of financial sector reforms and clean-ups is detrimental to owners' wealth. Meanwhile, payment of dividends in crisis periods could drive up the value of a firm's stock given that investors may divest funds from poorly performing corporations to invest in those who pay some dividends, no matter how small it may be worth. These findings emphasize the need to maintain a balance between dividend payment out of gross-free cash flows and net-free cash flow savings since dividend payout does not necessarily result in improved financial performance.

The effect of clean-ups in the financial sector appears to be significantly detrimental to non-financial institutions as compared to financial institutions. We recommend managers of corporations to aim at increasing free cash flows and concentrate on expanding (utilizing free cash flows) their operations to improve their long-term financial performance rather than focusing solely on paying dividends to attract investors in the short term. Managers of listed non-financial firms could adopt mixed policies (a balance between dividend payout and free cash flow savings) concerning dividends to attract both investors who prefer dividends and those who prefer capital gains. Financial institutions should pursue more free cash flows to meet regulations and help enhance their value. Governments and market regulators alike must take practical steps to roll out policies on financial sector reforms and/or clean-ups to mitigate the detrimental impacts of inadvertent reforms and/or clean-ups on other sectors of the economy.

Prior studies establish a significant role of corporate board characteristics on firm performance, and as our findings confirm a significant impact of governance variables on dividend policy, future studies could assess the moderating role of governance in the dividend policy and performance nexus amid financial crises.

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## Note

1. The variable names apply throughout the paper.

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## Appendix

### List of Sampled Firms

**TABLE A1: List of Sampled Firms**

Share Code	Name of Company
<b>Panel A: Non-Financial Firms</b>	
AGA	AngloGold Ashanti Limited
ALU	Aluworks LTD
BOPP	Benso Oil Palm Plantation Ltd
CLYD	Clydestone (Ghana) Limited
CMLT	Camelot Ghana Ltd
CPC	Cocoa Processing Company
FML	Fan Milk Limited
GGBL	Ghana Commercial Bank Limited
GOIL	Guinness Ghana Breweries Ltd.
GSR	Golden Star Resources Ltd.
MAC	Mega African Capital Limited
MLC	Mechanical Lloyd Company
MMH	Meridian-Marshalls Holdings
SAMBA	Samba Foods Ltd
SWL	Sam Wood Ltd.
TLW	Tullow Oil Plc
TOTAL	Total Petroleum Ghana Ltd
UNIL	Unilever Ghana PLC
<b>Panel B: Financial Firms</b>	
ACCESS	Access Bank Ghana
ADB	Agricultural Development Bank
CAL	CalBank PLC
EGH	Ecobank Ghana Ltd
EGL	Enterprise Group Limited
ETI	Ecobank Transnational Incorporation
GCB	Ghana Commercial Bank Limited
SCB	Standard Chartered Bank Ghana Ltd.
SIC	SIC Insurance Company Limited
SOGEGH	Societe Generale Ghana Limited
TBL	Trust Bank Limited (The Gambia)





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