

ANALYSIS OF THE DETERMINANTS OF DIVIDEND POLICY: EVIDENCE FROM MANUFACTURING COMPANIES IN TANZANIA

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Abstract

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This paper examines the determinants of dividend policy of manufacturing companies listed on the Dar es Salaam Stock Exchange in Tanzania. Two measures of dividend policy namely, dividend yield and dividend payout are examined over the 2008-2016 period. In addition, three proxies of profitability namely return on assets ratio, return on equity ratio, and the ratio of earnings per share are applied in separate specifications. Similarly, investment opportunities are measured using the ratio of retained earnings to total assets and market to book value ratio. Other explanatory variables are liquidity, business risk, firm size, firm growth and gearing ratio. For inferential analysis, 12 regression models are specified and estimated depending on the measurements of dividend policy, profitability, and collinearity between retained earnings to total assets and market to book value ratios. Empirical results show that the determinants of dividend policy vary across the proxies of dividend policy, profitability and investment opportunities. On one hand, return on equity, retained earnings to total assets ratio, market to book value ratio, business risk and size of the firms tend to have a significant effect on dividend yield. On the other hand, liquidity, business risk, and retained earnings to total assets ratio seem to affect dividend payout. Meanwhile, return on asset ratio tends to have an effect on both dividend yield and dividend payout when excluding liquidity in the regression models. Overall, dividend yield as a measure of dividend policy and return on equity as measure of profitability provide better results. The main implication of these results is that managers should consider the major determinants of dividend yield ratio while formulating the appropriate dividend policy for a firm.

Keywords: Dividend Yield Ratio, Dividend Payout Ratio, Random Effect Model, Tanzania

1. INTRODUCTION

Dividend policy is considered to be one of the major decisions in modern financial management. It involves determining the amount of earnings to be distributed as dividends to the shareholders and the amount to be retained by the company for investment purposes (Pandey & Ashvin, 2006; Ross *et al.*, 2002). Arguably, dividend policy fosters dynamics in financial management by affecting financing policies and investment within a firm. Dividends build shareholders trust in the company

and usually it is a good attraction to other potential investors if the dividend yield and payout ratios are good. However, dividend policy remains one of the most challenging and controversial areas of modern financial management. Despite the fact that firm's dividend policy determines exactly what proportion of profits are distributed to shareholders and the proportion retained for further investment purposes, Ross *et al.* (2002) and Brealey & Myers (2005) point out that dividend policy is one of the crucial unresolved matters in financial management. Notably, Miller & Modigliani (1961) and Myers (1976)

argue that dividend policy is irrelevant in determining the value of a firm while Lintner (1956) while Fama & Babiak (1968) contend that dividend policy matters. According to Lintner (1956) and Fama & Babiak (1968), prevailing earnings and previous dividends determine the dividend payout ratios of companies in developed stock markets. In this view, dividend yields and payouts are of major importance to shareholders since they contribute to a higher value and that shareholders would be willing to pay a higher price for stocks that pay dividends.

An attempt to examine the factors that determine dividend policy has spawned a vast empirical literature, majority of which are from developed economies. Nevertheless, many studies on the dividend policy indicate contrasting results. For example, Nuhu (2014) and Pandey & Ashvin (2016) show that earnings and liquidity are positively related to the dividend payout ratio while Zameer *et al.* (2013) and Almeida *et al.* (2014) reveal that firm's with increased earnings have little dividend payout. Indeed, the questions how do the companies set their dividends and why do they pay dividends impose the problem in dividend policy. This also suggests that there is no unified picture regarding dividend policy and remain one of the most debated subjects within the field of corporate finance. With these contrasting perspectives, and as a central motivation for this paper, additional insight into the dividend policy debate can be gained by an examination of an emerging economy such as Tanzania, which is currently to the best of our knowledge, is scanty. To this end therefore, this paper examines the determinants of firms' dividend yield and pay out in Tanzania. The paper also adds to the existing knowledge about financial management by widening the scope of analysis as compared to the previous studies by assessing as many determinants as possible and how they affect dividend policy. This is especially significant because there are many determinants of dividend policy and no any law subject a company to pay a certain percent of its net profit after tax as a dividend to its shareholder in Tanzania.

The scope of this paper is limited to manufacturing companies listed on the Dar es Salaam Stock Exchange (DSE). DSE became operational in April, 1998. The companies that are included in this paper are Tanzania Cigarette Company (TCC), Tanzania Portland Cement Company (TPCC), Tanzania Breweries Limited (TBL), East African Breweries Limited (EABL), Tanzania Oxygen Limited (ToL), TATEPA Limited. The study of manufacturing companies' dividend policy is of great significance because Tanzania's industrial sector, which contributes around 25 percent to GDP, is mainly comprised of manufacturing. Equally important, however, dividends policy is an important and widely used tool for the distribution of the value of manufacturing companies to shareholders.

The rest of the paper is organized as follows. Section 2 reviews some important literature on the determinants of dividend policy while section 3 presents model specification, definitions of variables and data. The empirical results are presented and discussed in section 4. The last section, section 5 concludes the paper.

2. LITERATURE REVIEW

Previous studies on dividend policy (Fama & French, 2001; Lintner, 1956; Baker *et al.*, 1985; Alli *et al.*, 1993; Juma'h & Pacheco, 2008; Eriotis, 2005; Anand, 2004; Bhat, 1996; Ahmed & Javid, 2009; Al-Malkawi, 2007; Bulla, 2013; Kibet *et al.*, 2010; Musiega *et al.*, 2013) have highlighted various determinants of dividend yield and payout that include investment opportunities, company size, company growth, profitability and liquidity. However, controversies emerge in the directions of the relationship between these factors and dividend policy. Arguably, profit is one of the most important determinants of dividend policy. Indeed, according to Amidu & Abor (2006); Hedensted & Raaballe (2006) and Anil & Kapoor (2008), profit is the single most important factor in a company's financial statement and it has been widely applied in studies in order to determine the relationship with the dividend payout ratio. Li & Lie (2006) and Amidu & Abor (2006) argue that profitable firms are more likely to increase dividends payouts. Similarly, Aivazian & Cleary (2003) and Musiega *et al.* (2013) argue that firms are more likely to raise their dividends if they are profitable. Also, according to Nissim & Ziv (2001), an increase in dividend is associated with future profitability while a decrease in dividend is not related to future profitability. To shed more light on the positive relationship between dividend policy and profitability, Arnott & Asness (2003) reveal that earnings growth is associated with high rather than low dividend payout. Thus, on the basis of these studies we can hypothesize that profitability is expected to have a positive and statistically significant relationship with dividend yield and pay out. In fact, just like the dividend preference theory, investors expect a dividend increase with an increase in profits.

Despite the fact that many previous studies show a positive relationship between firms' profitability and dividend policy, the direction of the relationship between these variables, is not straight forward. To elucidate this proposition, Alli *et al.* (1993) argue that dividend payments depend more on cash flows, which reflect the company's ability to pay dividends, than on current earnings, which are less heavily influenced by accounting practices and thus do not reflect the firm's ability to pay dividends hence cannot be used as a determinant for dividend payout. Differences in measurement of profitability may also contribute to the contrasting results. Some studies, for example Gill *et al.* (2010) and Amidu & Abor (2006) express profitability as

$$ROA = \frac{PBIT}{TA} \times 100 \quad (1)$$

Where ROA = Return on assets
 $PBIT$ = Profit before interest and taxes
 TA = Total assets

while other studies for example Al-Kuwari (2009) measure profitability as

$$ROE = \frac{PAT}{TE} \times 100 \quad (2)$$

Where ROE = Return on equity
 PAT = Profit after tax
 TE = Total equity

One major drawback with ROA is that the measurement varies heavily between different industries (Hellström & Inagambaev, 2012). For example, in industries where large investments in plants, property and equipment are dominant, ROA is generally low but it is high in industries with low investments in plants property and equipment. Likewise, ROE as a measure of profitability has its own weakness. For example, the measurement depends on the percentage of debt and equity that is used to finance the business. This suggests that firms that finance the majority of its business with debt are likely to have a higher ROE. In addition, it is worth noting that, ROE varies somewhat between industries but not to the same extent as ROA (Hellström & Inagambaev, 2012).

Profitability apart, the size of the company has been considered as one of the main determinants of dividend policy (see for example Lloyd *et al.*, 1985; Holder *et al.*, 1998; Hedensted & Raaballe, 2006). According to Lloyd *et al.* (1985), the fact that large companies generally have more diverse shareholders, they have to pay higher dividends in order to reduce agency costs. Similarly, Aivazian *et al.* (2003) argue that the larger firms have easy access to the market and are expected to pay more dividends. Indeed, large firms tend to have easier access to more sources of funds (Adedeji, 1998). Large institutional investors which include pension funds and insurance funds tend to invest in large corporations with relatively low transaction costs (Redding, 1997). Notably, large companies benefit from economies of scale when raising debt financing. With lower transaction costs and increased potential for agency problems, the size of the companies tends to be positively correlated with dividend payments. Moreover, large and diversified companies have little probability of undergoing bankruptcy because they can maintain higher level of debt. Also, Holder *et al.* (1998) show that larger firms have better access to capital markets since they are able to provide high collateral. This in turn makes it possible to finance the company with debt at a lower cost. Consequently, they can pay dividends more easily. In fact, larger firms tend to have less asymmetric information and thus pay higher dividends. Similarly, Deshmukh (2003) argues that with respect to the change in the dividend, other things held constant, the higher the level of asymmetric information due to small firm size, the higher the probability of underinvestment; consequently the lower the dividends paid to stockholders. Thus, firm size is expected to have a positive and significant impact on dividend policy. However, with easier access in the search for external financing, as an alternative to lower agency costs, larger firms may reduce the dividend function in order to control the agency problem. Besides, larger firms have more scrutiny from the public, which in turn reduces the dividend commitments of these firms.

Moreover, measurement of the size of companies tends to vary between studies. For example Lloyd *et al.* (1985) and Holder *et al.* (1998) use the natural logarithm of sales while Daunfeldt *et al.* (2006) use the logarithm of the number of employees as a measure the size of companies. Other studies for example Al-Kuwari (2009) apply market capitalization to measure the company size.

Although the market capitalization incorporates the market value of the firm which is a great advantage since it includes both external and internal factors among the measurements of companies' dividend policies, it has some drawbacks since it depends on the market value of the company's stock (Hellström & Inagambaev, 2012). If the stock is over or undervalued the market capitalization will not give a correct picture of the size of the company. Nevertheless, it makes no difference whether the size is measured in terms of sales, market value of equity since the results should be approximately the same (Lloyd *et al.*, 1985).

Firms that are growing rapidly tend to have smooth dividend payments to shareholders. This is mainly because firm growth acts as a signal to shareholders that the firm possesses high growth opportunities. Studies such as Rozef (1982), Smith & Watts (1992), Graver & Graver (1993), La porta *et al.* (1999), Lloyd *et al.* (1985), Moh'd, *et al.* (1995), and Holder (1998) examine the effect of firm growth by using the theory of cost transaction and the theory of agency costs. It is worth noting that, the growth of a firm is reflected in the increase in the assets and the growth rate of sales or revenues. Moreover, expanding company raises sources of investment costs financing such as internal funds, debt and external equity. Thus, the company that is expanding is likely to hold its earnings to finance investment. Clearly, firms with high growth opportunities are likely to retain a greater portion of their earnings to finance their expansion projects as against returning these dividends to shareholders. Consistent with these arguments, many previous studies reveal a negative relationship between growth of the companies and dividend payments (see for example Rozzef, 1982; Lloyd *et al.*, 1985; and Holder, 1998). Similarly, Myers (1984) suggests that investment policy can be substituted for dividend payouts because it reduces the free cash flow and the agency problem.

Furthermore, theories in the context of growth such as the signaling theory, contracting theory and the free cash flow theory clearly show the relationship between firms' growth and dividend payments. For example, according to signaling theory, high growth firms have higher debt and dividend policies in order to signal to the market that they have better earnings prospects and anticipate better growth prospects. Also, in the context of the contracting theory, high growth firms have future prospective investment opportunities and associated dividend distributions and hence are less likely to pay dividends. Similarly, low growth firms have more free cash flow and as such would try to maintain more debt in order to pay out more dividends (see also Jensen, 1986). Contrary, high growth firms have less free cash flow and therefore lesser level of debt in their capital structure.

Another important determinant of dividend policy is the liquidity position of a company. Companies with more liquidity are likely to pay dividends as compared to the firms that have liquidity problems (Musiega *et al.*, 2013). Undoubtedly, a poor liquidity position means fewer dividends due to shortage of cash. A good liquidity position of a company is an important factor which influences dividend payout ratios (Anil & Kapoor, 2008). Clearly, companies with stable and high cash

flows are more likely to pay dividends compared to companies who have low or unstable cash flows. Higher liquid company can pay higher dividend due to the excess amount of cash. Firms with a greater cash flow need to pay more dividends to reduce the agency costs of the free cash flow (La Porta *et al.*, 2000). In investigating the determinants of dividend policy Naceur *et al.* (2006) find that the high profitable firms with more stable earnings can manage the larger cash flows and because of this they pay larger dividends. According to Labhane & Mahakud (2016), it may happen that a firm can have enough profits to declare the dividends but not sufficient cash in hand to pay the dividends. The payment of dividend means outflow of cash for a company (Labhane & Mahakud, 2016). Firms facing liquidity problems have low dividend payouts because they have shortage of cash flows to pay dividends to the shareholders. Thus, it is expected that the dividend decision of the firm is affected by the liquidity position of firms.

Furthermore, previous studies have been conducted in order to determine the relationship between business risk and the dividend policy. According to Fama & French (1988), business risk, which is measured as the price-to-earnings ratio, indicates that shareholders are counting on higher earnings growth in the future and thus, the higher the level of risk, the lower the dividend payments to shareholders. Studies such as Rozeff (1982) and Lloyd *et al.* (1985) also reveal that there exists a strong negative relationship between the level of riskiness and dividend payments. Riskier firms with high financial leverage pay out fewer dividends and have lower dividend yields (Naceur *et al.*, 2006). In the same vein, Beabczuk (2004) argues that corporations with higher risk and borrowing paid fewer dividends. Generally, riskier firms have higher volatility in their cash flows which makes it more difficult to plan for future investments which in turn, according to Hellström & Inagambaev (2012), contributes to the need for external financing increases. However, according to the pecking order theory, external financing is more expensive and companies therefore choose to decrease their dividend payouts in order to avoid more expensive external financing (Rozeff 1982; Al-Kuwari, 2009; Al-Shubiri, 2011).

By and large, business risk is used as a proxy for the uncertainty in the firm's current and future earnings, and it can be measured as the standard deviation of first difference of operating income divided by total assets and in this case it is expected to have negative relationship with dividend payment (Hellström & Inagambaev, 2012). The other measure of business risk is variance in cash flow (see for example Amidu & Abor, 2006).

Investors aim at maximizing their wealth. Investment or growth opportunity is a driving force which motivates a reward for investors (Siboni & Pourali, 2015). However, investors normally consider risk in their investment decisions. Notably, optimal utilization of available investment opportunities leads to success. This suggests that investment opportunity is an option for firm's investment and growth. Firms with high potential for investment opportunities tend to have low dividend payouts to shareholders because most of the profits are invested instead of being distributed as dividends to

shareholders. To shed more light on these explanations, existing literature suggests a correlation between investment opportunities and dividend policy. For example, Smith and Watts (1992) argue that firms with high investment opportunity are likely to pursue a low dividend payout policy, since dividends and investment represent competing potential uses of a firm's cash resources. According to Myers & Majluf (1984), companies that have high investment opportunities require more money to finance their future investments so that they pay fewer dividends and make more investments to maximize their expected return. Many other studies, for example Labhane & Mahakud (2016); Kasozi & Ngwenya (2015); Amidu & Abor (2006) and Ahmed & Javid (2009), show that investment opportunity is one of the fundamental factors that affect the dividend payment decision. These studies conclude that firms experiencing high growth and investment opportunity tend to pay low dividend. As it has been presented, the reason is that when firms pay dividends they limit their cash available for investments. If new investment opportunities present themselves, the firms have to fund them with either retained earnings or by issuing new debt or equity.

Although an inverse relationship can be expected between investment opportunity of the company and dividend policy, investment opportunities are unobservable to outsider, and therefore studies in this area measure firm's investment using various proxies. The commonly used measures of investment opportunities are market-to-book assets ratio or Tobin's q (Smith & Watts, 1992; Adam & Goyal, 2008; Skinner, 1993), market-to-book equity ratio (Adam & Goyal, 2008; Collins & Kothari, 1989; Penman, 1996; Labhane & Mahakud, 2016) and earnings-price ratio (Adam & Goyal, 2008; Chung & Charoenwong, 1991). However, little is known about how well these proxies perform, which is one of the fundamental problems in corporate finance (Chung & Charoenwong, 1991 and Baker, 1993). While all three proxies are related to the real option values of firms' investment opportunities, the market-to-book asset ratio has the highest information content of the three proxies (Adam & Goyal, 2008). Neither the market-to-book equity nor the earning-price ratio provides incremental information beyond that already contained in the market-to-book asset ratio (Adam & Goyal, 2008). Equally important, many studies support the fact that companies with higher market-to-book value tend to have good investment opportunities, and would retain more funds to finance such investment, which in turn lower dividend payout ratios (Rozeff, 1982; Lloyd *et al.*, 1985; Collins *et al.*, 1996; Amidu and Abor, 2006). By contrast, some studies for example Aivazian *et al.* (2003), have in fact found a positive relationship between market-to-book value ratio and dividend payments, suggesting that firms with higher investment opportunities rather pay higher dividends.

Furthermore, high gearing ratio which measures the proportion of a company's borrowed funds to its equity may lead to little dividend payments. In fact, a high gearing ratio represents a high proportion of debt to equity that puts the firm under risk and decreases cash flows. A high gearing

ratio is indicative of a great deal of leverage, where a company is using debt to pay for its continuing operations. The fact that excessively high gearing ratio puts company's loans at risk of not being repaid; the company counteracts this problem by prohibiting the payment of dividends. These explanations suggest that there is a notable negative relationship between gearing levels and dividend policy. However, like many other determinants of dividend policy, there are various measures of gearing ratio. The most comprehensive measure of gearing ratio is one where all forms of debt including bank overdraft are divided by equity. This is expressed as

$$GR = \frac{LD + SD + BO}{SE} \quad (3)$$

where GR = Gearing ratio
 LD = Long term debt
 SD = Short term debt
 BO = Bank overdraft
 SE = Shareholders' equity

Alternatively, gearing ratio is measured as

$$GR = \frac{EBIT}{IP} \quad (4)$$

where GR = Gearing ratio
 $EBIT$ = Earnings before interest and taxes
 IP = Interest payable

However, this ratio is mainly intended to provide some indication of whether a company can generate enough profits to pay for its ongoing interest payment. Another proxy for gearing ratio is the ratio of long-term debt to equity ratio. This ratio can be of use especially when the bulk of a debt of company is tied up in long-term bonds.

One of the challenging and complex issues in corporate finance is identifying the determinants of dividend policy. Even though the existing literature on dividend policy reveal that profitability, firm size, firm growth, business risk, investment opportunities, gearing ratio and liquidity factors are the major determinants of dividend policy, the role of these factors varies across the time period, countries and industries. There is a conflict as to whether there is a direct or indirect relationship. Findings from most of the studies reveal contradictions and inconsistency depending on the markets, measurement of the variables and analytical model adopted. Equally important, local studies done are not conclusive in their findings and it is this gap that the current study intends to fill. In fact, factors that determine dividend policy are described as a puzzle and consequently, more research is required before conclusions are made on determinants of corporate dividend policy (Black & Scholes, 1974; Allen & Michael, 1995). To overcome some research gaps that exist in the literature, this paper uses different measures of the factors. It also included many factor, while considering the problem of multicollinearity, to widen the scope of the study and ultimately generate appropriate conclusions.

3. METHODOLOGY

3.1 Dividend Payout vs. Dividend Yield Ratios

The two most common measures of dividends are the dividend payout ratio and the dividend yield ratio. Both these methods provide reliable measurements, but they measure dividend payments in different ways. The dividend payout ratio is defined as the percentage of the total earnings that is distributed to shareholders. It is expressed as

$$DP = \frac{DS}{ES} \quad (5)$$

where DP = Dividend payout ratio
 DS = Dividend per share
 ES = Earnings per share

Dividend payout ratio takes internal factors into considerations and it is therefore independent of external factors (Penman, 2009). This measure is used in valuation for estimating dividends in future periods. Also, it tends to follow the life cycle of a firm and indicates the maturity of a firm. In addition, the retention ratio derived from it is used to estimate growth in future earnings (Labhane & Das, 2015). According to McManus *et al.* (2004), dividend payout ratio tends to explain the returns over the dividend yield. In the same line, the signaling effect of dividend payout ratio is more informative compared to dividend yields since it only contains internal company factors (McManus *et al.*, 2004). Contrary to the dividend payout ratio, the dividend yield ratio is influenced by external factors (Warren *et al.*, 2011). This measure takes the stock price into consideration. The dividend ratio is measured as

$$DY = \frac{DS}{SP} \quad (6)$$

where DY = Dividend yield ratio
 DS = Dividend per share
 SP = Stock price

The dividend yield measures the returns in the form of dividends and price appreciation and the risk associated with the investment in stock. Fama & French (1988) reveal that the dividend yield has an ability to predict the stock returns and it therefore provides more information compared to the dividend payout ratio. Moreover, the fact that dividend yield changes as the stock price changes, it is therefore out of the company's control (Steven & Jose, 1992).

Previous studies show that dividend yield and dividend payout ratio are different and it is therefore important to choose the most relevant measurement since it will have a major impact on the result. However, the fact that these ratios explain different aspects of dividends, it is difficult to choose which of the two measurements is the best (Hellström & Inagambaev, 2012). Nonetheless, the majority of the previous studies have used the dividend payout ratio (see for example Rozeff, 1982; Lloyd 1985; Amidu & Abor 2006). Notably, the current paper applies both ratios mainly because

many company selected factors are included in the analysis.

3.2 Model Specification

Some of the previous studies focusing on dividend policy use cross-sectional analysis. However, panel data analysis has certain advantage because it incorporates the role of unobservable firm-specific and time-specific factors with other quantifiable factors on determination of dependent variable (Hsiao, 1986). In the panel data model, the unobserved effects can be included in the error

Model 1

$$DY_{i,t} = \gamma_0 + \gamma_1 Pr_{i,t} + \gamma_2 \ln FS_{i,t} + \gamma_3 Risk_{i,t} + \gamma_4 GR_{i,t} + \gamma_5 FG_{i,t} + \gamma_6 Lq_{i,t} + \gamma_7 IO_{i,t} + \gamma_8 MBV_{i,t} + \eta_{i,t} + \varepsilon_{i,t} \quad (7)$$

Model 2

$$DP_{i,t} = \lambda_0 + \lambda_1 Pr_{i,t} + \lambda_2 FS_{i,t} + \lambda_3 Risk_{i,t} + \lambda_4 GR_{i,t} + \lambda_5 FG_{i,t} + \lambda_6 Lq_{i,t} + \lambda_7 IO_{i,t} + \lambda_8 MBV_{i,t} + \eta_{2i,t} + \varepsilon_{2i,t} \quad (8)$$

where i is the firm subscript, t is the time subscript, γ s and λ s are unknown parameters to be estimated, ε is the usual random disturbance term, and η is the unobserved firm-specific effect. The dependent variables (dividend policy) are dividend yield and dividend payout ratios. The variables are defined as follows:

- DY = Dividend yield ratio (Dividend per share/Share price)
- DP = Dividend payout ratio (Dividend per share/Earnings per share)
- ROA = Return on assets (Earnings before interest & tax/Total assets)
- ROE = Return on equity (Profit after tax/Total equity)
- EPS = Earnings per share (Profit after tax/Total number of shares)
- FG = Firm growth [(Sales 1 - Sales 0)/Sales 0]
- GR = Gearing ratio (Earnings before interest & income/Interest payable)
- Lq = Liquidity (Acid test ratio) (Current asset-Inventory and Prepayment)/Current liabilities
- $Risk$ = Risk (Price per share/Earnings per share) (P/E Ratio)
- FS = Firm size (Natural log of total assets)
- MBV = Market to Book Value (Market value of equity/Book value of equity)
- IO = Investment opportunities (Retained earnings/Total assets)

The hypotheses can be confirmed or denied based on the estimated individual values of γ_i , and λ_i in the regression analyses, where $i = 0, \dots, 8$. The null hypotheses are $H_0: \gamma_i = 0$, and $H_0: \lambda_i = 0$, i.e. the coefficients in each regression are not different from zero. The alternative hypotheses are $H_1: \gamma_i \neq 0$, and $H_1: \lambda_i \neq 0$ i.e. the coefficients in each regression are different from zero. t -test is used to test the significance of the coefficient of each variable included in the two models, while the F -test is used to test the hypothesis that all the slope coefficients in the two models are simultaneously or jointly equal to zero i.e. all the regressors in each model have no impact on the regressand.

term. The variance-covariance matrix of the resulting non-spherical errors must be transformed to obtain consistent estimates of standard errors. In this case, the random effect estimator is appropriate (Hsiao, 1986). In view of these arguments, this paper applies a balanced panel data analysis to examine the relationship between dividend policy and its determinants in Tanzania. With a panel data there will be a greater degree of freedom. In line with both theoretical and empirical studies about the firm-specific characteristics, the estimation models are expressed as

3.3 Data

This paper covers 6 manufacturing companies. The companies were selected from the companies listed on DSE. Currently, 26 companies are enlisted on DSE, out of which 6 companies are manufacturing. The DSE was established by the Capital Markets and Securities Authority under the Capital Markets and Securities Act of 1994. The reason to choose DSE is that all the companies listed on DSE follow the financial reporting norms set by the Capital Markets and Securities Authority. Secondary data on each variable were collected over the 2008-2016 period. As a result, total number of observations is 54. Data were collected from audited annual reports and financial statements including statement of financial position, comprehensive income and cash-flow and consolidated financial statements of companies. We believe that secondary data obtained from financial statements contained in annual reports are reliable. Data from the financial statements of companies listed on DSE are audited by reputable auditing firms such as Ernest & Young and KPMG. As it happens, these secondary data present the true picture of the financial performance and position of companies.

4. EMPIRICAL RESULTS

4.1 Descriptive Statistics and Correlation Analysis

Table 1 and Table 2, respectively, present the descriptive statistics and correlation coefficients for all variables considered in the analysis of this paper. As has been reported, the number of observations is 54. Specifically, Table 1 reports the mean, median, standard deviation, skewness, kurtosis, minimum and maximum for each of the dependent and independent variables. Results indicate that the dividend yield ratio varies from 0.07 to 0.54 with a mean value of 0.23 and median value of 0.20 while the dividend payout ratio ranges from a minimum value of 0.01 to a maximum value of 0.39 with an average value of 0.22 and a median value of 0.24. The mean values for the dividend yield and payout

ratios suggest that the sample firms have average dividend yield and dividend payout ratios of 23 and 22 percent, respectively. In general, the statistics suggest that there are no outliers since the mean of each variable is relatively close to its median.

The values of skewness and kurtosis show the normality test. For a variable to be normally distributed its skewness value should be equal to zero whereas the kurtosis value should be three. In the same vein, under the null hypothesis of normal distribution, if the calculated p-value of the Jarque-Bera (JB) is greater than 0.05, we fail to reject the null hypothesis at 5 percent level of significance. Thus, as Table 1 reports, we fail to reject the null hypothesis that *DP*, *ROA*, *ROE*, *EPS*, *Risk*, *FS*, and *GR* are normally distributed. In addition, all the variables except *DY*, *IO*, *Lq*, *MBV*, and *FG* possess skewness and kurtosis values that are not far from 0 and 3 respectively, suggesting that many variables included in the empirical analysis are close to normal distribution. Interestingly, all variables are within the acceptable range of skewness of between ± 3 and kurtosis of between ± 10 , recommended by Kline (2005). The value of standard deviation indicates that *Risk* and the *FS* are highly volatile among all the variables over the 2008-2016 period.

By contrast, the standard deviation also indicates that *DP*, *DY*, *ROE* and *IO* are less volatile compared to the rest of the variables during the same time.

As far as correlation is concerned, results in Table 2 suggest that there is a positive correlation between *DY* and *ROA*, *ROE*, *EPS*, *Risk*, *Lq*, *FG* and *FS*. Other variables namely *IO*, *MBV* and *GR* seem to have a negative correlation with *DY*. On the other hand, *DP* seems to have a positive correlation with *ROE*, *EPS*, *Risk*, *Lq*, *FG*, *FS* and *GR* but it moves in the opposite direction with *IO* and *MBV*. The correlation coefficients between *DY* and *FS* on one hand and *DY* and *ROE* on the other hand are relatively high suggesting that *DY* moves in the same direction with *FS* and *ROE*. However, these correlations do not necessarily mean causations. Thus, it is very important to examine these relationships in a multivariate regression analysis. On correlation among the independent variables, the correlation coefficients between the variables, except between *Lq* and *IO*, are less than 0.80 suggesting that multicollinearity is not a serious problem. Nevertheless, because of the high degree of collinearity between the *Lq* and *IO* variables, we use those variables in separate specifications.

Table 1. Summary Statistics

<i>Variable</i>	<i>DY</i>	<i>DP</i>	<i>ROA</i>	<i>ROE</i>	<i>EPS</i>	<i>IO</i>	<i>LQ</i>	<i>MBV</i>	<i>RISK</i>	<i>FS</i>	<i>FG</i>	<i>GR</i>
Mean	0.23	0.22	0.36	0.26	6.50	0.22	1.26	0.30	27.53	25.91	0.09	0.42
Median	0.20	0.24	0.38	0.29	6.50	0.21	1.22	0.26	24.98	26.10	0.13	0.35
Maximum	0.54	0.39	0.77	0.44	7.23	0.64	5.29	0.93	62.46	27.61	1.23	0.90
Minimum	0.07	0.01	0.03	0.03	5.77	0.06	0.24	0.10	6.33	23.41	-0.89	0.16
Std. Dev.	0.11	0.10	0.16	0.11	0.38	0.11	0.93	0.18	14.92	1.22	0.34	0.18
Skewness	1.36	-0.46	0.05	-0.63	-0.10	1.66	1.95	1.57	0.60	-0.76	-0.77	0.74
Kurtosis	4.28	2.34	2.78	2.35	2.24	6.75	8.56	5.99	2.34	2.59	7.15	2.59
JB	20.44	2.86	0.13	4.55	1.39	56.4	103.8	42.24	4.24	5.63	44.05	5.31
Prob	0.00	0.24	0.94	0.10	0.50	0.00	0.00	0.00	0.12	0.06	0.00	0.07
Obs	54	54	54	54	54	54	54	54	54	54	54	54

Source: Authors' estimates (2017)

Table 2. Correlation Matrix

<i>Variable</i>	<i>DY</i>	<i>DP</i>	<i>ROA</i>	<i>ROE</i>	<i>EPS</i>	<i>IO</i>	<i>LQ</i>	<i>MBV</i>	<i>RISK</i>	<i>FS</i>	<i>FG</i>	<i>GR</i>
<i>DY</i>	1											
<i>DP</i>	0.22	1										
<i>ROA</i>	0.27	0.23	1									
<i>ROE</i>	0.41	0.20	0.62	1								
<i>EPS</i>	0.12	0.02	0.27	0.11	1							
<i>IO</i>	-0.30	-0.34	0.17	0.28	0.23	1						
<i>LQ</i>	0.07	0.21	0.10	0.38	0.03	0.86	1					
<i>MBV</i>	-0.13	-0.02	-0.09	0.10	0.05	0.07	-0.03	1				
<i>RISK</i>	0.35	0.22	0.02	-0.17	0.29	-0.23	-0.11	-0.34	1			
<i>FS</i>	0.57	0.19	0.20	0.56	-0.27	-0.05	0.26	0.00	0.11	1		
<i>FG</i>	0.17	0.08	-0.11	0.03	0.04	0.17	0.15	0.11	-0.17	-0.07	1.0	
<i>GR</i>	-0.07	0.16	-0.30	-0.67	-0.16	-0.38	-0.46	-0.26	0.34	-0.41	-0.20	1

Source: Authors' estimates (2017)

4.2 Regression Analysis

The fact that some explanatory variables such liquidity and investment opportunities seem to have correlation, these variables are included in the models as reported in Table 3 to avoid the problems of multicollinearity and endogeneity. Because we use different measures of dividend policy and profitability of the companies we develop 12

models. In the first six models, the dependent variable is dividend yield ratio while in the last six models the dependent variable is dividend payout ratio. There three measures of profitability namely *ROA*, *ROE* and *EPS*. These measures are applied separately in all models. The random effects results are reported in Table 4 and Table 5 where the dependent variables are dividend yield ratio and dividend payout ratio, respectively.

Table 3. Variables included in the models

Variable	Models												
		1	2	3	4	5	6	7	8	9	10	11	12
Dividend yield	<i>DY</i>	✓	✓	✓	✓	✓	✓	×	×	×	×	×	×
Dividend payout	<i>DP</i>	×	×	×	×	×	×	✓	✓	✓	✓	✓	✓
Return on assets	<i>ROA</i>	✓	✓	×	×	×	×	✓	✓	×	×	×	×
Return on equity	<i>ROE</i>	×	×	✓	✓	×	×	×	×	✓	✓	×	×
Earnings per share	<i>EPS</i>	×	×	×	×	✓	✓	×	×	×	×	✓	✓
Firm size	<i>FS</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Risk	<i>Risk</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gearing ratio	<i>GR</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firm growth	<i>FG</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Liquidity	<i>Lq</i>	✓	×	✓	×	✓	×	✓	×	✓	×	✓	×
Investment opportunity	<i>IO</i>	×	✓	×	✓	×	✓	×	✓	×	✓	×	✓
Market to book value	<i>MBV</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: ✓ included in the model, × not included in the model

Source: Authors constructions

As can be seen in Table 4, the coefficients on *ROE* and *FS* in models 3-4 and models 1-6 respectively, are positive and statistically significant at 1 percent level, suggesting that return on equity as a measure of profitability and firm size have a positive effect on dividend yield. Intuitively, these results imply that, when using dividend yield ratio as a measure of dividend policy, more profitable and larger firms tend to pay higher dividends. These results support the hypothesis and are consistent with the findings of Al-Malkawi (2008), Mollah (2011), Hamill and Al-Shattarat (2012) and Patra, et al., (2012). When using dividend payout ratio as a measure of dividend policy, the coefficient on *ROE* is insignificant (Table 5). Surprisingly too, results fail to reject the null hypothesis that the coefficient on *FS* is equal to zero, implying an insignificant relationship between size of the firms and the dividend payout ratio. Other measures of profitability namely *ROA* and *EPS* seem to exert no influence on dividend yield but they tend to have a positive impact on dividend payout ratio when excluding liquidity in the regressions.

The coefficient on the investment opportunity in models 2, 4 and 6 as reported in Table 4 and in models 8, 10 and 12 as presented in Table 5 is negative and statistically significant. The significant negative effect of investment opportunity on dividend policy supports the pecking order hypothesis. The results are indeed, consistent with the results of previous research, for example, Labhane & Mahakud (2016) and Amidu & Abor (2006). By intuition, as the investment opportunities of company increase, the company will retain high amount of its earnings for re-investment.

Moreover, results show that liquidity tends to have an impact on dividend payout ratio but not on dividend yield ratio. Specifically, when considering dependent variable dividend payout ratio, the coefficient on liquidity is positive and statistically significant at 1 percent level, suggesting that companies with stable liquidity position tend to pay more dividends than firms that have liquidity problems. These results are consistent with Musiega et al. (2013) and Anil & Kapoor (2008).

Contrary to expectations, the riskiness of the company seems to have a significant and positive impact on company's dividend payout ratio. This is, in fact, not in accordance with the majority of the

previous studies that reveal a negative relationship between risk and the dividend payout ratio (see for example, Rozeff (1982); Lloyd et al. (1985); Holder et al. (1998). However, a positive relationship between business risk and dividend payout is unsurprising. According to signaling theory, riskier firms may want to signal stability and therefore choose to pay dividends to shareholders. Nonetheless, the positive impact of risk on dividend yield seems to be very weak. Furthermore, the coefficient on the ratio of market to book value across models 7-12 has been constantly insignificant suggesting that the ratio of market to book value exerts no impact on dividend payout. However, the same ratio tends to have a strong negative effect on dividend yield when using *ROE* as a measure of profitability but excluding investment opportunity in the regression model. The negative effect of market to book ratio, which is also a measure of growth opportunities, on dividend yield is consistent with a number of previous studies including Abor & Bopkin (2010) Baker et al. (2012) and Fama & French (2001). Intuitively, companies with greater growth opportunities could profitably invest the free cash flow in projects that take advantage of these growth opportunities. This also implies that companies with better growth opportunities may retain more resources to take advantage of the growth opportunities which in turn lower dividends. Thus, an increase in growth opportunities is associated with a decrease in dividend yield.

Table 4. Random Effect Models: Dividend Yield Regressions

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
ROA	0.112	0.133*				
	(0.077)	(0.076)				
	[1.46]	[1.77]				
ROE			0.426***	0.460***		
			(0.143)	(0.140)		
			[2.99]	[3.29]		
EPS					-0.014	-0.001
					(0.040)	(0.041)
					[-0.34]	[-0.01]
IO		-0.233**		-0.272**		-0.214*
		(0.115)		(0.109)		(0.120)
		[-2.02]		[-2.50]		[-1.78]
Lq	0.021		0.026*		0.023	
	(0.014)		(0.014)		(0.015)	
	[1.46]		[1.95]		[1.55]	
MBV	-0.013	-0.005	-0.021***	-0.011	-0.026***	-0.022
	(0.073)	(0.071)	(0.069)	(0.0667)	(0.074)	(0.073)
	[-0.17]	[-0.07]	[-3.32]	[-0.16]	[-0.35]	[-0.30]
Risk	0.002*	0.001*		0.002**	0.002*	0.002
	(0.000)	(0.001)		(0.001)	(0.001)	(0.001)
	[1.91]	[1.80]		[2.05]	[1.84]	[1.57]
GR	0.023	0.014	0.123	0.122	-0.036	-0.027
	(0.091)	(0.088)	(0.094)	(0.090)	(0.101)	(0.020)
	[0.25]	[0.16]	[1.31]	[-0.26]	[-0.35]	[-0.28]
FG	-0.011	-0.009	-0.009	-0.009	-0.020	-0.020
	(0.036)	(0.035)	(0.034)	(0.033)	(0.036)	(0.036)
	[-0.31]	[-0.26]	[-0.27]	[-0.26]	[-0.54]	[-0.55]
FS	0.05***	0.044***	0.039***	0.031***	0.049***	0.045***
	(0.011)	(0.011)	(0.011)	(0.111)	(0.013)	(0.0133)
	[4.56]	[3.98]	[3.48]	[2.75]	[3.63]	[3.38]
Cons.	-1.145***	-0.961***	-0.947***	-0.720*	-0.940*	-0.915*
	0.304	(0.314)	(0.285)	(0.300)	(0.545)	(0.541)
	[-3.77]	[-3.06]	[-3.32]	[-2.43]	[-1.72]	[-1.69]
No. of obs	54	54	54	54	54	54
No of groups	9	9	9	9	9	9
R-sq: within	0.4973	0.5171	0.5693	0.5870	0.4577	0.4612
between	0.2381	0.2668	0.1995	0.2469	0.3443	0.3996
overall	0.4680	0.4886	0.5270	0.5886	0.4449	0.4539
Wald chi2(7)	40.47	43.95	53.20	58.57	36.90	38.23
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Regressions are estimated using panel data over the period 2008-2016 across 6 companies. (.) denotes standard errors, [.] denotes *t* statistics and *, **, *** means significance at the 10%, 5%, 1% levels.

Source: Authors estimates

Finally, the coefficients on the earnings per share (*EPS*) as measures of profitability, gearing ratio (*GR*) and firms growth (*FS*) are generally, statistically insignificant across almost all models. These results suggest that *EPS*, *GR*, and *FS* exert no impact on dividend policy of manufacturing companies in Tanzania over the 2008-2016 period.

Table 5. Random Effect Models: Dividend Payout Regressions

Variable	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
ROA	0.122	0.165***				
	(0.083)	(0.078)				
	[1.48]	[2.13]				
ROE			-0.146	-0.198		
			(0.166)	(0.158)		
			[-0.88]	[-1.25]		
EPS					-0.053	-0.082**
					(0.043)	(0.04)
					[-1.24]	[-2.03]
IO		-0.45***		-0.456***		-0.469***
		(0.119)		(0.124)		(0.121)
		[3.80]		[3.67]		[3.87]
Lq	0.04***		0.044***		0.042***	
	(0.016)		(0.016)		(0.016)	
	[2.64]		[2.79]		[2.70]	
MBV	0.056	0.046	0.087	0.073	0.111	0.103
	(0.079)	0.073	(0.08)	(0.076)	(0.081)	(0.075)
	[0.71]	[0.63]	[1.08]	[0.97]	[1.37]	[1.37]
Risk	0.002*	0.002**	0.002*	0.002**	0.003**	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	[1.91]	[2.32]	[1.73]	[2.02]	[2.17]	[2.89]
GR	0.041	0.06	0.05	0.05	0.03	0.028
	(0.098)	(0.091)	(0.109)	(0.103)	(0.109)	(0.098)
	[0.42]	[0.67]	[0.42]	[0.53]	[0.27]	[0.29]
FG	-0.04	-0.04	-0.03	-0.03	-0.03	-0.027
	(0.038)	(0.037)	(0.04)	(0.04)	(0.04)	(0.04)
	[-0.98]	[-1.11]	[0.75]	[-0.79]	[-0.65]	[0.72]
FS	0.008	0.02*	0.016	0.03**	0.003	0.023*
	(0.011)	(0.012)	(0.013)	(0.014)	(0.013)	(0.013)
	[0.74]	[1.73]	[1.27]	[2.15]	[0.20]	[1.74]
Cons.	0.665**	0.303	0.539	0.143	1.181**	1.115**
	(0.326)	(0.321)	(0.332)	(0.336)	(0.577)	(0.541)
	[2.04]	[0.94]	[1.63]	[0.42]	[2.05]	[2.06]
No. of obs	54	54	54	54	54	54
No of groups	9	9	9	9	9	9
R-sq: within	0.2693	0.3553	0.2563	0.3226	0.2691	0.3568
between	0.1860	0.3326	0.0902	0.2151	0.0798	0.2387
overall	0.2594	0.3526	0.2341	0.3090	0.2446	0.3427
Wald chi2(7)	16.11	25.09	14.50	20.98	15.67	24.60
Prob>F	0.0241	0.0007	0.0430	0.0038	0.0283	0.0009

Notes: Regressions are estimated using panel data over the period 2008-2016 across 6 companies. (.) denotes standard errors, [.] denotes *t* statistics and *, **, *** means significance at the 10%, 5%, 1% levels.

Source: Authors' estimates

5. CONCLUSIONS AND POLICY IMPLICATIONS

This paper examines the determinants of dividend policy for the manufacturing companies in Tanzania during the 2008-2016 period. The paper uses a sample of all the 6 manufacturing companies listed on Dar es Salaam Stock Exchange. Since dividend policy has been described as a puzzle, it is necessary to empirically examine its determinants. For analysis, dividend policy is measured using both dividend yield and dividend payout ratios. In the same vein, the fact that different measures of

profitability namely, return on assets, return on equity and earnings per share may give different results, it is very important to use all of the three measures in separate specifications in order to reveal the most significant factor. Also, investment opportunities are proxied by retained earnings to total asset ratio and the ratio of market to book value. For inferential analysis, random effect panel data model is applied. 12 multiple linear regression models are estimated depending on the measurements of dividend policy, profitability, and collinearity between earnings to total asset and

liquidity ratios. Empirical results show that investment opportunity as measured by retained earnings to total asset ratio has a negative effect on both dividend yield and dividend payout ratios. By contrast, business risk tends to have a positive effect on dividend policy in Tanzania as far as manufacturing companies are concerned. Other factors such as return on assets and firms size seem to have a significant positive effect on dividend yield but exert no real effect on dividend payout although return on assets ratio tends to have a positive effect of dividend payout after excluding liquidity in the regressions. Moreover, empirical results reveal that liquidity has a positive effect on dividend payout but it has no impact on dividend yield. Similarly, the ratio of market to book value seems to have a negative and statistically significant effect on dividend yield after omitting the earnings to total asset ratio in the estimation model. Notwithstanding, the paper does not establish the effect of earnings per share ratio, gearing ratio, and firms growth on either dividend yield or dividend payout.

The main policy implication of the results is that determinants of dividend policy vary across the dividend policy proxies. They also vary depending on the measurements of profitability and investment opportunities. Overall, dividend yield ratio provides a better measure of dividend policy of the manufacturing companies mainly due to the fact that many factors notably, return on equity, retained

earnings to total assets ratio, market to book value ratio, business risk and size of the firms tend to affect dividend yield. Likewise, return on equity seems to be the best proxy for profitability. This implies that, managers should consider the major determinants of dividend yield ratio while formulating the appropriate dividend policy for a firm.

Despite the fact that we apply 12 regression models and include a significant number of regressors, depending on theoretical and empirical research, this paper contains some limitations. Six companies listed on the Dar es Salaam Stock Exchange are considered for analysis in this paper but it is possible that larger sample that includes non-listed companies may improve the results. However, as has been explained earlier, all the companies listed on Dar es Salaam Stock Exchange follow the financial reporting norms set by the Capital Markets and Securities Authority. The other limitation of this paper is that a 2008-2016 period is used in the paper but for future research we recommend to use a longer time period. Similarly, some other factors such as shareholding structure, share price risk and share valuation may be included in the analysis. Finally, a comparative analysis could be performed between Tanzania and other developing countries to gauge the main similarities and differences on the determination of dividend policy.

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