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Determinants of Dividend Policy: Evidence from Listed Firms in the African Stock Exchanges

Summary: The study demonstrates that much of the existing theoretical literature on dividend policy can be applied to the emerging capital markets of Africa. Using available financial data of listed firms in the 29 stock exchanges in Africa, the study finds similarities in the determinants of dividend policy in African firms with those in most developed economies. In particular, agency costs are found to be the most dominant determinant of dividend policy among African firms. The finding is non-synonymous with emerging capital markets which have a high concentration of private ownership and trading volumes. Agency cost theory may be important in both emerging and developed capital markets but the nature of the agency problem may be different in each case. Other factors such as level of market capitalisation, age and growth of firms, as well as profitability also play key roles in the dividend policy of listed African firms.

Key words: Dividend policy, African countries, Listed firms, Corporate governance.

JEL: G30, G35.

Dividend policy is primarily concerned with the decisions regarding dividend payout and retention. Ronald C. Lease et al. (2000) described it as the practice adopted by managers in making dividend payout decisions. It details the amount of cash to be distributed to the shareholders and what is to be retained by the bank for further investment. It is a decision that considers the amount of profits to be retained and that to be distributed to the shareholders of the bank. The objective of a firm's dividend policy is to be consistent in the overall objective of maximising shareholders wealth since it is the aim of every investor to get a return from their investment. Much of dividend policy studies have concentrated on developed economies of Western Europe and North America but with little attention on Africa region. A study of dividend policy of listed firms in African has become pertinent in view of the growing investments in the continent. A well regulated stock market is a vehicle for economic development, and should have a spin-off effect on the dividend policy of public companies.

Management is generally confronted with two operational decisions: investment (or capital budgeting) and financing decisions. While the capital budgeting decision is concerned with what real assets the firm should acquire, the financing decision is concerned with how these assets should be financed. Stephen R. Bishop et al. (2000) note that a third decision may also arise when the firm begins to generate profits: should the firm distribute all or a proportion of earned profits in the form of dividends to the shareholders, or should the profits all be ploughed back into the

business? Presumably, in taking any course of action, managers should concentrate on how to maximise the wealth of shareholders for whom the firm is being managed. Managers must not only consider the question of how much of the company's earnings is needed for investment but also take into consideration the possible effect of their decisions on share prices.

The discrepancy in the dividend policy of African firms and the implications on the general economic activities and growth has not gone unnoticed. Studies such as Varouj Aivazian, Laurence Booth, and Sean Cleary (2003), Matthias A. Nnadi and Meg E. Akomi (2008) and Gordon N. Asamoah (2010) have focused on various implications of dividend policy in developing economies particularly in Africa. The abnormal design of dividend in the region has often been a deliberate management policy. Ashiq Ali (2007) examined listed firms in the Tunisian stock exchange and found that the dividend policy of corporations is significantly different from the widely accepted dividend policy of corporations operating in developed markets. Generally, the dividend policy of firms in developing economies varies in some respects with those of developed economies (Shania Taneem and Ayse Yuce 2011).

This paper therefore examines the factors influencing dividend of listed firms in the 29 stock exchanges in Africa. The analysis is based on a panel data set of both dividend-paying and non-dividend-paying firms, since exclusion of the non-dividend paying firms from the analysis may lead to a selection bias. Many of the factors that are found to be significant in the determination of dividend policy are the same as those found in developed capital markets.

1. Review of Empirical Literature

Three main contradictory theories of dividends are commonly identified in finance literature. Some scholars (Kin C. Han, Suk H. Lee, and David Y. Suk 1999; Helen Short, Hao Zhang, and Kevin Keasey 2002) argue that an increase in dividend payments increases a firm's value. Other views proposed by Gareth Morgan and Stephen Thomas (1998), Frankline Allen, Antoniao E. Bernardo, and Ivo Welch (2000) claim that high dividend payouts may destroy a firm's value. Their assertions are based on the M&M theory that dividend is irrelevant and all effort spent on the dividend decision is wasted. These views are embodied in three theories of dividend policy: the high dividends increase share value theory (or the so-called "bird-in-the-hand" argument), the low dividends increase share value theory (the tax-preference argument), and the dividend irrelevance hypothesis.

Dividend debate is not limited to these three approaches. Several other theories of dividend policy have been presented, which further increase the complexity of the dividend puzzle. Some of the more popular of these arguments include the information content of dividends (signalling), the clientele effects, and the agency cost hypotheses. The dividend irrelevance theory is pitched on the assumption that a perfect market dividend policy has no effect on either the price of a firm's stock or its cost of capital. The shareholder is not affected by the dividend decision and therefore would be indifferent between dividends and capital gains.

However, little evidence on the M&M dividend irrelevance hypothesis exists for emerging markets. Samy Ben Naceur and Mohammed Goaied (2002) examined

48 companies listed on the Tunisian Stock Exchange for the period 1990 to 1997. Using unbalanced panel data, they estimated a random effects Lintner model in a dynamic setting to test whether the probability of creating future value of the Tunisian companies related to dividend policy, financial policy, and profitability. Dividend (measured by payout ratio) and financial (measured by debt to total assets) policies were found to be insignificant. Their conclusion supports the M&M irrelevance propositions of dividend and capital structure. Despite all the empirical work testing the dividend irrelevance hypothesis, the impact of dividend policy on the value of a firm remains unresolved.

An alternative view about the effect of dividend policy on a firm's value is that dividends increase a firm's value. In a world of uncertainty and imperfect information, dividends are valued differently to retained earnings (or capital gains). Investors prefer the "bird in the hand" hypothesis (BIHH) of cash dividends rather than the "two in the bush" of future capital gains. Increasing dividend payments, ceteris paribus, may then be associated with increases in a firm's value. Empirical support for the BIHH as an explanation for paying dividends is generally very limited, and the argument has been challenged especially by M&M (1961) who argued that the required rate of return (or the cost of capital) is independent of dividend policy, suggesting that investors are indifferent between dividends and capital gains.

The tax-effect hypothesis suggests that low dividend payout ratios lower the cost of capital and increase the stock price. In other words low dividend payout ratios contribute to maximising the firm's value. This argument is based on the assumption that dividends are taxed at higher rates than capital gains. Therefore, investors in high tax brackets might require higher pre-tax risk-adjusted returns to hold stocks with higher dividend yield. This relationship between pre-tax returns on stocks and dividend yields is the basis of a posited tax-effect hypothesis. In contrast, Aivazian, Booth, and Cleary (2003) posit that most emerging markets have a more bank-centred financial system, where contracting is not normally at arm's length, compared to firms in Europe and the US.

Clienteles will be attracted to firms that follow dividend policies that best suit their particular situations. Similarly, firms may intentionally attract different clienteles by their dividend policies. For example, firms operating in high growth industries that usually pay low (or no) dividends attract a clientele that prefers price appreciation in the form of capital gains tax to dividends. On the other hand, firms that pay a large amount of their earnings as dividends attract a clientele that prefers high dividends. Allen, Bernardo, and Welch (2000) suggest that clienteles such as institutional investors tend to be attracted to invest in dividend-paying stocks because they have tax advantage.

Dividends contain information about the firm's current and future cash flows. To close the information gap, managers have incentives to convey "private information" to the market through dividend payments. The announcement of a dividend increase will be taken as good news and the market will bid up share prices accordingly. Similarly, an announcement that a dividend will be cut suggests unfavourable prospects and will tend to cause a fall in the firm's share price. Dividends are considered a credible signalling device because of the dissipative costs involved.

Using a sample of 225 Brazilian firms, Andre Carvalhal-da-Silva and Ricardo Leal (2003) found that government controlled firms have the highest payout ratios with an average of 36 percent, while family-controlled firms have the lowest with 28 percent. Foreign- and institutional-controlled firms have dividend payouts of 35 percent and 34 percent respectively. Though their results were not statistically significant, they do indicate the level of dividend paid by the different strata of owners. Appropriate regulatory framework and control are therefore necessary in maintaining a healthy stock market. Ognjen Radonjić and Miodrag Zec (2010) agree that a continual and timely updates of the financial markets regulations is panacea to the constant crisis observed in most economies. Such regulations should involve proper regulations of corporate dividend polices.

Gang Wie, Zhang Weiguo, and Jason Z. Xiao (2003) showed that ownership structure is an important determinant of corporate dividend policy. They found significant results in dividend payment by firms owned by the State compared to those owned by individuals. However, using a sample of 133 Finnish listed firms, Benjamin C. Maury and Anete Pajuste (2002) found a positive relationship between individual and family controlled firms and dividend levels. Firms where the CEO has a controlling power are likely to have low dividend payout ratios.

As seen in the literature, the vast majority of the studies have been published on dividend policy in developed markets but very few studies have examined dividend policy of listed firms in the African stock exchanges. This study therefore intends to fill the niche by examining the intrinsic determinants of the dividend policy of listed firms in the African region.

2. Research Methodology

The study used available accounting data of listed firms in the 29 stock exchanges in Africa from the period 1998-2009. Table 1 contains a list of the stock exchanges and the number of listed firms at each one. The data available consists of balance sheets, income statements, financial ratios, and other relevant public information for all quoted companies. From the available financial data, a database containing all relevant financial figures for the companies was constructed. However, due to missing data, the panel is unbalanced and the number of observations for each company and country differ.

There are 2105 listed firms in the 38 African countries but our sample was constrained by available data. Out of the 1,987 companies with accessible data, only 1,742 firms are listed in stock markets with excess of 50 firms across the manufacturing, agriculture, hotel and hospitality, industrial, service, insurance and bank sectors. South Africa, Egypt and Nigeria account for over 72% of the listed firms in the sample. The companies range from old to newly established ones. Delisted firms are removed from the sample and some companies were de-listed during the study period. In order to gain the maximum possible observations, pooled cross-section and time-series data is used. The study includes both dividend-paying and non-dividend-paying firms. The exclusion of non-dividend-paying firms has been found to result in a well-known selection bias problem (Allen, Bernardo, and Welch 2000; Kai Li and Xinlei Zhao 2008). Therefore, only stock markets with more than 50 listed firms are included in the regression.

The focus of this study is on payout only in the form of cash dividends rather than share repurchases or stock dividends. The reason for this is because most listed African firms do not repurchase their shares, and stock dividends are not commonly used. Three measures of dividend policy, namely cash dividends, the dividend payout ratio, and dividend yield are used in the study. The cash dividend represents the amount of annual cash distributed to shareholders as most African companies pay dividends on an annual basis. The dividend payout ratio is the ratio of dividend per share to earnings per share. The dividend yield is defined as the dividend per share to market value.

We theorise that age and growth significantly affect firms' dividend policy. As firms become mature, their growth and investment opportunities shrink, resulting in a decline in their capital expenditures. Thus more free cash flows are available to be paid as dividends. In order to test whether investment opportunities affect dividend policy, the MBR is included in the variables. The idea is that if a firm's market value is greater than its book value, then it has larger growth opportunities. This proxy has been widely used in finance literature (Nickoaos Travlos, Lenos Trigeorgis, and Nikos Vafeas 2001; Sanjay Deshmukh 2003). The higher the firm's MBR, the greater the growth options and therefore the less likely is firm is to pay dividends in order to finance that growth.

Table 1 List of Listed Firms in the African Stock Exchanges

	Country	Stock exchange	Number of listed firms#	Sample used in the study
1	Algeria	Bourse d'Alger, Algiers	7	-
2	Botswana	Botswana Stock Exchange, Gaborone	44	-
3	Cameroun	Douala Stock Exchange	2	-
4	Cape Verde	Bolsa de Valores de Cabo Verde	-	-
5	Cote d'Ivoire	Bourse Regionale des Valeurs Mobilieres, Abidjan	39	-
6	Egypt	Cairo and Alexandria	378	378
7	Ghana	Ghana Stock Exchange, Accra	28	-
8	Kenya	Nairobi Stock Exchange	48	-
9	Libya	Libyan Stock Market, Tripoli	7	-
10	Malawi	Malawi Stock Exchange, Blantyre	8	-
11	Mauritius	The Stock Exchange of Mauritius, Port Louis	40	-
12	Morocco	Casablanca Stock Exchange	81	81
13	Mozambique	Maputo Stock Exchange	3	-
14	Namibia	Namibia Stock Exchange, Windhoek	34	-
15	Nigeria	Abuja Securities and Commodities Exchange	1	-
16	Nigeria	Nigerian Stock Exchange, Lagos	223	223
17	Rwanda	Rwanda Over the Counter Exchange, Kigali	2	-
18	South Africa	Alternative Exchange Johannesburg	51	51
19	South Africa	Bond Exchange of South Africa, Johannesburg	400	400
20	South Africa	Johannesburg Securities Exchange Limited	472	472
21	South Africa	The South African Futures Exchange Johannesburg	49	-
22	Sudan	Khartoum Stock Exchange Khartoum	-	-
23	Swaziland	Swaziland Stock Exchange	10	-
24	Tanzania	Dar es Salaam Stock Exchange, Tanzania	11	-
25	Tunisia	Bourse de Tunis	56	56
26	Uganda	Uganda Securities Exchange	14	-
27	Zambia	Agricultural Commodities Exchange of Zambia	-	-
28	Zambia	Lusaka Stock Exchange	16	-
29	Zimbabwe	Zimbabwe Stock Exchange	81	81
		TOTAL	**2018**	**1742**

Source: Compiled by the authors.

To examine the extent to which debt can influence dividend policy, the study uses the financial leverage ratio defined as the ratio of total short-term and long-term debt to total shareholders' equity (DER). Based on the above discussion, a negative association is expected between dividends and financial leverage.

Evidence from emerging markets also supports the proposition that profitability is one of the most important factors that determines dividend policy. For example, Cahit Adaoglu (2000) found that a firm's earnings are the main factor in determining dividend decisions in Turkey. Indra M. Pandey (2001) has arrived at a similar conclusion for Malaysian firms. More recently, Aivazian, Booth, and Cleary (2003), in their study of the dividend policy of emerging market firms and US firms, demonstrated that profitability has a significant impact on dividend payouts for both samples.

Since more than 50 percent of the observations recorded zero dividends, the Heckman selection test is performed on the significant variables of the Tobit regression model to test for the any bias on the sample results. In addition, the Marginal Effects Tobit model specification is used to robustly check the significance of the other dividend policy measures (cash dividends (*LogDIV*) and dividend-to-total assets ratio (*DIV*/TA)) on the model. The general model is estimated using the Tobit specification, for firm *i* in the period (mathematical signs indicate the hypothesised impact on dividend policy as measured by dividend yield) can be written as:

$$\begin{aligned} \text{DYLD} = y_o + y_1\text{STOCK} - y_2\,\text{AGENCY} - y_3\text{OWN} + y_4\text{GOVT} + \\ + y_5\text{ORG} + y_6\,\text{MBR} + y_7\text{AGE} + y_8\text{SHATUR} - y_9\text{DTAX} - y_{10}\text{DER} - \\ - y_{11}\text{CAP} - y_{12}\text{EPS} + - y_{12}\mathit{INDUST} + \varepsilon \end{aligned} \tag{1}$$

(The variables are explained in the Appendix.)

We tested for stationarity by performing a Unit Root Test on the AR(p) model using the following model:

$$\Delta y_t = \mu y_{t-1} + \sum_{i=1}^{p} \alpha_i \, \Delta y_{t-i} + U_t \tag{2}$$

We augment the DF test by using 4 lags of the dependant variables on the null hypothesis:

$$H_o = Y_t = Y_{t-1} + U_t \tag{3}$$

3. Results and Discussion of Findings

3.1 Unit Roots Test Result

The stationarity property of the respective time series is tested using the Augmented Dickey Fuller (ADF) unit roots test techniques (see result in Table 2). The results reveal that most of the series are non-stationary at their levels. The introduction of a constant (c) gives rise to the findings that at their respective levels, AGENCY, MBR, ORG are non-stationary at 1 percent and 5 percent, but stationary at 10 percent. CAP, INDUS, STOCK indicate non-stationarity at 1 percent, but stationary at 5 percent and 10 percent; while EPS and DER are non-stationary at all the three levels. AGE and OWN are stationary at 5 and 10 percents, but non-stationary at 1 percent; whereas GOVT, SATURN and TAX are only stationary at 10 percent. Similar results

are also obtained with the inclusion of a trend (b) in the equations, with AGENCY, OWN, SATURN and CAP bearing non-stationary features at the three levels of significance. With the inclusion of a trend also AGE, TAX, EPS, INDUST, STOCK, ORG, DER, GOVT and MBR are all stationary at the three levels of significance. As expected in most macroeconomic data, all the variables are found to be stationary (and integrated to the order one) at their first differences at the three levels of significance.

Table 2 Unit Root Tests on the Time Series

Variables	ADF statistic	Augmented Dickey-Fuller test		
		1%	5%	10%
	-2.266a	-3.509	-2.890	-2.580
AGENCY	-2.090b	-4.039	-3.450	-3.150
	-6.249c*	-3.509	-2.890	-2.580
	-1.529a	-3.509	-2.890	-2.580
CAP	-0.962b	-4.039	-3.449	-3.149
	-5.760c*	-3.509	-2.890	-2.580
	-3.065a	-3.509	-2.890	-2.580
EPS	-2.970b	-4.039	-3.450	-3.150
	-6.023c*	-3.509	-2.890	-2.580
	-3.235a	-3.509	-2.890	-2.580
AGE	-2.102b	-4.039	-3.449	-3.149
	-5.661c*	-3.509	-2.890	-2.580
	-1.939a	-3.509	-2.890	-2.580
GOVT	-3.522b	-4.039	-3.450	-3.150
	-6.077c*	-3.509	-2.890	-2.580
	-1.210a	-3.509	-2.890	2.580
DER	-2.410b	-4.039	-3.449	-3.149
	-5.567c*	-3.509	-2.890	-2.580
	-4.193a	-3.509	-2.890	-2.580
INDUST	-4.217b*	-4.039	-3.450	-3.150
	-5.920c*	-3.509	-2.890	-2.580
	-2.991a	-3.509	-2.890	-2.580
TAXD	-3.002b	-4.039	-3.449	-2.580
	-5.719c*	-3.509	-2.890	-2.580
	-2.749a	-3.509	-2.890	-2.580
STOCK	-5.044b	-4.039	-3.450	-3.150
	-6.307c*	-3.509	-2.890	-2.580
	1.923a	-3.509	-2.890	-2.580
MBR	-3.223b	-4.039	-3.449	-3.149
	-5.895c*	-3.509	-2.890	-2.580
	-2.086a	-3.509	-2.890	-2.580
OWN	-4.209b*	-4.039	-3.450	-3.150
	-6.370c*	-3.509	-2.890	-2.580
	-2.321a	-3.509	-2.890	-2.580
ORG	-3.240b	-4.039	-3.449	-3.150
	-5.876c*	-3.509	-2.890	-2.580
	-1.349a	-3.509	-2.890	-2.580
	-5.644b*	-4.039	-3.449	-2.580
SHATURN	-6.542c*	-3.509	-2.890	-2.580

Notes: * Significance at 1, 5, 10 degree confidence levels. Variables with (a) represent the results of the unit root test with constant included in the test equation; those with (b) show results with the inclusion of trend in the test equation; and those with (c) indicate results from testing with first difference. Augmented Dickey Fuller (ADF) tests are significant if their respective calculated absolute values are greater than their critical values, at respective levels of significance.

Source: Results obtained by the authors.

The above results are consistent with general expectation as macroeconomic data are in most cases non-stationary at their levels. Therefore, differentiating the data to achieve stationarity makes some statistical meaning as trends in the dividend can result in the expectation of future performance of the firm (Michael J. Seiler 2004).

3.2 Descriptive Statistics

Table 3 shows the dividend payout ratios by sector for the period 1998-2009. Note that the manufacturing sector has the highest average mean percentage cash dividends of 32% and yield of 0.62. The agricultural firms have the lowest mean payout ratio of 22% with a dividend yield of 0.40 respectively. The banking and insurance sector have a record of high dividend payouts. The reported high dividend in the sector may be attributed to the growing operational and economic activities undertaken during the period in the sector. For instance, several bank mergers and acquisitions have taken place in the region, most of which have been acquired by foreign and international firms. The agricultural and other allied industries have remained very much under developed on the continent.

Table 3 Average Mean of Dividend Payout and Yield Ratios by Sector, 1989-2009

Year	Manufacturing	Agriculture	Insurance & bank	Hotel and hospitality
1998	34% (0.460)*	23% (0.356)	60% (0.296)	31% (0.316)
1999	35% (0.298)	15% (0.305)	22% (1.941)	38% (0.352)
2000	55% (0.278)	27% (0.415)	74% (0.500)	43% (0.305)
2001	37% (0.978)	16% (0.233)	55% (0.230)	35% (0.365)
2002	44% (0.411)	27% (0.338)	70% (0.408)	28% (0.194)
2003	27% (1.111)	135% (6.023)	46% (0.332)	26% (0.247)
2004	30% (0.431)	27% (0.353)	33% (0.312)	13% (0.176)
2005	28% (0.454)	19% (0.327)	32% (0.429)	17% (0.282)
2006	33% (0.693)	16% (0.298)	27% (0.358)	27% (0.360)
2007	25% (0.425)	20% (0.369)	25% (0.341)	21% (0.299)
2008	8% (1.485)	20% (0.357)	26% (0.368)	48% (0.855)
2009	26% (0.412)	21% (0.436)	11% (0.259)	38% (0.402)
Mean	32% (0.62)	22% (0.40)	40% (0.48)	30% (0.35)

Notes: * Figures in parentheses are the average yield while the others are the mean payout ratio.

Source: Compiled by the authors.

Of the twelve variables used in the model, seven variables are statistically different from zero. To control for industry effects, a dummy variable (*INDUST*) is in-

cluded taking a value of one if a firm belongs to the insurance or banking sectors, and zero otherwise (that statistic is 85.75 with a P-value of 0.000, indicating that the explanatory power of the model is significant beyond the 1 percent level). The overall significance of the model was tested using the Wald test.

The Table 4 shows the result of the random effects Tobit model using the maximum likelihood estimation. It is represented in three models in which dividend policy is measured by the dividend yield (DYLD). The coefficient results are reported and the *t-statistics* are shown in parentheses. Model 3 includes thirteen variables and encompasses all of the models, with 1742 firms' observations. Only stock exchanges with at least 50 listed firms are included.

Table 4 Result of the Tobit Regression Model (Dependent variable = Dividend yield)

	Model 1	Model 2	Model 3
Constant	-0.266***	-0.278***	-0.300***
	(-4.10)	(-5.43)	(-6.14)
AGENCY	-0.060***	-0.041***	-0.042***
	(-2.61)	(-2.04)	(-2.31)
CAP	0.016***	0.0154***	0.016***
	(3.62)	(4.72)	(5.40)
EPS	0.0046***	0.005***	0.006***
	(2.52)	(2.84)	(3.36)
AGE	0.004***	0.004***	0.004***
	(4.52)	(3.93)	(3.81)
GOVT	0.024*	0.021*	0.019*
	(1.93)	(1.90)	(1.83)
DER	-0.003***	-0.003***	-0.002***
	(-2.59)	(-2.95)	(-2.59)
INDUST	-	-0.017	-0.017
		(-1.30)	(-0.93)
TAXD	-	-0.007	-0.006
		(-1.52)	(-1.38)
STOCK	-	-	-0.006
			(-1.01)
MBR	-	-	0.002
			(004)
OWN	-	-	-0.004
			(-0.43)
ORG	-	-	0.008
			(0.72)
SHATURN	-	-	-0.002
			(-0.02)
Rho (p)±	0.597***	0.588***	0.578***
	(10.46)	(10.46)	(11.77)
No. of observations	1742	1742	1742
Log likelihood	271.33	270.17	262.01
Wald test	X^2 =85.75	X^2 = 78.16	X^2 =76.87
P-value	0.000	0.000	0.000
LR test±±	155.63	178.05	189.63

Notes: *, **, *** significant at 10, 5 and 1 percent levels, respectively; t-statistics are shown in parentheses; ± the proportion of the total variance contributed by panel level variance component; ±±LR test denotes the likelihood ratio test, which provides a test for pooled (Tobit) estimator against the random effects panel estimator.

Source: Results obtained by the authors.

The regression result shows that the agency cost variable *STOCK* is not significantly different from zero, indicating that ownership dispersion does not appear to influence dividend policy in listed African firms. *AGENCY* is negative and statistically significant at the 1 percent level. These results remain consistent throughout the models. This indicates that insider ownership is an important determinant of corporate dividend policy among African firms. Firms with a higher proportion of insider ownership are likely to be persuaded to engineer a policy that the insider owners, such as the directors, find most suitable. This is consistent with Thomas K. Gugler (2003), which examined a panel of 214 Austrian firms over the period 1991-1999 and concluded that a firm's ownership and control structure significantly affects its dividend policy. Mark Leary and Roni Michaely (2011) also add that less financial constraint firms are more susceptible to agency conflicts.

Along with *STOCK*, the two ownership dummies, *OWN* (family ownership) and *ORG* (institutional ownership), as well as *MBR* and *SHATURN,* were all dropped from the model. However, the existence of the government or its agencies as a controlling shareholder seems to influence the level of dividends paid. The positive significant relationship between dividend yield and *GOVT* is consistent with the assertion that state-controlled firms tend to pay more dividends. The share turnover ratio (*SHATURN*) is used as a proxy for information asymmetry which is negative and therefore does not provide support for the signalling hypothesis. One possible explanation for this result is that the proxy for information asymmetry is weak.

MBR and *AGE* are used as proxies for growth and investment opportunities. The coefficient of *MBR* is positive and insignificant, whereas, as predicted, the coefficient of *AGE* is positive and significantly different from zero. These findings indicate that the market-to-book value ratio does not affect dividend yield, while firm age is positively related to dividend yield. The positive coefficient on *MBR* is comparable to that reported by Aivazian, Booth, and Cleary (2003) for emerging markets. These results are consistent with the prior research of Ronny Manos and Christopher Green (2001), who found that the age of the firm and the payout level are positively related. The *t*-statistics of the coefficients on market capitalisation (CAP) for models 1, 2 and 3 are 5.34, 3.62, and 4.72, respectively, which are highly significant at the 1 percent level. The effect of market capitalisation may vary with countries and continents. Mo Azeem, Zeeshan Akbar, and Ahmad Usman (2011) contend that the dividend decisions of listed firms in Pakistan are independent of their growth which varies with Turkish firms (Maury and Pajuste 2002).

The coefficients on debt-to-equity ratio (*DER*) are negative and statistically significant at the 5 and 1 percent levels. The *t*-statistics of the coefficients on *DER* for models 1, 2 and 3 are 2.61, 2.59 and 2.95 respectively. This suggests that firms with high debt ratios tend to pay fewer dividends. Earnings per share (*EPS*) are all positive and significant at the 1 percent level, which suggests that profitability is a critical determinant of the level of dividends paid by African firms. The finding supports studies such as Patrick J. Kaufmann, Richard M. Gordon, and James E. Owers (2000) and Eugene F. Fama and Kenneth French (2002), which have documented a positive relationship between profitability and dividend payouts.

These results demonstrate that listed firms performance have greater level of efficiency in relation to their stock performance as measured by their earnings. Studies such as Fotios Pasiouras, Aggelikki Liadaki, and Constantin Zopunidis (2008), Sailesh Tanna, Pasiouras, and Nnadi (2011) have established similar results. A recent study by Saadet Kasman and Adnan Kasman (2011) on the performance of Turkish listed banks supports the argument that stock markets performance is intrinsically link with such performance measures as technical, scale and productivity efficiencies.

The tax variable (*TAXD*), takes a value of one for the years 1998-2009 (post-tax period), zero otherwise. The implementation of a basic tax rate on dividends seems to have had no significant influence on corporate dividend policy. The *INDUST* result shows that the dividend policy of the firms is not affected by the type of industry. Firms operating in a low tax environment and with less institutional constraints will enjoy a distinctive dividend policy (Fabio Braggion and Lyndon Moore 2011).

3.3 Further Check

Further checks are performed to robustly check the results obtained earlier. The significant variables in the Tobit regression are re-estimated by substituting the dividend yield with cash dividends (*LogDIV*) and dividend-to-total assets ratio (*DIV*/TA), which are other measures of dividend policy. This will provide invaluable proof of any sensitivity of the result to other measures of dividend policy. More importantly, it eliminates the associated criticism of yield as dividend policy measure (Fama and French 2002).

The results are presented in Table 5 and are consistent with those obtained using the dividend yield (*DYLD*) as a dependent variable. The Wald test for *LogDIV* model is 93.03 and 150.52 for DIV/TA model, indicating that the overall explanatory power of both models using *LogDIV* or *DIV*/*TA* is used as a dependent variable, is significant.

The estimation results show that *GOVT*, *AGE*, *CAP* and *EPS* have a positive effect on the dividend policy of listed African firms. In both models, the coefficients of those variables are significant at the 1 percent level, with the exception of *GOVT* at the 10 percent level in *LogDIV* model. This indicates that large, profitable, and mature firms with low growth options tend to pay higher levels of dividends. It suggests that government-controlled firms tend to have higher payout ratios. A more regulated stock market will be more efficient and reliable (Radonjić and Zec 2010). The variables *AGENCY* and *DER* are significant at the 5 and 10 percent levels in the *LogDIV* and *DIV*/*TA* models respectively, indicating the reliability of the findings.

The marginal effect of each coefficient estimate is also reported and shows that a percentage change in the proportion held by insiders (*AGENCY*) will account for a 1.273 percent change in dividend yield. Similarly, a percentage increase in government (*GOVT*) ownership in a firm would lead to an increase in the dividend yield of 0.610 percent. Note that the marginal effects of agency costs variables are significantly larger than the other variables, supporting the conclusion that the agency costs hypothesis provides an important explanation of dividend policy in Africa.

Table 5 Tobit Estimation: Further Check Using Other Dividend Policy Variables

	Dependent variable = logDIV	Dependent variable = DIV/TA	Marginal effects (%)
Constant	-95.010*** (-7.12)	-0.360*** (-11.03)	
AGENCY	-10.446*** (-2.46)	-0.020*** (-1.90)	1.26§ (-2.35)
GOVT	5.468* (1.66)	0.018** (2.94)	0.62 (1.69)
AGE	0.876*** (4.53)	0.003*** (5.25)	0.12 (3.68)
DER	-0.398** (-2.63)	-0.003* (-4.15)	-0.00 (-3.24)
CAP	5.484*** (6.62)	0.021*** (10.29)	0.16 (3.25)
EPS	1.378*** (4.12)	0.004*** (3.56)	0.36 (4.36)
Rho (ρ)♣	0.590*** (7.80)	0.746*** (28.23)	
No. of observations	1742	1742	
Log likelihood	-192.08	383.04	
Wald test	$\chi^2(6)=94.43$	$\chi^2(6)=150.51$	
P-value	0.000	0.000	
LR test±±	146.15	203.03	
P-value	0.000	0.000	

Notes: *, **, *** significant at 10, 5 and 1 percent levels, respectively; t-statistics are parentheses; ± the proportion of the total variance contributed by panel level variance component; LR test ±± denotes the likelihood ratio test, which provides a test for pooled (Tobit) estimator against the random effects panel estimator. ♣Proportion of panel variance. §Marginal effects contributions and t-statistics in parentheses.

Source: Results obtained by the authors.

The age of the firm (*AGE*) seems to influence *DYLD* but only marginally. Recall that this variable was designed to proxy for growth and investment opportunities. Mature firms with less growth and investment opportunities tend to pay more dividends. As a firm becomes one year older, the estimated increase in *DYLD* is 0.117 percent.

Firm size as measured by market capitalisation, is positively related to *DYLD* with marginal effects of 0.480 percent. If, for example, a firm's market capitalisation increases from US$10 million to US$ 15 million, the expected increase in its *DYLD* would be 0.195 percent. In relation to a firm's capital structures, financial leverage (*DER*) is negatively related to dividend yield. If a firm's financial leverage increases by 1 percent, the estimated decrease in dividend yield is 0.066.

3.4 Henchman Selection Test

To test if the results may be biased by the inclusion of both dividend paying and non-dividend paying firms, we use the Henchman two step procedure to test the possibility of a selections bias on the Tobit model for the two sets of samples. The t-statistics indicate a strong statistical bias in the samples; this is also corroborated by the marginal effects of the results. The Henchman selection is performed on the significant variables of our Tobit estimation in Table 3 using the following estimation models:

$$Y^* = \beta_1 + \beta_2 X + \mu \quad (4)$$

$$Y = Y^* \text{ if } Y^* > 0 \quad (5)$$

$$Y = 0 \text{ if } Y^* 0 \quad (6)$$

In the Tobit model, the values of the regressors and the disturbance term determine whether or not a firm falls into the participating category ($Y > 0$) or the non-participating category ($Y = 0$).

The results obtained in Table 6 justify the inclusion of both paying and non-dividend paying firms in our regression model. The AGENCY, CAP, and EPS variables are consistently significant in both samples.

Table 6 Henchman Selection Test on Tobit Regression

Independent variables	Dependent variable = Dividend yield		
	Dividend paying firms	Non-dividend paying firms	Marginal effects
Constant	-6.343*** (-2.62)	-0.269*** (-4.56)	-
AGENCY	-1.145* (-1.65)	-0.042* (-2.87)	-0.452
GOVT	0.540 (1.29)	0.024 (2.16)	0.213
AGE	0.066 (1.61)	0.008 (3.51)	0.026
DER	-0.003 (-1.63)	-0.113 (-2.05)	-0.001
CAP	0.357** (2.38)	0.163** (2.38)	0.002
EPS	12.307 *** (3.38)	0.057 *** (5.46)	5.058
Rho (ρ) ♣	0.502*** (3.43)	0.621*** (11.17)	
No. of observations	1742	1742	
Censored	759		
Uncensored	883		
Log likelihood	213.54		
Wald test	$\chi^2(6)=168.04$		
P-value	0.000		
LR test±±	13.24		
P-value	0.000		

Notes: *, **, *** significant at 10, 5 and 1 percent levels, respectively; t-statistics are parentheses; ± the proportion of the total variance contributed by panel level variance component; LR test ±± denotes the likelihood ratio test, which provides a test for Henchman estimator. ♣Proportion of panel variance and t-statistics in parentheses.

Source: Results obtained by the authors.

4. Conclusion

Profitable and long established firms are more likely to pay a higher level of dividends. These results are generally consistent with both the agency costs hypothesis. Ownership dispersion, as measured by the natural log of the number of shareholders, does not appear to impact on the dividend policy of listed African firms. In fact, the degree of ownership dispersion was not found to affect the level of dividends. We

also found that a firm's financial leverage has a significant negative effect on its dividend policy. This effect is present in the amount of dividends as tested with the Tobit model. Corporate governance tends to be dominated by inside ownership such that the minority shareholders are not able to exert much influence on dividend policy, and where the degree of outside ownership will often, therefore, not be of much significance. Using the ADF unit root test technique, the study showed that most of the time series data used are non-stationary at their respective levels, but stationary at their respective first differences.

The results also show that the proportion of total shares held by insiders, the second proxy for the agency costs hypothesis, has a negative impact on the level of dividends paid. That is, insider ownership seems to have an impact on the size of dividends, but not necessarily on the decision to pay them. Similarly, the existence of government, or its agencies, in a firm's ownership structure is found to positively affect its dividend policy. Government controlled firms are synonymous with the high and regular dividend payments in Africa. This is also consistent with the *double agency costs* notion of government ownership, where the state is also the agent for citizens/taxpayers (Kent H. Baker, Gary E. Powell, and Theodore E. Veit 2002). Other variables of ownership structure seem to have no significant influence on dividend policy. Taken together with ownership dispersion, these results provide mixed support for the agency costs hypothesis of dividend policy in listed African firms.

The results show that the firm's age is positively related to its dividend policy. The age of the firm is found to be an important determinant of the decision to pay dividends. These results demonstrate that mature firms with less growth and investment opportunities are more likely to pay dividends, which is consistent with the *maturity* and free cash flow hypothesis. This finding indicates that the level of financial leverage inversely affects the dividend decision. The finding agrees with Rakesh Bali (2003), who asserts that the firm's debt-equity level plays an important role in its dividend policy. The intuition here is that high levels of tangible assets in a firm's asset structure will increase debt capacity and therefore, allow them to rely less heavily on retained earnings.

The proxy variable for information asymmetry (share turnover ratio) was statistically insignificant in the analyses. We used this proxy because firms with higher share turnover tend to have more information about them in the public domain, and therefore would have less need to provide extra information about a firm's future performance through dividends. The results also show that African firms have relatively higher speed of adjustment factor (to changes in earnings) compared to those in developed countries, suggesting that there is relatively little smoothing of dividends among African firms. These results are, however, in line with those reported for other emerging markets.

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Appendix

Explanation of Variables

STOCK: The natural logarithm of the number of common stockholders of a firm (measure of ownership dispersion).

AGENCY: The percentage of a firm's stocks held by insiders.

OWN: Family ownership dummy equals one if an individual is the controlling shareholder, and zero otherwise.

GOVT: Government ownership dummy equals one if the government, or one of its agencies, is the controlling shareholder, and zero otherwise.

ORG: Organisational or institutional dummy equals one if an institution (financial or non-financial corporation) is the controlling shareholder, and zero otherwise.

SHATURN: Share turnover ratio: the ratio of the number of shares traded at the end of the year.

MBR: Market-to-book-value ratio: the ratio of a firm's market value per share (MPS) to its book value per share (BVS).

AGE: Firm's age, which is calculated as the difference between the calendar year at *t* and the establishment date of the firm.

CAP: Natural logarithm of market capitalisation.

DER: Debt-to-equity ratio: the sum of total short-debt and total long-term debt, to total shareholders' equity.

EPS: Earnings per share: the net income after taxes (NIAT) divided by the number of shares of common stock outstanding.

TAXD: Tax dummy equals one for the years 1998-2009.

INDUST: Non-financial companies dummy equals one if the firm belongs to the industrial or services sectors.

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