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When does board share ownership matter? Evidence from across firm life cycle in Sub-Saharan Africa

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Abstract: The purpose of this paper is to investigate the relationship between board share ownership and firm value, as well as to determine when in the firm's life cycle board share ownership is value relevant in Sub-Saharan Africa (SSA). The paper uses dividend pay-out and the ratio of retained earnings to total assets to distinguish between mature and immature firms and to estimate board share ownership and firm value for each set of firms, using system-generalised methods of moments. The findings suggest that board share ownership is value-relevant for non-financial firms in SSA. The paper further finds that board share ownership matters for immature firms, not mature firms. The findings imply that differences in requirements for financing and investment result in differences in board share ownership and firm value between mature and immature firms. The findings suggest that board share ownership is not valued at all stages of a firm's life cycle.

Keywords: board ownership; value relevance; mature firms; immature firms; firm's life cycle; Sub-Saharan Africa; SSA; share value; generalised method of moment; non-financial firms.

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1 Introduction

Recently, board share ownership has received significant attention in corporate governance literature (Abhinany et al., 2019; Villalonga, 2018). Agency theory acknowledges the critical role of ownership structure in determining the extent to which

the interests of owners and managers are aligned (Fama and Jensen, 1983). Agency theory proposes a set of corporate governance structures made up of incentive alignments such as board share ownership and monitoring mechanisms (Jensen and Meckling, 1976; Fama and Jensen, 1983; Thaker, 2018) to minimise agency conflicts. However, the entrenchment hypothesis suggests that increasing board share ownership aligns the interests of managers with those of owners. This enables board members to have the voting rights to insulate themselves against market forces and engage in actions that maximise their private benefit at the expense of minority shareholders (Conyon and He, 2017). This creates a conflict of interest between majority and minority shareholders. Empirically, some studies (see Utama et al., 2017; Post and Byron, 2015) argue that board share ownership is beneficial to firms, while others suggest that it is detrimental (e.g., Adams and Ferreira, 2009). From the above different theoretical perspectives and empirical evidence, the relationship between board share ownership and firm value remains inconclusive, contradictory, and ambiguous (Conyon and He, 2017).

In most recent board ownership literature (see Al-Hares et al., 2020; Shan, 2019), the emphasis is shifting towards investigating the board share ownership and firm value relationship by exploring how board share ownership within firms changes over the firm life cycle. Whereas neither of the studies observed the impact of board ownership structure on firm value to track changes over the life of the firm, the findings of these studies suggest that firms can initiate actions to change their ownership structure. Consistent with agency and entrenchment theoretical prepositions, Ali and Young (2016) argue that board share ownership plays a multi-faceted role. On one hand, it serves as a monitoring mechanism and reduces agency conflict. On the other hand, it can further deepen the agency conflict since it can insulate management against market forces and engage in actions that maximise their private benefit. It can be inferred from the above conflicting theoretical perspectives that the relationship between board share ownership as a governance mechanism and firm value may depend on firm characteristics.

Although board share ownership and firm value studies have attracted a lot of attention, findings (see Maharani et al., 2019; Post and Byron, 2015; Shan, 2019) have been inconclusive and mixed. Less attention has been paid to studies that investigate when in a firm's life cycle the board share ownership value is relevant. This is very surprising because of the following: first, theoretical and empirical evidence (see Shan, 2019) suggests that the role of board share ownership differs within firms. Second, the governance prediction model proposes that the quality of the governance mechanism is dynamic and improves along the firm's life cycle. In this paper, we argue that the value relevance of board share ownership is not the same across the life cycle of the firm. Specifically, the paper examines how the relationship between board share ownership and firm value differs along the firm life cycle for a sample of listed firms in Sub-Saharan Africa (SSA). Specifically, the question as to when board share ownership matters in the life of a firm remains unanswered. Therefore, the purpose of this paper is to examine the relationship between board share ownership and firm value for mature and immature non-financial firms in SSA. Byrne (2015) arguably defines mature firms as firms characterised by a high retained equity to total asset ratio, high dividend payments, and free cash flow compared to immature firms. SSA offers an interesting environment to study the relationship between board share ownership and firm value. SSA countries have a weak institutional environment, which makes law enforcement and regulation difficult. In such situations, agency theorists recommend a strong corporate governance framework

as a substitute to protect investors. Recently, SSA countries have undertaken corporate governance reforms with the aim of improving the stock market to stimulate economic growth. One noticeable reform is the extent to which board ownership affects the level of agency conflict and improves performance. The reforms suggest some level of board share ownership to help align the interests of the principal and the agent. Recent empirical evidence (see Darko et al., 2016) in SSA on board share ownership and firm value is mixed and inconclusive. These findings support the entrenchment and alignment argument for board ownership. To the best of our knowledge, cross-country studies in SSA that consider the reforms in board ownership preposition and recent contradictions in empirical literature that further seek to explore the board share ownership and firm value nexus are non-existent. In this paper, we aimed at filling this gap and extending the discourse on board share ownership in SSA by examining the research question: When in the life cycle of a firm does board ownership structure matter?

Furthermore, listed firms in SSA are characterised by board ownership concentration (Darko et al., 2016), dominance of family businesses, weak investor protection, and corporate law enforcement, in contrast to the developed capital market, which has corporate control, an active market, and low board ownership concentration. Accordingly, the role board share ownership plays in emerging markets like SSA may be different from that in developed markets. Thus, the findings in developed markets may not be applicable in an SSA context.

Consequently, the paper seeks to build on as well as make new contributions to the international literature on board share ownership, firm value, and corporate governance in general by addressing the limitations of prior studies. First, the paper examines the value relevance of board share ownership in SSA. This is distinct from prior studies that have examined the association between ownership structure and firm value in developed capital markets. This proposition is based on the theoretical and empirical evidence (Sani, 2020) that suggests that firms in emerging economies design their ownership structures based on isomorphic reasons without giving much attention to the real ex-ante and ex-post economic implications of their decisions. Accordingly, findings from prior studies (see Ayman and Mansouri, 2022; Alvarez and Phan, 2018) in developed markets on the link between board share ownership and firm value may not hold for emerging markets such as SSA. Second, distinct from prior literature, this paper seeks to explore when board share ownership matters in emerging capital markets for mature and immature firms. By using the dividend pay-out ratio and the ratio of retained earnings to assets to differentiate between mature and immature firms, this paper seeks to contribute to the board share ownership and value relevance relationship by providing insight on at what stage of the life cycle board share ownership is most value relevant. Theoretically, the paper extends the framework of agency theory and entrenchment hypothesis by providing insight on when board share ownership matters for mature and immature firms, despite the conflicting role board share ownership plays in addressing agency conflicts. In practice, the findings of this study will inform managers, policymakers, and shareholders about the stage of the firm's life cycle when board share ownership is relevant to improving firm value.

The findings broadly suggest that board share ownership is value-relevant for non-financial firms in SSA. This implies that the greater the number of shares held by board members of SSA non-financial listed firms, the greater the share value. The paper further finds that board share ownership matters for immature firms, not mature firms.

The rest of this paper proceeds as follows: Section 2 presents a literature review and hypothesis development, whereas methodology is captured in Section 3. Section 4 presents the results of discussions and conclusions are captured in Section 5.

2 Literature review and hypothesis development

The relationship between ownership structure and firm value is supported by different theoretical perspectives. These perspectives include agency theory and optimal contracting theory. The misalignment of the relationship that exists between owners and managers of a firm gives rise to agency conflicts. The consequences of this misalignment lead to a convergence-of-interest hypothesis. This hypothesis indicates that there is a positive relationship between the extent of insiders' ownership and firm performance. However, Demsetz and Lehn (1983) and Fama and Jensen (1983) observe that there is an offsetting cost as insiders' ownership increases. This results in the entrenchment hypothesis, which predicts a negative link between large shareholdings and firm performance. Considering ownership structure as a governance mechanism and in sharp contrast to agency theory, proponents of optimality in structuring governance believes that ownership structure is a function of many factors. These include firm complexity and the ease or difficulty with which information can be obtained for use by governance players (Markarian and Parbonetti, 2007).

In line with the mixed theoretical literature and empirical evidence on the relationship between board share ownership and firm value remains inconclusive (Davies et al., 2005; Arko et al., 2014). Prior research has found that corporate board ownership has a positive impact on firm value (Barth et al., 2014; Connelly et al., 2012). The importance of compensating directors with shares in ensuring effective corporate governance has been highlighted in the literature (Jensen and Meckling, 1976). Jensen (1993) argues that directors with greater stock ownership might have a higher incentive to monitor management and discharge their fiduciary responsibilities. This is due to the fact that, as shareholders, directors can now reap the ultimate benefits of increased shareholder wealth. Ultimately, this should push the firm to achieve its long-term success through enhanced shareholder wealth. Yermack (2004) further asserts that a firm stands to benefit in the form of increased stock performance from close ties between directors' and overall shareholders' interests if directors are rewarded by way of shared ownership options. This concurs with the alignment or management discipline hypothesis. Empirically, Bhagat and Black (2012) test and confirm the hypothesis that director stock compensation is associated with future firm performance. Nonetheless, other groups of studies report a negative connection between corporate board ownership and firm value (Laing and Weir, 1999; Demsetz and Villalonga, 2001; Andres, 2008). This concurs with the entrenchment or expropriation hypothesis.

Notwithstanding the mixed theoretical and empirical evidence, studies on the relationship between board share ownership and firm value are highly concentrated in developed capital markets with different institutional factors (Sani, 2020). In SSA, the ownership structure is concentrated in the hands of board members and family members (Darko et al., 2016). This suggests that the level of agency conflict between shareholders and managers may be mitigated, and therefore the relationship between board share ownership and firm performance may be positive. However, because firms in the SSA

ownership structure are concentrated in the hands of board members, this situation may create agency conflict between majority and minority shareholders, which will affect share value negatively.

Accordingly, the governance prediction model proposes that the quality of the governance mechanism is dynamic and improves along the firm's life cycle. This paper conjectures that the benefit of having mitigated agency conflict between managers and shareholders as a result of board share ownership will be canceled by having higher agency conflict between majority and minority shareholders. Therefore, the relationship between board share ownership and firm value will differ between mature and immature firms. Accordingly, the paper hypothesised that:

H1 Board share ownership is not valued at all stages of the firm's life cycle.

3 Research design

3.1 Sample considerations and data

The sample of the study is drawn from five major stock exchanges in SSA. These include 107 listed firms from Nigeria, 49 listed firms from Zimbabwe, 39 listed firms from Kenya, 25 listed firms from Ghana, and 16 listed firms from Botswana. The number of firms in these countries is influenced by the availability of data for the period under consideration. Thus, the total listed non-financial firms studied were 236, given a total of 1,888 firm-year observations. It must be noted that SSA is made up of 49 countries covering major stock exchanges like Johannesburg Stock Exchanges, Nigeria Stock Exchanges, Mozambique Stock Exchanges, and the Uganda Stock Exchange, as well as younger ones like Africa Digital Stock Exchange Limited of Zambia, ALTX East Africa Exchange of Uganda, and the Maseru Securities Exchange of Lesotho.

Consistent with prior studies (see Al Amosh and Mansor, 2020; Khatib et al., 2021), countries with fewer than ten listed firms were excluded from the selection process. Accordingly, the Douala Stock Exchange of Cameroon with two listings, the Rwanda Stock Exchange of Rwanda with eight listings, the East Africa Exchange of Rwanda with no listing, and the Somali Stock Exchange of Somalia with two listings was excluded from the study. Also, in line with prior studies (Ntim, 2012), the stock market of the Republic of South Africa was also excluded due to its distinct characteristics from the exchanges in SSA. This market is deemed an extremity and hence was excluded from the study. Also, firms in francophone countries were also excluded from the sample because of their different governance and legal systems from those of anglophone countries in SSA. Finally, consistent with prior studies, financials and utilities tend to be:

- 1 tightly regulated
- 2 heavily leveraged, two features that can have a different effect on firm value and should be analysed separately (Collett and Hrasky, 2005; Mangena and Chamisa, 2008; Ntim, 2012).

Data for the study was manually extracted from annual reports from the sampled firms, which are published annually by the firms from 2008 to 2017. The selection of these years was influenced purely by data availability.

3.2 Variables and measurements

The dependent variable of the study is firm value, proxied by the firm's share price, the market value of equity-to-book value of equity, and the log of market capitalisation. To be able to account for a possible lag between the time financial statements are released and the change in the share price, this paper distinctively measures the share price using the share price prevailing at year-end, three months after year-end, and six months after year-end. Using share prices at year-end is consistent with Bokpin et al. (2011), while using prices post-year-end is owed an explanation because there is likely to be a lag between the time accounts are released and the information in the accounts considered emerging on the market (Bokpin, 2013).

Board share ownership, denoted by *BOARDOWN*, is the independent variable. In an attempt to control the variance in firm value not attributable to board share ownership and to address endogeneity from an omitted variable, control variables are included in the model. In line with prior studies (see Agyemang et al., 2017; Fiador, 2013), the study controls for government shareholdings (*GOVSHARES*), listing age (*LISTINGAGE*), firm size (*FSIZE*), leverage (*LEV*), and return on equity (*ROE*). There are several arguments and empirical evidence that these variables have shown both linear and nonlinear relationships with firm value (Fiador, 2013; Bokpin, 2013; Greif, 2012). Consistent with Guest (2009), we expect that firm value will be different across industries and financial years. Accordingly, we include industry dummies (*INDUST*) for the two industries, namely mining and pharmaceuticals. Also, year dummies (*YD*) for the financial years 2008–2017 are included. These variables are included to reveal unobservable effects such as trend effects and industry-specific effects.

The general panel equation to be estimated takes this form.

$$y_{it} - y_{it-1} = \gamma(y_{it-1} - y_{it-2}) + \beta'(X_{it} - X_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1})$$

where $i = 1, 2, 3$ are for individual firms and the t is the time dimensions (years), *BOARDOWN* is the independent variable, X_{it} is the set of control variables, λ_i represents the unobserved firm-specific fixed effect, ε_{it} is the error term and y_{it} denote the dependent variable that is firm value.

Therefore, the variables in the above equation are measured and calculated as follows:

<i>FV</i>	The firm value measured in five different ways: natural log of the share price at the year-end, natural log of share price three months after year-end, natural log of share price six months after year-end, natural log of market-to-book value of equity, and the natural log of market capitalisation.
<i>BOARDOWN</i>	The proportion of ordinary shares held by board members at year-end to total ordinary shares held by the firm.
<i>GOVSHARES</i>	The proportion of ordinary shares held by the government and its institutions at year-end to total ordinary shares held by the firm.
<i>LISTINGAGE</i>	The number of years a firm has been listed on the GSE at year-end
<i>FSIZE</i>	Natural log of the book value of total assets at year-end

<i>LEV</i>	Total liabilities divided by total assets at year-end
<i>ROE</i>	Profit after tax and any preference dividends divided by book value of equity at year-end.

Consistent with prior studies (see Badu, 2022; Agyemang et al., 2017), the dynamic panel data generalised method of moment (GMM) is the main estimator for this study proposed by Arellano and Bover (1995) and Blundell and Bond (1998). It has several advantages that make it more suitable to test the hypotheses. It is capable of addressing endogeneity by substituting the endogenous variables with instrumental variables. It also offers better elasticity to the variance-covariance framework and has greater effectiveness and accuracy (Baltagi, 2008). The hypothesis for the study is mainly governance variables. These variables are observed to be affected by endogeneity. Empirical studies indicate that endogeneity problem is caused by problems of omitted variables, reverse causation, measurement errors, and equilibrium conditions (Börsch-Supan and Köke, 2002). Suspecting this possibility, using other estimators is likely to produce an inefficient estimate. The adoption of system GMM estimator is capable of addressing endogeneity problems which have been a major issue in corporate governance literature. The data for this study is made up of individual firms over a specified period. In such a situation, the lagged dependent variable is likely to be correlated with the error term in the model. Accordingly, using the ordinary least square (OLS) in estimating the above equation may result in inconsistent estimates. The generalised method of moment estimator is capable of addressing the unobserved heterogeneity between individuals with panel data methods. To deal with the problem and adopt OLS in estimating the above model, the equation is transformed by differencing the time-series means of each variable for each firm. Though differencing the time-series means of the variables eliminates the individual firm-specific effects, λ_i because it does not vary with time, the correlation between $(y_{it-1} - \bar{y}_i)$ and $(\varepsilon_{it} - \bar{\varepsilon}_i)$ remains. This again renders the estimate inconsistent. Thus, to deal with this problem, the first-differenced GMM attributable to Arellano and Bover (1995) is used. This is derived from estimating two simultaneous equations, one in levels (with lagged first differences as instruments) and the other in first-differences (with lagged levels as instruments). This estimator uses the lagged level of the dependent variable and other endogenous explanatory variables as instruments for the first-differenced equation.

Nonetheless, various diagnostic tests were conducted.¹ The study also checked for endogeneity. The presence of endogeneity is tested using the Durbin-Wu-Hausman exogeneity test. The results of the Durbin-Wu-Hausman exogeneity test show that the coefficient of board share ownership for all the proxies for firm value is statistically significant, implying that the board share ownership is endogenously related to firm value. The Appendix indicates the descriptive results for the study.

4 Results and discussion

4.1 Descriptive statistics

The descriptive statistics of the dependent and independent variables considered for the study are presented as an Appendix. The share prices respectively at year-end, at the end

of the third-month post-year-end, and at the end of the sixth-month post-year-end are shown in the first three rows. The average share price for the year-end appears to slightly higher than the mean three months and six months. In all the measures of share price, it can be deduced that the deviation in share prices is not significant. This is because the standard deviation of the share prices is closer to the mean share price. The descriptive statistics also show the mean of the market prices of each dollar of the book value of equity. Similar to the share prices, the mean market to book value of the sample firms is closer to the standard deviation suggesting very little deviation among the firms.

The statistics also provide further information on the nature of board ownership structure in the sample firms which is the main independent variable. The statistics indicate that an average 58% of the shares in sample firm are owned by directors with a maximum of 91.7% and a minimum of 33.3%. This mean of 58% is consistent with other prior studies that suggest that the ownership structure of firms in SSA is concentrated in the hands of directors (Darko et al., 2016).

4.2 Regression result

We begin by examining the relationship between board share ownership and firm value. As indicated earlier, we use system generalised methods of moment to examine the relationship between board share ownership and firm value. The model includes industry and year dummies as well as the extensive control variables discussed earlier. Table 1 shows the results of the relationship between board ownership and firm value based on system generalised methods of moments.

The results in Table 1 provide evidence on the relationship between board share ownership and firm value. Based on the results in Table 1, there is a positive and statistically significant relationship of 1% between board share ownership and firm value. The results provide evidence that suggests that in SSA, there is a positive relationship between board share ownership and firm value. This result is consistent with the proposition that increasing board share ownership affects the interests of minority shareholders. Our evidence also corroborates past studies that report a negative effect of board share ownership on firm value (Abhinay et al., 2019) and is inconsistent with past studies that report a negative connection between board share ownership and firm value (see Bhagawen et al., 2017; Seok et al., 2020). Theoretically, our findings support the convergence-of-interest hypothesis, which suggests that board share ownership can minimise agency conflict by aligning the interests of shareholders and managers, thereby enhancing firm value.

To ensure consistency and efficiency of the estimates as well as the appropriateness and validity of the instruments used to eliminate endogeneity, the GMM model provides serial correlation results, which are given by AR (1) and AR (2) selection criteria and Sargan's test results. These results are presented in Table 2. AR (1) should be negative and significant. AR (2) is the test for serial correlation in the first differenced residual under the null of no serial correlation. However, based on Arellano and Bover (1995), AR (2) should be insignificant. As shown in Table 2, for all the models, AR (1) is negative and significant, and AR (2) is insignificant, implying that the estimates are efficient and significant. The models also passed an instrument validity test because they recorded a statistically insignificant Sargan's value.

Table 1 Results of board ownership and firm value using the system generalised method of moments

	1	2	3	4	5
	<i>LSHAREPX</i>	<i>LSHAREPX3</i>	<i>LSHAREPX6</i>	<i>LMTB</i>	<i>LMV</i>
Lagged dep. variable	2.121*** (2.23)	2.132* (2.16)	3.219** (2.46)	3.212*** (2.13)	3.980*** (1.23)
BOARDOWN	2.132*** (5.10)	1.293*** (5.10)	1.807*** (4.54)	0.306* (1.36)	0.275 (0.45)
GOVSHARES	-1.805*** (-5.07)	-1.605*** (-4.75)	-1.576*** (-4.05)	-0.801*** (-2.43)	0.541 (1.25)
LISTINGAGE	0.0359*** (6.24)	0.0203*** (6.13)	0.0813*** (6.10)	-0.0241** (-2.21)	0.0461*** (4.18)
FSIZE	-0.0231** (-1.17)	-0.0221* (-1.02)	-0.0543* (-1.03)	0.0124 (0.41)	0.123*** (2.15)
LEV	-0.201 (-1.30)	-0.142 (-0.09)	-0.124 (-0.03)	1.340*** (5.22)	-0.334 (-0.60)
ROE	3.243*** (5.44)	3.140*** (6.21)	4.136*** (6.24)	1.212*** (3.27)	3.340*** (5.22)
INDUST	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included
INTERCEPT	-1.129 (-1.32)	-1.143 (-1.29)	-1.319 (-1.46)	-1.452* (-1.96)	12.16*** (12.55)
R ²	62.2%	63.1%	65.3%	32.7%	63.2%
CHI ²	410.3	412.8	427.4	133.0	425.2
Overall sig.	0.00000	0.00000	0.00000	0.00000	0.00000
Test for serial correlation	AR(1)-2.14* AR (2)-4.21	AR(1)-2.32* AR (2)-4.32	AR(1)-2.22* AR (2)-4.61	AR(1)-2.13* AR (2)-4.22	AR(1)-2.62* AR (2)-4.11
Sargan test	0.642	0.704	0.721	0.712	0.712

Note: t-statistics are reported in parentheses; ***, **, and * denote significance at 1%, 5% and 10% levels, respectively.

4.3 Further test

Evidence from past studies suggests a significant curvilinear association between ownership and firm value (Connelly et al., 2012). The implication of these findings is that there is a U-shaped relationship between board share ownership and firm value. In this paper, we conduct further tests to find out if the relationship between board share ownership and firm value is nonlinear. As suggested by Morck et al. (1988), we regress equation (1) by including the square term of board share ownership in addition to the board share ownership variable. The results (available upon request because of brevity) suggest that the relationship between board share ownership and firm value is negative and statistically significant, but the relationship between the square of board share ownership and all five proxies for firm value is positive and statistically insignificant,

ruling out a possible nonlinear relationship between board share ownership and firm value.

Table 2 Results of board share ownership and firm value using system generalised method of moments for mature firms (above median industry dividend pay-out)

	1	2	3	4	5
	<i>LSHAREPX</i>	<i>LSHAREPX3</i>	<i>LSHAREPX6</i>	<i>LMTB</i>	<i>LMV</i>
Lagged dep. var.	2.201* (2.10)	2.061*** (2.12)	3.651* (2.601)	3.802* (2.50)	2.328** (1.70)
BOARDOWN	-5.024** (-4.14)	-5.230** (-4.17)	-4.237** (-4.20)	1.590** (-1.20)	-5.211*** (-4.32)
GOVSHARES	-1.241*** (-3.21)	-1.016*** (-2.50)	-1.303*** (-2.20)	-0.201*** (-2.19)	0.212** (2.16)
LISTINGAGE	0.116*** (5.10)	0.310*** (4.03)	0.151*** (3.01)	-0.0394** (-2.10)	0.340*** (4.01)
FSIZE	-0.0230* (-1.32)	-0.606* (-1.04)	-0.601* (-1.02)	0.0510 (0.40)	0.102*** (3.30)
LEV	-0.005 (-0.11)	-0.342 (-0.12)	-0.012 (-0.41)	1.790*** (4.07)	-0.102** (-1.07)
ROE	2.021*** (4.12)	3.013*** (4.01)	2.152*** (0.01)	1.044*** (0.30)	3.021*** (4.10)
INDUST	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	included
INTERCEPT	-2.020 (-1.10)	-3.001 (-1.20)	-4.055* (-1.59)	1.042 (0.21)	1.48*** (3.18)
R ²	27.3%	41.3%	62.2%	31.3%	72.2%
CHI ²	460.9	420.4	410.0	135.1	420.1
Overall P-value	0.00000	0.00000	0.00000	0.00000	0.00000
Test for serial correlation	AR(1)-2.13* AR (2)-4.21	AR(1)-2.02* AR (2)-4.11	AR(1)-2.12* AR (2)-4.31	AR(1)-2.02* AR (2)-4.01	AR(1)-2.13* AR (2)-4.20
Sargan test	0.637	0.724	0.730	0.745	0.725

Note: t-statistics are reported in parentheses; ***, **, and * denote significance at 1%, 5% and 10% levels, respectively.

Following that, we attempt to determine when in the firm's life cycle board share ownership is deemed valuable. The paper conducts this analysis by dividing our sample into two, namely mature and immature firms. Consistent with prior studies (see O'Connor and Bryne, 2015; DeAngelo et al., 2006), we used dividend pay-out as a proxy for firm life cycle to categories the sample into mature and immature firms. The dividend pay-out method is used because mature firms tend to pay more dividends than immature firms. Anthony and Ramesh (1992) observe that immature firms have a lower dividend ratio. Also, they further observe that when firms reach maturity, growth opportunities decrease, and the firm at this stage continues to pay dividends because of fewer investment opportunities. In relation to dividend pay-out and to account for differences in

dividend pay-out in different industries, we obtained 110 and 126 mature and immature firms, respectively. Thus, mature firms are those firms whose dividend pay-out is greater than the median industry dividend pay-out; whereas immature firms are those whose dividend pay-out is less than the median industry dividend pay-out. After successfully categorising the firms as mature or immature, we rerun the initial regression analysis for the two-sample. The results from the regression analysis are presented in Tables 2 and 3.

Table 3 Results of board ownership and firm value using system generalised method of moments for immature firms (below median industry dividend pay-out)

	1	2	3	4	5
	<i>LSHAREPX</i>	<i>LSHAREPX3</i>	<i>LSHAREPX6</i>	<i>LMTB</i>	<i>LMV</i>
Lagged dep. var.	3.211** (2.31)	3.561** (3.12)	4.281* (2.46)	3.782*** (2.35)	2.328** (4.37)
BOARDOWN	5.324*** (5.14)	5.230*** (4.17)	4.237*** (4.20)	1.590 (1.20)	5.211*** (4.32)
GOVSHARES	-1.640*** (-5.21)	-1.216*** (-4.50)	-1.343*** (-4.25)	-0.901*** (-2.29)	0.612** (2.26)
LISTINGAGE	0.0216*** (7.10)	0.1960*** (7.13)	0.1511*** (7.21)	-0.0394** (-2.20)	0.0134*** (4.11)
FSIZE	-0.1293* (-1.12)	-0.1616* (-1.74)	-0.1631* (-1.62)	0.01450 (0.24)	0.122*** (3.13)
LEV	-0.105 (-0.11)	-0.1682 (-0.12)	-0.102 (-0.41)	1.270*** (5.17)	-0.212** (-1.77)
ROE	2.225*** (5.12)	3.113*** (6.11)	3.152*** (6.11)	1.244*** (3.30)	3.124*** (5.50)
INDUST	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included
INTERCEPT	-2.130 (-1.20)	-3.001 (-1.40)	-4.155* (-1.89)	1.142 (0.41)	11.48*** (4.18)
R ²	28.3%	42.3%	64.2%	32.2%	71.2%
CHI ²	470.9	410.4	430.0	125.1	520.1
Overall P-value	0.00000	0.00000	0.00000	0.00000	0.00000
Test for serial correlation	AR(1)-2.12* AR (2)-4.21	AR(1)-2.12* AR (2)-4.21	AR(1)-2.12* AR (2)-4.21	AR(1)-2.12* AR (2)-4.21	AR(1)-2.12* AR (2)-4.21
Sargan test	0.687	0.714	0.723	0.744	0.715

Note: t-statistics are reported in parentheses; ***, **, and * denote significance at 1%, 5% and 10% levels, respectively.

Table 4 Results of board ownership and firm value using system generalised method of moments for mature firms (above median industry retained earnings to total assets)

	1	2	3	4	5
	<i>LSHAREPX</i>	<i>LSHAREPX3</i>	<i>LSHAREPX6</i>	<i>LMTB</i>	<i>LMV</i>
Lagged dep. var.	3.101* (1.10)	2.621*** (2.20)	3.251* (2.301)	3.802* (2.10)	2.027** (1.10)
BOARDOWN	-3.124** (-5.20)	-3.030** (-5.10)	-4.037** (-4.64)	-1.091** (1.06)	-5.011*** (-0.36)
GOVSHARES	-1.321*** (-4.02)	-1.105*** (-2.15)	-1.070*** (-2.10)	-0.751*** (-2.30)	0.910 (1.90)
LISTINGAGE	0.128*** (4.30)	0.062*** (4.23)	0.022*** (5.01)	-0.032** (-3.10)	0.239*** (4.08)
FSIZE	-0.071** (-1.17)	-0.001* (-1.60)	-0.0113* (-1.24)	0.131 (0.23)	0.114*** (2.09)
LEV	-0.301 (-0.01)	-0.144 (-0.90)	-0.117 (-0.31)	1.620*** (5.09)	-0.106 (-0.56)
ROE	3.104*** (5.60)	3.654*** (6.01)	4.056*** (6.09)	1.605*** (3.76)	3.700*** (5.03)
INDUST	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	included
INTERCEPT	-1.024 (-1.02)	-1.123 (-1.89)	-1.013 (-1.60)	-1.191* (-1.06)	13.64*** (10.15)
R ²	61.7%	62.1%	63.3%	30.7%	64.2%
CHI ²	411.3	412.8	431.4	143.0	457.2
Overall P-value	0.00000	0.00000	0.00000	0.00000	0.00000
Test for serial correlation	AR (1)-2.02* AR (2)-4.21	AR (1)-2.32* AR (2)-4.01	AR (1)-2.52* AR (2)-4.01	AR (1)-2.32* AR (2)-2.11	AR(1)-2.22* AR (2)-4.21
Sargan test	0.712	0.724	0.713	0.724	0.654

Note: t-statistics are reported in parentheses; ***, **, and * denote significance at 1%, 5% and 10% levels, respectively.

From Table 2, it can be observed that the relationship between board share ownership and firm value is negative and statistically significant across all five proxies for firm value. This implies that mature firms do not value board share ownership and that board share ownership is not value relevant for mature firms. Conversely, it can be observed from Table 3 that the coefficient estimates on board share ownership are positive and statistically significant, implying that board share ownership is value relevant for immature firms. The contrasting relationship between board share ownership and firm value for mature and immature firms may be due to many factors. Along the firm life cycle, firms will have different financing, monitoring, and investment requirements. Accordingly, it is not surprising that the relationship between board share ownership and firm performance differs between mature and immature firms. Mature firms are associated with free cashflow as a result of reduced investment activities. At this stage of

the firm's life cycle, agency conflict is likely to be very high. Therefore, mature firms will not consider board ownership as value-relevant. This is because of empirical evidence (see Laing and Weir, 1999; Demsetz and Villalonga, 2001; Andre, 2008; Seng and Thaker, 2018) are of the view that if directors are allowed to hold shares, they might form 'private' leagues with management to expropriate wealth from other stakeholders. Previous studies (see Shleifer and Vishny, 1997; Ntim, 2012) conclude that monitoring ability is of greater importance to mature firms than immature firms. Therefore, if board ownership increases, agency conflict between majority and minority shareholders heightens. This probably explains the negative relationship between board share ownership and firm performance in mature firms. Also, mature firms are associated with higher dividend payments, and such firms are attractive to institutional shareholders such as pension fund companies and insurance firms. Prior empirical evidence shows institutional shareholders are associated with majority shareholders. In such situations, the interests of minority shareholders are normally not aligned with those of majority shareholders, resulting in type 2 agency conflicts. This concurs with the entrenchment or expropriation hypothesis. However, immature firms are associated with good growth opportunities. To pursue these opportunities, the firm's financing capability is critical. To raise funds at a cheaper cost, investors will be concerned with the extent to which their interests are protected. Evidence exists to show that board share ownership is associated with a low level of agency conflict. For example, Jensen (1993) argues that directors with greater stock ownership might have a higher incentive to monitor management and discharge their fiduciary responsibilities. Jensen (1993) further argued that shareholder directors can mirror themselves in the ultimate benefits of enhanced shareholder wealth. Ultimately, this should push the firm to achieve its long-term success through enhanced shareholder wealth. Yermack (2004) also asserts that a firm stands to benefit in the form of increased stock performance from close ties between directors' and overall shareholders' interests if directors are rewarded by way of shared ownership options. This concurs with the alignment or management discipline hypothesis.

4.4 Robustness checks

We further test the robustness of the results in two ways. First, we examine if our findings are robust to an alternative measure of firm life cycle. Second, we test the robustness of the findings using an agency substitution model of dividend. Concerning the robustness test on an alternative measure of firm life cycle, we use the ratio of retained earnings to total assets as an alternative proxy for firm life cycle. The use of the ratio of retained earnings to total sales for mature firms as proxies has been extensively used in dividend literature (see DeAngelo et al., 2006; Denis and Osobov, 2008; Brockman and Unlu, 2011). The collective consensus of these studies arguably is that as firms mature, the contribution of earned equity to total assets increases because, at this stage of the firm, it becomes more profitable at the same time as experiencing reduced investment opportunity sets, ultimately resulting in free cashflow. Therefore, mature firms are characterised by high retention of equity relative to total assets, and the opposite is true for immature firms. Using the ratio of retained earnings to total assets as a measure of mature firms, the results show that 98 firms are considered mature firms, and thus their ratio of retained earnings to total assets is greater than the median ratio of retained earnings to total assets. On the contrary, 138 firms are considered immature as their ratio

of retained earnings to total assets is less than the median ratio. Tables 4 and 5 depict the results using the ratio of retained earnings to total assets.

Table 5 Results of board share ownership and firm value using system generalised method of moments for immature firms (below median industry ratio of retained earnings to asset)

	1	2	3	4	5
	<i>LSHAREPX</i>	<i>LSHAREPX3</i>	<i>LSHAREPX6</i>	<i>LMTB</i>	<i>LMV</i>
Lagged dep. var.	2.301* (2.09)	2.611*** (2.32)	3.051* (2.501)	3.702* (2.10)	2.028** (1.71)
BOARDOWN	4.014** (3.14)	4.030** (4.70)	2.777** (4.20)	2.590** (1.20)	5.191*** (4.32)
GOVSHARES	-1.201*** (-3.81)	-1.216*** (-2.40)	-1.003*** (-2.10)	-0.211*** (-2.09)	0.282** (1.18)
LISTINGAGE	0.196*** (4.10)	0.310*** (4.13)	0.141*** (3.01)	-0.0364** (-2.30)	0.140*** (4.11)
FSIZE	-0.020* (-1.02)	-0.116* (-1.04)	-0.621* (-1.12)	0.010 (0.21)	0.112*** (0.31)
LEV	-0.105 (-0.23)	-0.112 (-0.03)	-0.120 (-0.11)	1.420*** (0.03)	-0.128** (-1.07)
ROE	2.011*** (4.02)	3.113*** (4.01)	2.052*** (0.41)	1.145*** (0.20)	3.121*** (2.10)
INDUST	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included
INTERCEPT	-2.120 (-1.50)	-3.201 (-1.10)	-4.075* (-1.90)	1.142 (0.41)	1.08*** (3.08)
R ²	28.3%	45.3%	67.2%	51.3%	62.2%
CHI ²	462.9	421.4	418.0	105.1	410.1
Overall P-value	0.00000	0.00000	0.00000	0.00000	0.00000
Test for serial correlation	AR(1)-2.03* AR (2)-4.21	AR(1)-2.12* AR (2)-4.21	AR(1)-2.32* AR (2)-4.31	AR(1)-2.22* AR (2)-4.11	AR(1)-2.43* AR (2)-4.10
Sargan test	0.617	0.714	0.733	0.715	0.715

Note: t-statistics are reported in parentheses; ***, **, and * denote significance at 1%, 5% and 10% levels, respectively.

As it can be observed in Tables 4 and 5, using the ratio of retained earnings to assets as an alternative measure of classifying mature and immature firms. This result is consistent with the results using the dividend pay-out ratio, and the findings remain quantitatively the same. This indicates that the findings are robust to an alternative measure of mature and immature firms. Although the findings are robust, we conduct further robustness testing using the agency substitution model of dividends. The premise of the model, according to O'Connor and Bryne (2015), is that firms with better growth prospects can replace weak investor protection at the national level with reputational capital by building a history of dividend payments. The implication of this model is that immature firms may

pay a higher dividend. Critics may argue that using dividend payout to classify firms as mature or immature is therefore incorrect because there is a high probability of classifying young, high dividend-paying firms as mature rather than immature. This is critical because the separation of mature and immature firms was accomplished through dividend payout. To address this apparent weakness, the paper further categorises firms as mature or immature based on their retained equity to total assets ratio and dividend payout. Using this criterion, although the firm-year observations reduced the results (not presented but available upon request), they did not deviate from the previous findings affirming that board share ownership matters for immature firms and not mature firms.

5 Conclusions

Although the effect of ownership structure on firm value has been widely investigated in the developed capital market, the findings have been contradictory. The case for SSA as to when, across the life cycle of the firm, board share ownership is value relevant remains unexplored. As a result, the question of when board share ownership matters in the life of a company remains unanswered. This is very surprising because, theoretically, board share ownership can reduce agency conflict and create firm value. Empirical evidence further suggests the role of board share ownership differs among firms. Therefore, the purpose of this paper is to examine the relationship between board share ownership and firm value for mature and immature non-financial firms in SSA. In conducting the analyses, this study uses data from listed non-financial firms in SSA using system's generalised method of moments. The paper uses dividend pay-out and retained earnings to calculate total assets to differentiate mature firms from immature firms. Our findings broadly suggest that board share ownership is value-relevant for non-financial firms in SSA. The paper further finds that board share ownership matters for immature firms, not mature firms. Differences in financing, monitoring, and investment requirements account for differences between mature and immature firms in relation to firm value. As a result, the paper concludes that in SSA emerging capital markets characterised by corporate board ownership concentration, poor investor protection, and a legal system that favours shareholder activism, board share ownership is relevant to value for immature firms.

Our findings also have important implications for practitioners, policymakers, and regulatory authorities. First, the findings of the paper suggesting that board share ownership is related to firm value is consistent with the recommendations of codes of best practices in Ghana and Nigeria that encourage directors, particularly outside directors, to hold shares in firms. Second, the findings of this paper suggesting that board share ownership is not value relevant at all stages in the life cycle of a firm has implications for regulators, policymakers, and top executives in SSA. Regulators should be cautious in recommending same ownership structure particularly board share ownership all firms. Based on the findings of the paper, such ownership structure may not hold for all non-financial firms in SSA. Top executives and policy makers should consider the stage of firm in the life cycle when considering ownership structure of their firms. This is evident from the findings of the paper that in SSA board share ownership is not value relevant at all stages in the life cycle of a firm. Therefore, the maturity or immaturity of the firm is critical to the extent to which share ownership structure can influence firm value. Top executives of non-financial firms in SSA should consider this factor in developing financing strategy for their firms.

The paper has some limitations that ought to be acknowledged. The study uses data from the SSA. Therefore, the findings cannot be generalised to a developed market and economy. The stages in the life cycle of the firm may be broader than just mature and immature firms. Other classifications in the life cycle of a firm may be the introductory, growth, maturity, and decline stages. Nonetheless, no attempt is made in this paper to include other sub-classifications in the firm's life cycle. We leave this question for future studies. Our findings suggest that more emphasis should be devoted to examining the ownership structure of immature firms than mature firms, where the focus of traditional governance studies has been placed.

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Notes

- 1 These include multi-collinearity, autocorrelation, heteroscedasticity, normality, and linearity are verified. The study uses correlation coefficients both Pearson pairwise and Spearman rank based to check for multi-collinearity, Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, Woodridge's test for the first-order autocorrelation. For brevity, the results of these tests are not presented but available upon request. The results indicate that there are no concerns with heteroscedasticity and autocorrelation and multi-collinearity.

Appendix

Descriptive statistics

Table A1 Summary statistics

<i>Variables</i>	<i>Mean</i>	<i>Std. dev</i>	<i>Min</i>	<i>Max</i>
SHAREPX-YE	2.180	2.942	0.100	20.180
SHAREPX-3M	1.292	1.142	0.121	21.210
SHAREPX-6M	1.180	2.206	0.121	24.010
MTB	1.840	1.606	0.271	11.059
BOARDOWN	0.580	0.430	0.333	0.917
Government ownership	0.100	0.360	0.000	0.650
Listing age	10.500	5.019	2.100	40.117
Total assets (USD)	290M	234M	33M	3.75M
Firm size	16.989	2.275	11.758	23.470
Leverage	0.430	0.209	0.107	2.400
Return on equity	0.154	0.221	1.680	2.191